Attachment 5.07

Assessment of EMCa technical review

January 2015

Ausgrid revised regulatory proposal attachment

Contents

1 Introduction

The Australian Energy Regulator (AER) have rejected Ausgrid's capital expenditure submission and substituted it with a value that is 43% lower than that within Ausgrid's substantive proposal. In regards to replacement expenditure, the AER have considered three mains inputs:

- benchmarking and trend analysis;
- an "engineering" review; and
- predictive modelling.

These inputs were used as the basis for rejecting Ausgrid's proposal. This attachment focuses on the "engineering review" of replacement expenditure conducted by Energy Market Consulting associates and Strata Energy Consulting (referred to jointly as EMCa in this assessment) - "*Review of Proposed Replacement Capex in AUSGRID's Regulatory Proposal 2014-2019: Energy Market Consulting associates and Strata Energy Consulting, October 2014*"[1].

The report is a limited scope review, narrowed from the original scope to include only replacement expenditure, and commissioned on 30 July 2014. It involved reviewing a small sample of twenty documents from our regulatory proposal (which included some 130 main documents and several hundred supporting documents), a single on-site meeting with Ausgrid officers (on 26 August 2014), and substantial reliance on the data provided in the Repex template of the RIN.

2 Overview

The report is of limited utility due to the lack of depth of review possible with the time and resources available. As a high level screening review of investment decision making processes, it points to some areas for further examination. Unfortunately, the AER's draft decision does not then respond by engaging further with our proposal, but by rejecting the proposal and resorting to inappropriate, top-down modelling approaches that fail to explore answers to any of the questions raised in the EMCa report.

While the AER make reference to and consider the review undertaken by EMCa as an 'engineering review', the report has scant consideration for the engineering requirements outlined in Ausgrid's ACAPS documents and explicitly states that "*It does not take into account all factors or all reasonable methods for determining an expenditure allowance in accordance with the National Electricity Rules (NER)*"[2]. Its findings are qualitative and largely subjective statements of concern and provide no basis for substitution of Ausgrid's expenditure forecast.

Ausgrid has identified a number of erroneous statements in the review. These appear to arise because the consultants misunderstood or misinterpreted the information provided, or drew incorrect conclusions from the information. There are also some valid criticisms, which Ausgrid has moved to address in our revised proposal.

In this assessment we have

- identified those findings that are based on incorrect, misinterpreted or misused data, and corrected the interpretation, which has generally led to our rejection of the finding;
- identified those where the report finds that the information "is not clear" and provided greater clarity.
- Identified those that represent reasonable criticisms of our processes or documentation and sought to rectify the situation as part of our revised proposal.

Even with the limited scope of the review we have found it difficult to respond to the report as its structure, analysis and findings tend to be repetitive and disjointed in its arguments and evidence. The following sections attempt to follow the structure of the report and may therefore exhibit a similar level of repetition and disjointedness.

[1] Quotes from the report are shown in blue in this document.

[2] EMCa report, p 1

3 High level assessment

The AER's draft determination for replacement expenditure identified the key findings of the EMCa review as:

- systemic issues leading to overstatement of needs and overestimation bias in cost estimates;
- management decision making issues relating to lack of consideration of alternatives, lack of cost benefit analysis and deliverability risks; and
- The use of overly conservative risk criteria.

At a general level, we have identified several common threads that flow throughout the review, and which undermine the validity of its conclusions. These include:

- the limited nature of the review and the consequent limited validity of some conclusions;
- the generally subjective and qualitative nature of the findings, which consequently provide much less certainty than is inferred by the draft decision; and
- flaws, misinterpretation and incorrect use of data, often because it was gleaned from the RIN data, rather than from our proposal.

3.1 The limited nature of the review

The AER in its findings states: *"There is evidence from an engineering review that Ausgrid's proposal is likely to significantly overstate the amount of repex required to meet the capex objectives"*[3].

Neither the AER's scope of review to EMCa nor anywhere the document itself is the EMCa report referred to as an "engineering review". Instead it is a narrowly defined as a "limited scope" "technical review". The review itself says the AER's request was to *"identify whether Ausgrid's processes, systems, behaviours and/or cultures are leading to any biases in the capex forecasts"* and to *"identify whether these biases mean that the capex forecast does not meet the capex criteria"*[4]. This identifies the report as a process and system review, not an engineering review. In addition, the review does not express its findings or conclusions in terms of the "capex criteria". We would contend that this contributes to making a conclusion to reject our proposal on this basis unreasonable.

This is in contrast to the 2009-14 determination, where the AER, with advice from consultants Wilson and Cook, engaged much more thoroughly with the substance of Ausgrid's capital expenditure forecasts and the engineering justification for proposed expenditures.

The report states that it has considered only on information that was available to the consultants up to 5 September. Given that the review was only commissioned on 30 July, this means the consultants had just over one month to synthesise the information in our proposal, understand the limited validity and complexity of the relationship with the RIN data, follow up any required clarifications and prepare conclusions. At the same time, the same consultants were also engaged in reviewing proposals from Endeavour Energy and Essential Energy. Acknowledging the potential synergies from reviewing all three NSW distribution businesses together, this remains a huge assignment in such a short time. In several places identifies conclusions or assumptions that are "*pending responses to our Information Requests*"[5]. To the best of our knowledge, Ausgrid responded to all information requests received through the agreed AER channels. It may be that the limited time frame for the review did not allow for this information to be considered in the report.

The review relied very heavily on analysis based on data provided alongside our proposal in response to a RIN issued by the AER, and preferred this data over that provided in our proposal. On many occasions, the analysis suffers from attempting to reconcile or compared the two, and there was clearly insufficient time for the consultant to understand the issues with the RIN data and the definitions and assumptions that were required by the definitions in the AER's request and multiple subsequent clarifications and amendments.

Our audit of the RIN data stated: "The information has been prepared ... for the purpose of fulfilling Ausgrid's reporting obligations to the AER. As a result, the information in the Templates may not be suitable for any other purpose." And noted that it was not possible to provide actual historical financial information for the REPEX template 2.2, and that the information was therefore estimated.

[3] AER draft decision, p 52

[4] EMCa, p 1

[5] EMCa, p 18

In attempting to provide a summary of Ausgrid's proposal, the reviewers clearly had difficulty understanding the role of capitalised overheads and their relationship to the repex line items in the RIN, and could not ascertain the relevance of the "balancing item". Unfortunately this led them to the conclusion that "*Ausgrid's lack of an orderly presentation of its repex program in its Regulatory Proposal, coupled with its disjointed identification of repex in its BAU budgets and RIN submissions, is a contributing factor to the poor governance of repex forecasting as identified in this report.*"

Our proposal was structured differently to the AER's RIN. Our SAP financial systems apply overheads to all labour costs at a very low level, and they flow through this mechanism to final costs. This means that our underlying unit cost estimates include overheads and our proposal and all supporting documents are expressed in fully allocated costs, not just direct costs. This also has implications for previous data provision in our prior regulatory accounts. We noted in our Basis of Preparation with respect to Repex templates that "*Reconciliation of our RIN Response with prior Regulatory Accounts is not possible".* Further, the definitions required by the AER meant that the detailed data did not always reconcile, did not provide comprehensive coverage and contained overlaps. This led the AER to require the balancing item to be added to the summary template to reconcile the total expenditure lines with our proposal. The reasons and construction of the balancing item is clearly explained in our Basis of Preparation. However, the correct interpretation would have been to place less reliance on the RIN response and more on the information in our proposal.

Ausgrid provided an "orderly presentation" of its expenditure requirements in our proposal. It was the AER's choice to undertake separate and entirely unrelated assessments of what they termed "augex" and "repex", to consider that all expenditure could be classified as either related to asset age or load growth, and to ignore Ausgrid's construction of its capital expenditure proposal. The fact that this simplistic representation is inadequate to properly describe the way expenditure is actually determined, and ignores the benefits obtained by a more holistic consideration of needs does not reflect "poor governance" on Ausgrid's part, but a desire by reviewers for their task to be simpler.

Subsequent to the delivery of the draft decision, in discussion with the AER about this issue, Ausgrid provided a less confusing presentation of its capital expenditure forecast on 10 December 2014, with accurate direct costs, and orderly construction of the balancing item, by disregarding the more restrictive definitional problems of the RIN. This is discussed in more detail in our revised response.

3.2 Subjective and qualitative findings

The EMCa findings are on the whole subjective and qualitative. This is a related problem to the issues of inadequate engagement and effort. While it would be unreasonable to expect a consultant to be able to do much more than provide qualitative responses with the time and resources applied, the nature of the review's findings is inadequate to enable the AER to reasonably draw the conclusions it has.

Findings regularly include phrases like:"*likely to be biased", "It would be fortuitous if*...", "*a cause for concern*", "*Prudency (or cost efficiency) is undermined by*...", "*it is not clear...", "... will tend to bring forward..."this casts doubt on", "We have not seen evidence that...",* and *"There is an increased likelihood that...".* It is clear that the review identified areas and issues that the consultants were not comfortable with. However, the vagueness of the findings suggests clearly that they were also unable to form a clear contrary view. There is no definitive suggestions about what an alternative program might look like, and no basis for a conclusion other than that more questions and engagement with the detail of the proposal was required.

In addition, the review regularly finds that there is "*a lack of evidence*...' or "*inadequate justification*...". While these again are justifiable causes for concern and further enquiry, they do not form a prima facie case that the forecasts are wrong.

We reinforce our view that the key error is in the AER asserting that the EMCa review findings are sufficient for Ausgrid's proposal to be ignored and substituted by a forecast that largely ignored the substance of the proposal.

The draft decision notes that "*Importantly, our assessment is about the total forecast capex and not about particular categories or projects in the capex forecast. The Australian Energy Market Commission (AEMC) has expressed our role in these terms*"[6]. While it is true that the AER determination sets revenues and not expenditure programs, in the context it is used here the implication is that the AER has no obligation to consider the detailed proposal at the project and program level. The AER is bound to consider the proposal in all it detail to ascertain whether it represents a reasonable forecast of the expenditure that forms the building blocks on which the revenue determination is based.

3.3 Flaws, misinterpretation and incorrect use of data

Notwithstanding, and possibly resulting from, the limitations of depth and scope of the EMCa review the report contains material flaws and misinterpretations the full extent of which Ausgrid has found difficult to identify, understand and correct. A partial list of issues is included in the following sections.

[6] AER draft decision, p 6-15

A key problem is the repeated resort to the data in our RIN response and the clear preference for using that rather than data contained in our proposal. It may be as simple as the fact that the RIN data was contained in readily accessible, standard format excel spreadsheets that were in the same apparent format for all three businesses. We can understand the attraction and apparent simplicity but, as explained above, our actual proposal was contained in our submission, not the RIN response.

We have identified in the introductory part of our revised proposal regarding capital expenditure forecasts that the use of RIN data lead to some errors of fact in the draft decision. In the case of replacement expenditure forecasts, EMCa derived various numbers from the RIN data and noted inconsistencies. However, within the limitations, EMCa do find correctly that "*a better characterisation of Ausgrid's repex is that it is essentially flat, with the proposed allowance being similar to actual repex in the prior RCP*"[7]. We would agree with this characterisation, which makes it a concern that in other places both EMCa and the draft decision refer to significant increases in repex. EMCa suggests that Ausgrid "... *now indicates the need for rapid escalation of expenditure*"[8] in a line of argument that it says demonstrates inconsistencies.

In the same listing of "contradictions" the review also states that Ausgrid "*provides information from 2009-2013 that shows a decrease in mean asset age for distribution substations, poles and towers"*. In fact our proposal says "*the average age of distribution substations has remained effectively constant, and that the average age of poles and towers has increased*."[9], and supports this with a clear chart showing that it is so. It is difficult to see how such a fundamental misreading of the proposal could be made, and doubly worrying that it should be expressed as a fact demonstrating that Ausgrid's replacement forecasting logic is inconsistent.

EMCa did not have regard to the fact that our "replacement" expenditure forecast includes both replacement and duty of care programs – a consequence of the limited AER categories. There seems to be no consideration for the differences in drivers in the EMCa report. While two duty of care ACAPS documents were included in the review (in Appendix B), EMCa have neglected to provide an assessment of these programs. This raises significant concerns that EMCa can make generalised finding that seem to stretch across both categories.

In one case EMCa states "*Ausgrid was, for key programs of work, unable to explain the variation in expenditure profile in its prior RCP*". This was a question without notice, tabled at the single meeting with the consultants, based on analysis that we had not previously seen. While we were able to speculate on probable reasons for RIN data producing counter-intuitive results (relating to differences in asset categorisation), we were not in a position to provide any detailed explanation on the spot. This issue was not followed up with any further information requests for clarification. It is disingenuous to claim on that basis that Ausgrid were "unable to explain" without clarifying that we were not offered a reasonable opportunity to do so.

Other clear examples include a misunderstanding of the governance process that led to the decision about the investment portfolio that underpins the proposal, statements about the application of contingency allowances, conclusions about the lack of top-down review and assumptions about the way risk assessments were used. These are considered in context in the following sections.

[7] EMCa, p 8

[8] EMCa, p 16

[9] Ausgrid proposal, May 2014, p 35

3.4 Conclusion

The review by EMCa is not wholly without merit. It identifies a range of issues with the data in the RIN, identifies areas where more detailed investigation would be fruitful, and raises a number of concerns that should be legitimately considered by the AER and addressed by Ausgrid.

However, it is not a comprehensive engineering review that could possibly be relied upon to dismiss the entirety of Ausgrid's proposal and provide a justification for wholesale substitution. It is too limited, too qualitative and beset by too much misinterpreted information to provide sufficient support for a reasonable alternate forecast of replacement expenditure.

The following sections deal with the EMCa report findings in the manner they are presented in the report, but with the overall findings at the end. All items in blue text quote the findings from the EMCa review. Note that section numbers in this report do not align with those in the EMCa report.

4 Governance and management framework

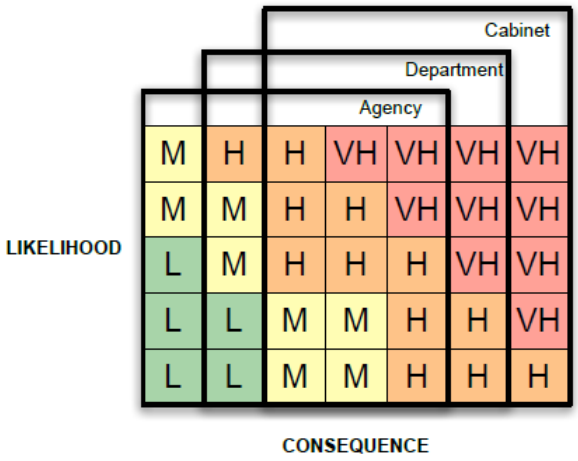
4.1 Repex prudency undermined by systemic failings

4.1.1 "Ausgrid uses a conservative operational risk framework and applies the likelihood and consequence findings conservatively. In aggregate, this results in overstating the risk posed by its assets."

This concern is linked to the operational risk management framework Ausgrid used in its ACAPS documents. EMCa in its review states "*The matrix and the accompanying assessment criteria are relatively risk averse – almost two thirds of conditions in the matrix are extreme to high. This is more conservative than approaches in other utilities and is far more conservative than its Corporate Risk Framework*." EMCa repeats this issue at several points in its review.

Ausgrid considers there is no fundamental issue with the assessment of corporate risk and operational risk using different frameworks. This is supported by R2A[10] who consider the use of different risk characterisation for various hierarchical business levels.

Figure 1 – Risk Matrix applied at different hierarchical business levels (R2A)



The issue raised by EMCa is the relative ranking of the outcomes of risk assessments between the corporate and operational risk matrices. This revolves around the words used to describe the levels of risk in the operational risk matrix. A risk evaluated as "Extreme" under the operational framework would be assessed at a lower qualitative level by the corporate risk matrix. However, the language is only relevant to the extent that it drives action or investment.

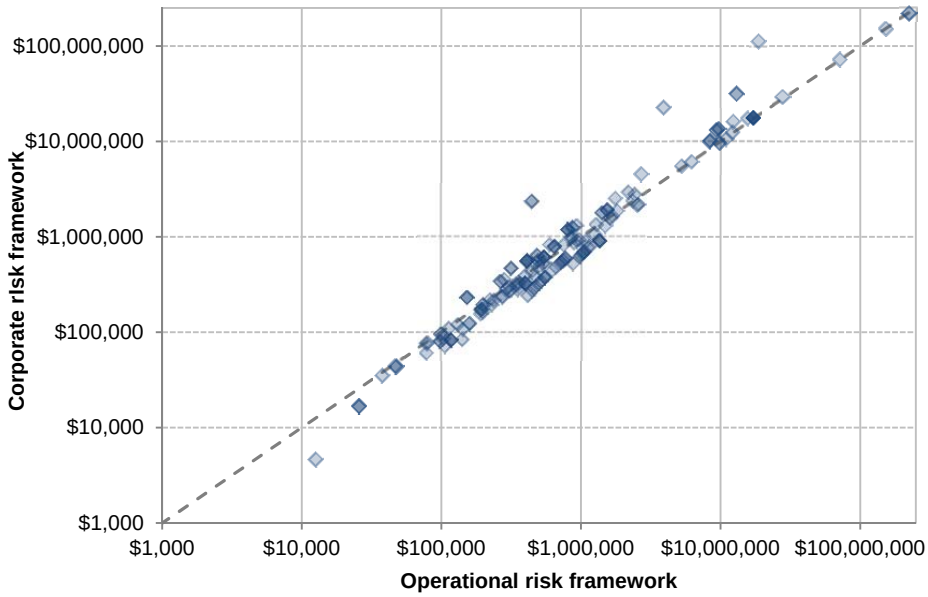
EMCa recognised that Ausgrid had already made some progress toward a framework of risk cost assessment using elements of the Capital Program Optimisation Methodology tool developed by Evans & Peck, saying this "*showed promise".* Ausgrid's motivation in developing along this path is to use quantification of risk to avoid the potential for subjective assessments of risk to enable conservative biases to drive investment decisions.

[10] Robinson, R.M, Francis, G, Hurley P, (2014, 9th Edition). *Risk and Reliability: Engineering Due Diligence*

In undertaking our annual review of the replacement plan, we have further developed this approach and now undertake risk cost quantifications for most planned replacement programs. These risk cost measures are now used by planners as a key input in deciding the relative merit of replacement programs and choosing between alternative treatment options.

We have mapped the risk cost estimated from the Evans & Peck model using the operational risk matrix for each of our proactive replacement and duty of care programs against the same methodology using the corporate risk matrix and find that they produce very similar outcomes. In the programs with higher valued risks, the quantified risk under the corporate framework is higher, implying that the operational risk matrix is in fact less conservative than the corporate framework when used in this way.

Risk consequence assessment comparison – proactive replacement and duty of care programs



While we are now moving to use the corporate risk framework as the basis for our future replacement planning, this comparison shows that we would not expect a material difference in the resulting program.

Ausgrid has moved to address this concern in its revised proposal.

4.1.2 "In some asset categories, Ausgrid has insufficient quality data to make an optimal assessment of particular asset strategies and to justify the volume and timing of activity."

There is no argument on this section of the report to support this contention. This makes it difficult to make any comment other than to reject a completely unsupported assertion. It may be that this was intended to relate to criticisms levelled at the "top-down adjustment process" (see section 4.2) or it may be related to comments regarding the proposed expenditure programs (see section 6.2.2).

4.1.3 "Ausgrid has failed to provide comprehensive cost-benefit analysis to support some of its key asset strategies".

Again there is a complete absence of any argument in this section of the report to support this assertion. Like the "finding" above, this does appear elsewhere in the report (see section 6.2.1), where we deal with it appropriately. The inclusion of findings where no argument exists suggest that the report was hastily assembled without due attention to ensuring a logical presentation of its arguments. This further supports out argument that the consultants were not afforded the time and resources to undertake this review thoroughly.

4.2 'Top-down' adjustments inadequately informed

4.2.1 *"The 24% adjustment (reduction) that we understand was applied by NNSW to Ausgrid's initial forecast capex may be inadequately informed to ensure that Ausgrid's repex program is prudent. Further, it is not clear how (or if) this 24% reduction has been applied to repex in the proposal and to RIN data. It would be fortuitous if an aggregate forecast adjusted in this manner represents a prudent and reasonable amount."*

This finding stems from a misinterpretation of the information provided in our proposal and at the on-site meeting. This issue is identifies as key in the summary findings.

Discussion of this issue with Ausgrid was brief, on the basis that EMCa said it had been canvassed more fully with Endeavour Energy previously. Ausgrid did make available a senior executive to discuss the Board process in more detail, but since the timing coincided with a lunch break, the direct engagement never happened. This is unfortunate, as EMCa's understanding and representation of this process is fundamentally flawed.

EMCa have been critical of the program adjustments made by the Ausgrid Board, stating *"…the fact that a 24% capex reduction could be made without having a material impact on network risk, and without an apparent asset management-based justification for the reduction, is a strong indicator that Ausgrid's forecasting processes have overestimated required repex"*. This concern is based on an erroneous understanding of the planning and investment governance process.

The governance process

Our governance and risk management framework was explained in our substantive proposal to the AER and in the accompanying evidence. We have a prudent and robust process in place to ensure that our capital expenditure program represents a reasonable estimate of the lowest cost solution to address a genuine network need.

The key stages of our governance process, as outlined to the AER and its consultant, include:

- Governance around the policies and standards which drive key triggers for investment with both independent and peer review and endorsement of the technical and risk triggers for investments.
- Effective input early in the process with the provision of long term (forward 5 to 10 years) strategies and plans to the Board.
- Annual development by the business of approval of the risk prioritised investment portfolio by the Board (Gate 1). Effective risk based prioritisation enables the Board to make an informed decision based on its risk appetite with an understanding of the risk versus expenditure position rather than uninformed changes to the portfolio.
- Preliminary individual project / program approval outlining the need and the options to address it (Gate 2). Approval is by the delegated authority and all projects and programs with a total estimated investment above $5m are subject to independent and peer review as part of the governance process. The review tests the need for the investment and the prudency of the proposed options.
- When project design is complete, and the most efficient delivery model has been determined, final project approval is required (Gate 3). As with the preliminary approval all investments above $5m are tested through an independent and peer review prior to approval.

Risk based investment prioritisation is one of the key stages (Gate 1) in our governance process. The ability to prioritise investments is an important factor in development of the portfolio investment plan. The methodology we have used for prioritisation has been developed to be consistent, efficient and transparent in order to articulate the risk outcome associated with a particular investment scenario. The current risk topic areas used to prioritise the portfolio include:

- Public safety, environmental or regulatory impact;
- Network initiated fire;
- WH&S (employee);
- Network condition;

- Community impact (reputation);[11]
- Network reliability; and
- Network capacity.

It important to recognise that replacement (and other investment) planning is undertaken concurrently with the development and risk assessment of the overall portfolio. Replacement planners were required to undertake risk assessments for each program using the CASH methodology, and to include alternative program timing scenarios (effectively alternate programs) as part of finalising the proposed program. Our expenditure forecast was constructed and progressively refined over a period of time.

Delivery risks and constraints are also reviewed and where required incorporated into the plan and sensitivity and economic analysis is conducted with consideration to the viability of the capital structure under a number of scenarios.

The investment governance committees review the resulting portfolio and provide a top down challenge process. This process tests the projects and programs, both for consistency of risk prioritisation and for deferral risk.

We recognise that the factors driving investments and risk can change over time – for example due to changes in demand, failure modes, asset deterioration, delivery costs, standards and policies. As a result a formal change control process is in place to provide governance and transparency for any changes to the Board approved portfolio and risk position.

The 2013 Gate 1 Approval

2013 was the first time we had utilised the CASH methodology to present a risk prioritised investment portfolio to the Ausgrid Board. This had been preceded by several papers discussing the principles of the model and gaining Board endorsement for the process.

When the final portfolio was presented to the board, it was accompanied by a clear recommendation that the required portfolio should be substantially lower than that projected as being required in the 2012 SCI. In Ausgrid's case, the 2012 SCI forecast totalled $5,882 million (nominal). As a result of planning reviews and adjustments, the forecast requirement was reduced due to lower demand forecasts, revised risk assessments and better targeting of replacement programs, a change to metering strategy and the impacts of a revised connection policy. The Ausgrid capital expenditure portfolio[12] presented to the Board for Ausgrid's substantive regulatory proposal recommended an appropriate risk balanced level between $4,459 million and $4,681 million, with operating cost trade-off implications for lower recommended levels of investment, and risk implications of levels lower than this. They were presented with full visibility of the risk assessment process and examples of projects that ranked above and below key expenditure levels.

The upper bound of recommended investment for Ausgrid was was already 20% lower than the 2012 SCI forecast. The Board determine a final amount which, in Ausgrid's case was approximately 4% below the upper recommended level. In the case of replacement expenditure, the difference was only 2%.

This is why Ausgrid has stated that the Board approved replacement capital expenditure level does not have a material impact on network risk. The Board did not make an uninformed 24% random cut to our recommended expenditure. They approved a forecast expenditure that was 24% lower than the 2012 forecast for the five year period 2014-19, but their decision was based on information provided on risk assessment, opex / capex tradeoffs and was within a range that arose from our underlying planning and risk assessment processes.

The Board did not, as suggested by EMCa, reduce the forecast expenditure due to an overestimation bias or due to the lack of an internal challenge process.

[11] Reputation is a new topic area included as a result of an independent review into our prioritisation process and tool. This topic has been included in the prioritisation process used for the capex forecast in this revised proposal.

[12] Network capital including metering, public lighting, ancillary services and overheads

Independent review

Subsequent to the submission of our regulatory proposal an independent review was conducted on the risk based prioritisation process. Evans and Peck, who conducted the review, noted that there were a number of very significant positive aspects to our process and also provided a number of improvement opportunities. The majority of these opportunities have been incorporated in the expenditure forecast supporting the revised proposal.

In response to AER information requests we responded to several questions from the AER and its consultant. These responses demonstrated the prudency of our prioritisation process and included:

- The prioritised risk master list that underpinned the expenditure forecast in the regulatory proposal
- Documentation describing the prioritisation model, including the topic areas, questions and definitions of the weighting values
- A sample of project summary data sheets drawn from specified risk ranges
- A copy of the Evans and Peck review of the risk based prioritisation process

Advisian (formerly Evans and Peck) have subsequently conducted a post implementation review (see Ausgrid revised proposal attachment 5.12) of the changes implemented to the prioritisation process and have confirmed that the changes provide for significantly increased alignment with the common risk matrix, greater differentiation on risk scores, improved focus on top risks at board level and a greater level of documentation and reasoning behind risk scoring.

Advisian also make clear that the CASH model forms part of an overall governance process and is not a standalone tool:

"*The model therefore flags projects / programs that should proceed to the next stage of capital evaluation to determining if enterprise investment criteria are met. It does not do this in its own right.*

This analysis is performed externally to CASH using "business as usual" investment guidelines. Some information, such as project identifiers and projects costs are linked back to CASH. However, portfolio optimisation, sizing of work programs and the like is performed outside of CASH. Provided this limitation is clearly understood, Advisian is of the view that the amendments made to the model address the 8 identified areas for Potential Improvement. However, this work has not yet evolved to the level that the mode, in its own right, can be used to allocate capital or "right size" a works program. Notwithstanding, it does facilitate a common understanding of risk scoring, which is a key input to this process."[13]

Jacobs have also disagreed with EMCa's interpretation in their review[14]:

"However, based on the review Jacobs considers the AER's position to be inaccurate. Jacobs considers the NSW DNSP's approach clearly demonstrates a considered top-down assessment of their Capex forecasts in reaching their final expenditure proposal. As such, the AER's findings would not appear to justify discounting the Capex forecasting methodologies of the NSW DNSPs and substituting them with the AER's methodology "

"Jacobs considers that the processes employed by the NSW DNSPs broadly address these criteria. Conversely, Jacobs notes that the approach substituted by the AER does not meet its own stated criteria for what a top-down assessment "should" include."

"Moreover, Jacobs considers the AER's position of largely discounting the bottom-up assessments is ill-founded and appears to demonstrate a poor understanding of a prudently constructed Capex forecast. It is Jacobs' view that such an approach, particularly one taken without due consideration given to risk profiles, could be potentially negligent"

"The AER has also concluded that the risk assessments do not adequately justify the priority and timing of the Capex forecasts. However, it appears that this conclusion has been reached because the CASH/PIP process was not properly understood. In Jacobs' view the CASH/PIP top down assessment clearly provides adequate granularity to inform the prioritisation and scheduling of the associated capital works programmes. ..... The AER appears to be taking a position on expenditure without apposite consideration of the risk profiles associated with the varying levels of expenditure. In particular, the AER's approach does not appear to consider "risk level metrics [as] key elements of capex drivers" within its substituted Capex forecast approach. "

[13] Attachment 5.12 – Advisian, p 7

[14] Attachment 1.16 – Jacobs, p 24, 25

Ausgrid rejects this finding on the grounds that it is based on a fundamental misunderstanding of the Board process portfolio approval process.

4.3 Repex program has unknown deliverability risk

4.3.1 "Ausgrid's proposed repex programs vary significantly from its historical work, yet it has not prepared a delivery strategy or a detailed implementation plan. Ausgrid was substantially underspent in the prior RCP due, in part, to delivery issues. The large increase in repex work in the current RCP requires careful planning due to the different skill sets, safety and access issues typically associated with brownfields work."

This criticism relies on the assertion that the nature of the program has changed so fundamentally from the program delivered in 2009-14 that it may present significant risk of non-delivery. EMCa acknowledges that Ausgrid responded to it that we were confident the program could be delivered, but seems to believe that it has better understanding of the likely issues and problems we will encounter than our program delivery team.

Ausgrid viewed the delivery challenge in terms of the overall operating and capital investment program, not solely on the basis of the replacement program. We identified that the level of overall program delivery is significantly below historical actual expenditure in every year of the future program.

Ausgrid accepts that it is reasonable to expect that delivery issues should be considered in developing a forecast of expenditure, and that a delivery and resourcing strategy is important to the prudent and efficient management of the business. However, we did not view this as a material risk to our expenditure forecast and chose to develop our delivery and resourcing strategy following the submission of our regulatory proposal. That work is now complete and forms part of our revised proposal.

Ausgrid rejects this concern on the basis that it was not a material risk, and that the delivery and resourcing strategy we have since developed has demonstrated this to be the case.

5 Forecasting methods

5.1 Approach to risk is overly conservative

5.1.1 "Ausgrid's risk-based repex justifications are a cause for concern, due to its tendency to use overly conservative risk criteria."

This assertion is based on the use of the operational risk framework and the risk assessment descriptors contained in that framework. This element was discussed and addressed at section 4.1.1.

There is also a statement that the risk framework was not universally applied. EMCa appears to agree with Ausgrid's asset management approach but concludes that its application is biased towards overstating network risk. They also state: *"It uses only quantitative benefits in its analysis, but includes qualitative benefits in its overall decision making process. This is a reasonable approach"*[15]. As this statement acknowledges, Ausgrid did not solely rely on its operational risk matrix to form its investment decisions.

In reviewing Ausgrid's risk approach, EMCa have concluded in that *"…in the ACAPS and other documentation we reviewed, we did not see this framework applied in every case*."

This is technically correct but misleading and used out of context because Ausgrid did not undertake a risk assessment in forming its reactive programs. Reactive programs were seen as unavoidable costs. Ausgrid only considered failures that would lead to the full replacement of the asset, that is, they could not be repaired or would not be efficient to repair. On the basis of this approach, all asset failures which result in replacement will have costs realised within the regulatory period. A risk assessment was therefore not considered to provide any value. Ausgrid used the long term historical information where available to forecast these reactive programs. Where the historical data for assets was relatively recent projected failure estimates were utilised based on updated failure information.

For our sub-transmission cable and 11kV switchboard strategic replacement programs, a different process was used. Because these assets exhibit very high consequence, low probability failure characteristics, they were originally evaluated with executive and board involvement to assess the risk and frame an appropriate strategy. The assessments undertaken for these assets were largely qualitative in nature and used real life examples to frame the extent of asset risk. This approach provides factual and historical evidence of the risks associated with these assets. Jacobs SKM

[15] EMCa, p 17

reviewed the strategic decision in regard to subtransmission cables and stated: "*Something about risk assessment appropriateness".* The assessment of 11kV switchboards was undertaken on the same basis. The Strategic Asset Prioritisation documents then assembled a replacement program within this strategic framework, and were not intended to re-assess the risk. These projects are considered under the Area Plans approach to investment planning as they are high value, complex and are influenced by a number of external factors.

Ausgrid has since developed more sophisticated tools for assessing risk for major replacement projects. These involve a time varying risk quantification approach that more thoroughly assesses and quantifies the consequences of major asset failures. Combined with a view of future failure likelihoods, this provides another level of confidence in the chosen timing for major replacement investments.

In using this method to evaluate all the planned major replacement projects, we have identified several that could be deferred from the originally targeted date and incorporated those savings into our revised proposal. In conjunction with the improvements discussed in section 4.1.1, we believe that this criticism has been dealt with effectively in our revised proposal.

5.2 Questionable basis for activity forecasts

5.2.1 "Ausgrid use a forecasting approach based on good industry practice, but at the program/project level, we find that there is:

- *Inadequate justification of the timing for resolving the condition-based issues (and therefore the volume of activity in the current RCP);*
- *Inadequate explanation of the degree of step-change evident in expenditure proposed at the sub-category level;*
- *Lack of robust delivery risk management."*

This claim is backed by very little analysis or discussion in the body of the review. The report states that, on reviewing a small sample of ACAPS documents, it "*found insufficient justification for the volume and timing of replacements*"[16]. The report does not go on to elaborate on those issues, nor does it suggest that the levels are incorrect, just that they felt the justification was inadequate. The question in the mind of the consultant appears to be at least partially a re-statement of the risk assessment issues dealt with previously, and the delivery concerns (also dealt with previously). The review of the ACAPs documents in detail appears in the following section of the report.

The issue of step changes in expenditure is not referred to in this section, other than the erroneous and internally inconsistent claim of "*rapid escalation of expenditure*" which we dismissed in section 3.3. This issue is only raised in the body of the report in relation to expenditure trend for sub-categories of switchgear and the SCADA, network control and protection category. These are dealt with in section 6.2.6.

In fact the most significant element of this section of the review is an overall treatment of our forecasting approach which claims "*the justification for increased repex is undermined by a number of inconsistencies and contradictions in Ausgrid's rationale*[17]*".* Putting aside the fact that we have already demonstrated that the claim of "increased repex" demonstrates an internal inconsistency in the EMCa report itself (see section 3.3), the description of these inconsistencies and contradictions contains a series of misunderstandings or misinterpretation of the information presented in our proposal.

- It suggests that data shows a decrease in mean age for distribution substations, poles and towers. This is incorrect. The initial proposal[18] presented a chart clearly showing that poles and towers exhibited increasing average age, and distribution substations exhibited a stable average age. Further, the accompanying discussion explains that distribution substation average age is only stable because of the growth of 3-4% in the overall number of distribution substations (all of which are obviously new), which masks the continued aging of the existing population. We identified this as one of the reasons we give little weight to analysis of average ages.
- It refers to "the need for rapid escalation of expenditure[19]". Ausgrid did not propose a significant increase in overall replacement expenditure in real terms. EMCa's report itself says "Ausgrid's proposed total repex of $3,280m for the forthcoming period reflects a 2% increase over its total actual repex of $3,228m in the previous period"[20]. We did propose an increase in spending in our Replacement Plan, but this plan does not cover major replacement projects contained in our Area Plans. Because the replacement expenditure in our Area Plans was forecast to be lower, the

[16] EMCa, p 17

[17] EMCa, p 16

[18] Ausgrid initial regulatory proposal, Figure 12 and accompanying text, p 35

[19] EMCa, p 16

[20] EMCa, p 6

change was a shift in focus from larger to smaller assets, not a net increase, and certainly not "rapid escalation". It is possible that this misconception arose from the same errors of historical categorisation that led to the inaccuracies in the trend analysis in the draft decision that we discussed above.

- Finally it interprets our wood pole replacement expenditure forecast as "even more aggressive performance is being targeted (e.g., wood poles)". Our strategy for wood poles is a reactive inspection-based replacement using an inspection regime and safety standard that is unchanged from the previous period. Our expenditure forecast is simply a projection of the number of poles that will fail inspection and the cost of replacing them. A reading of our proposal would have revealed that the expected increase in expenditure on wood pole replacement, which occurs toward the end of the period, is due to the fact that our population of already staked poles is expected to begin reaching the end of the life extension period enabled by staking. Our current average cost of dealing with a wood pole that fails inspection reflects the fact that approximately 50% of poles are able to be staked at much lower cost than replacing the whole pole. Since a staked pole cannot be staked again, our average cost of dealing with a condemned wood pole will rise.

When these errors and misunderstandings are corrected, the logic of Ausgrid's rationale is not flawed in the way EMCa alleged.

With these manifest errors, and because it is not supported with any argument within the body of the report, this finding must be regarded as an unsupported assertion and should be rejected on that basis alone. To the extent it has a foundation in the review undertaken, it is dealt with elsewhere in this assessment.

5.3 Cost estimation is biased towards overestimation

5.3.1 "In addition to the need for a 'top-down' adjustment, we found further evidence that Ausgrid's cost estimates are likely to be biased towards overestimation."

This finding arises from concerns regarding the application of multiple levels of contingency to project estimates, the identification that past estimates (from five years ago) did not always prove accurate in practice, and assertions regarding claims of improvements at Endeavour Energy and the realisation of procurement benefits.

The statements regarding the multiple application of contingency to project budgets are both incorrect and irrelevant. The review alleges that there is a bias toward cost over-estimation due to the application of two layers of contingency – one at corporate level and another at project level applied at the final (Gate 3) approval stage. This is a fundamental misunderstanding. The suggestion of a corporate level of contingency appears to come from a misreading of a policy document describing the management of contingency in a portfolio of active projects. The expenditure forecasts in the proposal comprise project estimates prior to Gate 3 approval (except for in-flight projects) which do not include project contingency either. Cost estimates for in-flight projects are based on project completion cost estimates, in which contingency has typically either been drawn down or removed. Contingences are not applied twice in the project governance life cycle and there is no over-estimation bias from this factor in the proposal.

The discovery that the cost estimates from five years ago proved to be inaccurate in some cases should not be considered surprising nor should it be considered likely to be repeated. These forecasts were prepared in an environment when continued underfunding had meant there was very limited historical base data on which to form cost estimates. Since then Ausgrid has undertaken a wide variety of major and minor projects using a variety of delivery mechanisms and undertaken many project cost reviews. The information base on which the current cost forecasts are based is vastly superior to that which was available five years ago. It is not reasonable to suggest that this will not result in a substantial improvement in accuracy.

In our revised proposal, Ausgrid has explicitly recognised ongoing improvements in cost structures from our current efficiency programs. While these are focussed on operating costs, and will mainly be manifest there, a top-down reduction has been applied to our forward capital program in recognition of the benefits of ongoing cost improvements. More detail is contained in our delivery and resourcing strategy.

6 Proposed expenditure programs

6.1.1 *"In all but one of our program reviews, we found that Ausgrid had sufficient basis for adopting the proposed focus area (e.g., SCFF cables, 11kV switchgear, wood poles) in its program. However, we identified issues in the majority of the programs we reviewed (as set out below)."*

This section assessed programs at a category level. The assessments relate to five major asset categories – cables, switchgear, poles, transformers and SCADA, network control and protection.

EMCa listed twenty documents as being reviewed, but only about half are actually referred, even obliquely, in the report. It is notable that there is no discussion of overhead conductor programs despite EMCa referencing four documents specifically dealing with them. Two other documents, which do not appear in the reference list at all are discussed extensively.

The findings in this section do not come from a clear line of argument in the document, but are generalised and subjective conclusions. This makes it difficult to deal with them in a structured way. Many of the statements within the body of this section reflect either misunderstandings of the documents or errors of fact. These undermine the validity of the conclusions.

EMCa do not draw any form of conclusion with respect to three of the four categories of replacement expenditure they review. The exceptions are transformers - "*we consider that the strategies have a sound basis for their selection and are appropriate for the asset classes*"[21], and SCADA, Network Control and Protection – "*The ACAPS documents do not present an appropriate level of analysis and justification to support a $100m plus expenditure program*".

In the case of SCADA, Network Control and protection, the expenditures in the two ACAPS documents quoted only total to $25.8m and $32m respectively – a total of $59m, including overheads. Stating that these documents would not justify a $100m plus program is not relevant when the program is just over $50m. EMCa does not go on to say what level of expenditure they considered might be appropriate based on the documents they reviewed.

In the following table, we have identified each element of the findings from this section, identified any discussion in the body of the section of the report that seems to relate to each finding, and included commentary on the specific paragraphs from the review.

[21] EMCa, p 34

The findings are:

6.2 Prudency undermined by:

6.2.1 "A lack of robust options…"

The report expresses concern about lack of options with respect to SCADA and switchgear, but identifies positive features of options consideration for cables and poles, and endorses the transformer program. This concern is therefore limited to two of the five assessments and should not be represented as a general issue.

Reference	Quote	Ausgrid's Response
S5.2.1 para 133	*The Area Plan considers a number of options relating to the resultant rating, capacity and replacement timing of its 132kV cable network*	The report finds that, in respect of major underground cable projects a number of options are considered. This contradicts the finding.
S5.2.2 para 148	*Ausgrid only considers one option in addition to 'Do nothing'. The options analysis should consider reasonably plausible options, including the cost-benefit of varying levels of replacement over time and risk mitigation options.*	In this ACAPS relating to switchgear, the 'Do Nothing' option represents the following actions: • Continue with current maintenance practices. • Repair where possible. • Replace asset on failure. Ausgrid has considered replacement with a new 11kV vacuum circuit breaker as the only reasonable alternative to the 'Do Nothing' case. Ausgrid's MRA process coupled with its condition base replacement ensures maximum life is achieved from its assets. The replacement program is targeted at high risk assets, or where the solution represents the lowest long term cost. This is evaluated across the entire subset. Due to this targeted approach and the benefits from this program, Ausgrid have assessed the need to replace all assets within this targeted subset. As such, the benefits in replacing multiple assets are proportional to the increases in cost. The most appropriate timing becomes a consideration of deliverability in the context of all other programs of work. This conclusion has been validated using the Risk Quantification Model. In the EMCa's evaluation they have suggested that investment delay was not a factor considered by Ausgrid. However, due to the proportionate relationship between cost and benefit for a targeted subset of asset, Ausgrid rejects this as a meaningful consideration for this program.

Reference	Quote	Ausgrid's Response
S5.2.3 para 156 & 160	*Following options analysis, Ausgrid concluded that continuing the condition based replacement/reinforcement option had the lowest cost and delivered the lowest risk position.* *Ausgrid has identified and analysed a reasonable number of credible options in ACAPS4001.*	The report finds that, in respect of pole replacement, a reasonable number of options are considered. This contradicts the finding.
S5.2.5 para 180	*ACAPS2009 only considers one option (in addition to doing nothing), which is planned replacement (i.e. prior to breakdown failure) … There is no option analysis in ACAPS2003*	In the case of SCADA, there is one program (ACAPS 2003) that is a forecast of the need for reactive replacement of failed equipment, and one (ACAPS 2009) which contemplates planned replacements to avoid in-service failures. The suggested alternatives in the ACAPS document are not alternative options but suggestions for trade-offs in realised dollars versus unrealised (risk) dollars. The comments by EMCa suggest that they have a limited technical understanding on this particular asset type and the availability of options that are available. ACAPS 2003 is reactive replacement. As this is a run to fail approach, no option analysis was undertaken. This is consistent with all run to fail programs.

6.2.2 "A lack of … risk and cost-benefit analysis in support of the timing/volume of the activity"

Reference	Quote	Ausgrid's Response
S5.2.1 para 123	*we were not able to observe a risk-based cost-benefit analysis for determining the timing of the work. Risk analysis seemed only to be used for comparative analysis … We could not observe the application by Ausgrid of a formal risk framework.*	Ausgrid accepts that its processes could always be improved, and has been working on broadening the use of cost-benefit and risk cost assessment techniques in the period since the substantive proposal was prepared. This was foreshadowed in discussions with EMCa and in our substantive proposal. EMCa acknowledged this as a developing area that "shows promise" in their report. In our revised proposal we have applied a risk assessment and quantification methodology to the major replacement projects to enable us to clearly identify those projects that can be cost effectively deferred without undue risk, and those that need to proceed. We have also expanded our application of risk cost quantification to replacement and duty of care programs.

Reference	Quote	Ausgrid's Response
S5.2.3 para 155	*We observe that Ausgrid has a current pole failure rate of 0.18 per 10,000 poles per year, well below the industry benchmark and that the failure rate has remained relatively constant for a number of years. Ausgrid state an aspirational target of 0.1 per 10,000 poles however we were not able to observe an economic analysis supporting this. It is unclear how this target has informed the strategy selection.*	The EMCa report incorrectly ascribes the 'aspirational target' as being Ausgrid's target. The aspirational target was footnoted on page 20 of ACAPS4001 as being sourced from the document 'Department of Consumer and Employment Protection Government of Western Australia -WESTERN POWER'S WOOD POLE MANAGEMENT SYSTEMS: REGULATORY COMPLIANCE AUDIT 2005 - EXECUTIVE SUMMARY citing Electricity Council of NSW guide EC8 -1994'. As there are no other documented industry sources of acceptable pole failure targets this figure has been used as a reference to provide externally sourced context. At no stage did we describe it as our strategic target.. Ausgrid's pole replacement program has predominantly been forecast on historical pole condemnation rates and the expectation that a level of reinforced poles are coming to the end of the life extension period that the pole reinforcement provides. A comprehensive explanation of the proposed program and timing is included in Section 8.2 of ACAPS4001
S5.2.5 para 178	*The average age and the age of assets above the standard life reported in ACAPS2009 do not support the rapidly increasing expenditure. As discussed, there is inadequate condition based justification.*	Ausgrid has acknowledged that it has limited data in this area but has made significant improvements over the last few years. However it would not be prudent to forecast no requirement for expenditure in the absence of good quality data. We have observed recent failures of particular asset models as described in ACAPS2009. The emergence of these failures and the presence of dominant failure modes has led to a targeted replacement of distance and voltage regulation schemes. 3 years of data has allowed Ausgrid to capture these failures. EMCa acknowledge the importance of these schemes in protecting the network and the associated consequences. Recognising that the lack of data does imply a higher level of uncertainty, we have reviewed the based on a more granular view at equipment level and a better informed view of consequences (informed by our revised risk-cost assessments). As a result the revised forecast for expenditure on this program has been reduced by 50%, reflecting a continuation of a mainly reactive program while failure data is acquired.

6.2.3 *… replacement targets are seemingly based subjectively to coincide with regulatory end points;*

This is not explicitly referred to or argued as an issue anywhere in the body of the section. However, the discussion about strategic cable and switchgear programs does contain mentions of strategic time frames for retirement of various technologies in 2019, 2024 or 2029. These dates do indeed coincide with regulatory end points. However, Ausgrid would suggest that using five-year windows is an appropriate approach to portfolio planning and since funding capacity is determined through the regulatory process, it would be inappropriate to choose a different five-year cycle. No argument is offered in the body of the document to support a contention that this is in any way inappropriate or why it should undermine prudency. The argument about subjectivity is also not supportable. EMCa, in describing the process recognises that the decisions about strategic replacement of both subtransmission cable strategy and switchgear arose from a considered process that assessed a range of risks and equipment issues; involved comparison with other utilities worldwide and review of process and outcomes by external parties; and has been regularly reviewed and revised by senior management as new information or analysis has come to light. Ausgrid suggests that this is not a simple and subjective target setting exercise.

6.2.4 *"A lack of reliable asset condition and failure data"*

This statement appears to be subjective and not supported with specific examples. The only example where condition data is presented is where EMCa have supported the transformer proposal. Ausgrid does consider that data quality will continue to improve which will lead to greater asset certainty and more accurate forecasting.

With the exception of some smaller asset groupings which Ausgrid had noted as lacking extensive failure data it is incorrect to imply that there is a general lack of reliable asset condition and failure data.

As an example, in paragraph 123 there is the acknowledgment by EMCa that 'Ausgrid have used SCFF and gas leakage rates' which is a representation of reliable asset condition data. Another example are numerous references to pole failure data, pole reinforcement rates noted throughout 5.2.3 Poles.

However, Ausgrid only undertakes condition monitoring on assets where it is prudent and efficient to do so. The RCM approach ensures this is efficient and prudent. Ausgrid would require a significant increase in opex to undertake a greater amount of condition monitoring but does not see this to be for the long term benefit of customers.

Reference	Quote	Ausgrid's Response
S5.2.1 para 118, 135	*Ausgrid is undertaking more detailed analysis of cable failures in order to better predict specific failure types.* *… the reasonableness of forecast expenditure is dependent on the accuracy and reliability of cable failure data. Ausgrid acknowledges the need to improve its analysis of cable failure risks.*	These comments appear to be based on statements made in the one review meeting and were intended to convey that Ausgrid adopts an approach of continuous improvement to cable failure data collection and analysis rather than that there was a lack of reliable cable condition and failure data.

Reference	Quote	Ausgrid's Response
S5.2.5 paras 171, 172, 175, 176	*In ACAPS2009 Secondary Protection & Control Systems, Ausgrid considers two options: do nothing and planned replacement. It has implemented a planned replacement regime, the justification for which is limited by poor historical failure data. Failure predictions have been extrapolated from only three years' worth of failure data, leading to a slower start to the replacement program to allow further assessment of the condition of the protection relay fleet.* *In ACAPS2003 Protection and Control Systems (Reactive), Ausgrid acknowledges the paucity of asset failure history and costs. Its strategy is to make provision for asset replacement based on failure projections derived from ad hoc failure records and to improve its asset data progressively.* *ACAPS2003 states that, "the asset base for this ACAPS has not been historically recorded in any corporate database and as a result it is not possible to present detailed failure history and financial costs for these assets. Secondary protection relay devices have recently been added (2012) to Ausgrid's corporate database (SAP). The historical expenditure shows the need for better asset recording for these assets. With the recent creation (2012) of these assets in SAP, the historical data required to provide clarity for replacement program will be available.* *ACAPS2003 also informs us that the projected expenditure for the 2015−19 regulatory period has taken into account "anecdotal evidence and the limited failure data that has been captured in SAP".*	Ausgrid has acknowledged that it has limited data in this area but has made significant improvements over the last few years. However it would not be prudent to forecast no requirement for expenditure in the absence of good quality data. We have observed recent failures of particular asset models as described in ACAPS2009. The emergence of these failures and the presence of dominant failure modes has led to a targeted replacement of distance and voltage regulation schemes. 3 years of data has allowed Ausgrid to capture these failures. EMCa acknowledge the importance of these schemes in protecting the network and the associated consequences. Recognising that the lack of data does imply a higher level of uncertainty, we have reviewed the based on a more granular view at equipment level and a better informed view of consequences (informed by our revised risk-cost assessments). As a result the revised forecast for expenditure on this program has been reduced by 50%, reflecting a continuation of a mainly reactive program while failure data is acquired.

6.2.5 "A variety of risk assessment approaches, with a bias towards conservatism based on either managerial experience or (when used) an operational risk framework that is biased to give high and extreme results;"

Reference	Quote	Ausgrid's Response
S5.2.1 para 123	*We could not observe the application by Ausgrid of a formal risk framework.*	Strategic subtransmission cable risk assessment is inherently more challenging and was not undertaken in the document reviewed by EMCa (which was the program prioritisation document). The full suite of documentation and considerations relating to the strategic decision were reviewed by JacobsSKM who stated "*It is clear that the combination of risk issues, long-term asset management capability, and practical issues (such as restricted access to aged underground cable assets) have been duly considered in both framing the strategic objective as well as setting priorities for individual asset replacements*"[22] and that it "*appears to be based on a sound appraisal of the risk issues*". The absence of a risk table in the program prioritisation documentation that follows does not signify that the risk assessments were in any way inappropriate. This information was identified among the documents reviewed by EMCa. Risk assessment for programs at the strategy level have been arrived at with direct involvement in judgements by the executive and board, rather than by the application of a derived framework.
S5.2.1 para 124	*We noted that the replacement date of many of the 132kV oil filled cables was presented by Ausgrid as being beyond the standard design life of 45 years. However, we found evidence that the life expectancy of oil-filled cables may be understated and, more significantly, may differ from Ausgrid's own planning documents. Ausgrid's 2013 Sydney Inner Metropolitan Area Plan makes the following comment in relation to TransGrid's treatment of its 330kV oil filled cable (Cable 41) : "It has been assumed that this cable will have a usable life of approximately 50-55 years, which is consistent with Ausgrid's planned approach to cable replacements on the 132kV network."*	This is a case of EMCa either misunderstanding the information they were presented with, or quoting selectively to make a point that is not supported in the documentation. Ausgrid did not base the replacement dates of its cables on the cables age against its standard life. The prioritisation of cables was based on cable unavailability and oil leakage rates. The condition of these assets and the emerging reliability and environmental exposure risk has led to the replacement timeframes established. The ongoing condition issues increase the risk of cable failure, while the lack of decreasing supportability and pressures from environmental bodies has led to increased consequence exposure. The comparison to Transgrid's Cable 41 is not reasonable, mainly because it is of a different (newer) vintage than the cables Ausgrid is dealing with, and has no history of deterioration. However, the statement is that many cables will be aged above 45 years. Figures 26 and 27 in our Strategic Asset Prioritisation document from which EMCa drew this statement shows that the average age at replacement for fluid filled cables would be over 47 years, with some at 60 years. For gas cables, the average age at retirement is 51 years, with some lasting until 69 years.

[22] JacobsSKM, Subtransmission Cable Replacement Strategy, Peer Review, 30 April 2014.

Reference	Quote	Ausgrid's Response
S5.2.2 para 146, 147	*Extreme risks and consequences are unlikely to be caused by the types of faults identified by Ausgrid and can generally be addressed through corrective maintenance. ACAPS012 provides the following statement: "The failure of an 11kV circuit breaker will result in either the loss of the associated 11kV distribution feeder or will result in the inability of that particular circuit breaker to operate and provide protection against short circuit or overload."* *Ausgrid's risk assessment is based on application of the operational risk matrix and leads to identification of three extreme risk ratings … the indicated 2% (one in 50 year) likelihood of loss of load following a breakdown failure suggests that the risk rating of 'extreme' is excessive.*	EMCa has made this statement in reviewing ACAPS2012. Ausgrid in its ACAPS document has stated: *"The consequences of a catastrophic failure of an 11kV bulk oil circuit breaker can include:* • *Potential reduction in network security and reliability.* • *Personnel safety.* • *Failure and subsequent damage to the circuit breaker itself, the 11kV switchboard or electrical equipment which is protected by the circuit breaker.*" Ausgrid does not see these risks as insignificant. EMCa appears to not have understood that the 'extreme' impact failure assessments are related to the chain of consequence following the circuit breaker failure that involves propagation to a fire, failure of the entire switchboard (and loss of load from the entire substation) or explosive failure and injury to nearby personnel. It is these consequences that drive the risk rating, not the loss of load from a single failure. Note that such consequences have occurred due to circuit breaker failures. The 2% likelihood relates to this complete failure scenario, not the single breaker failure. The risk of loss of load as a result of an 11kV circuit breaker failure is classed as 'high', not 'extreme'. This is an error in the EMCa report. The risk assessment only included the worst case risks. It did not include the probability of a lesser consequence. For example, in 60% of cases the load loss could be in the order of 4MVA. By not assessing the cumulative risk factors under both worst case and lesser consequence events, Ausgrid has been less conservative.

Reference	Quote	Ausgrid's Response
S5.2.5 para 179	*The risk assessment reported in ACAPS2009 is based on Ausgrid's operational risk matrix and identifies two extreme risks from the relay failing to operate. If the NNSW matrix was used, these would be rated as high risks. The application of the risk criteria to the loss of supply probability and consequence is conservative. However, Ausgrid is right to identify malfunctioning distance and (to a lesser extent) VR relays as important components of network safety and reliability. There is no structured risk assessment in ACAPS2003.*	We have acknowledged that making program judgments solely on subjective terms like 'extreme' or 'high' does not form an adequate basis for establishing the need for expenditure. However, our risk assessment was accompanied by a risk cost quantification that further informed the decision. Ausgrid accepts that its processes could always be improved, and has been working on broadening the use of cost-benefit and risk cost assessment techniques in the period since the substantive proposal was prepared. This was foreshadowed in discussions with EMCa and in our substantive proposal. EMCa acknowledged this as a developing area that "*shows promise"* in their report. In our revised proposal we have expanded our application of risk cost quantification to replacement and duty of care programs. ACAPS2003 is reactive replacement program and we did not undertake a risk assessment for it. Reactive programs are seen as unavoidable costs to be forecast. Ausgrid only considered failures that would lead to the full replacement of the asset, that is, they could not be repaired or would not be efficient to repair. On the basis of this approach, all asset failures which result in replacement will have costs realised within the regulatory period. A risk assessment was therefore not considered to provide any value.

6.2.6 A lack of consideration of delivery management, noting that delivery constraint was one of three main reasons nominated by Ausgrid in its self-analysis of the 2009-14 RCP underspend;

This statement demonstrates that the AER has not undertaken a comprehensive analysis of the ACAPS documents provided which show that the majority of Repex (including Duty of Care programs) is a continuation of programs which commenced prior to or during the previous RCP and have instead relied on RIN information. 'Green field' sites are only likely to occur for major substation work where a complete new substation is built and commissioned, not when modification of existing major substations is carried out. All overhead and underground mains related work or distribution substations work for the previous RCP and this RCP is carried out in public areas and therefore is considered 'brownfield' work.

Examples of the existing programs which continue in this RCP and which involve high volumes of smaller brownfield projects using existing skill sets include pole replacement (already using a mix of internal and external resources), LV CONSAC and HDPE cable programs (already using contract cable laying resources), distribution substation replacement, service wire replacement, various Duty of Care programs (already using a mix of internal and external resources), steel tower refurbishment (using external resources) and air break switch planned and reactive programs.

In addition to this, due to the changes in licence requirements, internal and external resources that carried out work due to the licence requirements in the previous RCP are now available to carry out this high volume smaller projects work and have the required skill sets.

In order to clarify and respond to the general concern regarding delivery, we have prepared a Delivery and Workforce Strategy that will accompany our revised proposal.

Reference	Quote	Ausgrid's Response
S5.2.2 para 143	*The shift in strategy from high voltage to lower voltage circuit breaker replacement is confirmed in Figure 8. The step change towards replacement of lower voltage units implies a large increase in the volume of work and is not adequately explained by Ausgrid. As this is labour intensive brownfields work, this will increase the volume and complexity of network and site access issues and related logistical tasks.*	Ausgrid acknowledges that a shift from greenfield to brownfield can increase complexity in construction and therefore can place delivery at risk. However, the shift from higher voltages to lower voltages will have the opposite effect. A number of outage constraints arose throughout the last period that led to delays in replacement of higher voltage assets. The shift to lower voltage assets will allow for reduced switching constraints and a more "like for like" type replacement approach.
S5.2.5 para 182	*Neither ACAPS2009 nor 2003 contain sufficient information to instil confidence that Ausgrid can deliver a rapid escalation in the forecast volume of secondary equipment work at an efficient cost.*	This is not a relevant consideration in what is, in reality a minor program of work. Ausgrid manages delivery strategy at the overall portfolio level, including both capex and opex activities, not at the individual program level. Delivery groups are involved in framing programs to provide feedback on delivery issues if there are peculiarities. However, it is not relevant to attribute delivery concerns to an increase (in the case of ACAPS 2003& 2009) of $40m over 5 years in the context of Ausgrid's program.

6.2.7 "Inadequate justification of the step change evident in expenditure from the last two years of the 2009-14 RCP to the 2015-19 RCP and in total repex excluding cable replacements."

Ausgrid did spend considerably less than that proposed to the AER last regulatory period. However, Ausgrid's planning processes have evolved since last period. The introduction of an Integrated Asset Management System in combination with a FMECA/RCM Approach on its assets has provided Ausgrid with a greater level of information in which to assess asset condition and performance.

Constraints required Ausgrid to defer a large amount of replacement and duty of care from last period. The constraints as described in Ausgrid's substantive proposal included a significant challenge in delivering a large step change in replacement and capacity expenditure. While Ausgrid managed its network well through strong maintenance performance, the capex criteria require the network to be managed for the long term benefit to customers.

Reference	Quote	Ausgrid's Response
S5.2.3 para 158	*It is not clear, from the information provided, why Ausgrid's expenditure was forecast to be almost 50% higher in 13/14 than 12/13. More importantly, there is insufficient justification for the forecast 26% increase in expenditure in 2018/19 from 2017/18.*	Ausgrid has a strategy to inspect, test, condemn and replacement poles based on a 5 yearly inspection cycle. Ausgrid's predicted increase in 13/14 from 12/13 was to address a backlog of condemned pole replacements. Section 8.2 of ACAPS4001 comprehensively explains the statistical analysis that was undertaken to demonstrate the forecast 'need' for pole replacement and pole reinforcement quantities, including the increases required in the final year of the RCP. Importantly, the expiry of the life extension afforded by nailing was forecast to become significant at about that time. This means a higher proportion of poles must be replaced, as a previously nailed pole cannot be nailed again. In reviewing our planning for the revised proposal, we have re-assessed the expected life extension from nailing and extended the date when this upturn is expected, so this step change is not a feature of our revised proposal.
S5.2.5 para 174	*The step change in expenditure in this category can be seen as being attributable to Field Devices.*	EMCa (and the AER) have relied primarily on RIN data that allocated expenditure on secondary systems from major equipment replacement projects in addition to category specific projects. In this case, the allocation is the major part of the expenditure in the category. Typically, this is because the replacement of major items such as whole zone substation switchboards necessarily means protection relays and related systems are replaced regardless of the condition or performance of the items themselves. While some elements of the change in expenditure are related to the devices themselves, the majority is a consequence of major replacement projects that are planned in the Area Plans. It appears that EMCa have not understood that this is the case, and assumed all expenditure was related to the condition of the "field devices" themselves.

6.3 Cost efficiency undermined by:

6.3.1 "inadequate evidence to show that estimation errors from the previous RCP had been addressed;"

Reference	Quote	Ausgrid's Response
S5.23 para 156	*We concur with Ausgrids strategy of reinforcing poles that are assessed as requiring treatment and have sufficient above-ground strength. However, in Figure 9, the proportion of expenditure on reinforcement does not appear to be in the range indicated by Ausgrid (i.e., 40-50% of poles requiring treatment).*	This seems to be a simple misunderstanding of the arithmetic. It is the ratio of replacement treatments (ie units) that is 40-50%, not expenditure. Replacing a pole costs, on average about 13 times the cost of nailing. Figure 9 shows expenditure, so the ratios are obviously heavily skewed towards replacement costs. In units replaced, nailing represents between 46% and 48% of LV poles until the last year of the period, when failures of previously nailed poles become a feature in the forecast.
S5.2.5 para 181	*Neither ACAPS2003 nor 2009 provide sufficient evidence that the costs incurred, or forecast to be incurred, in undertaking the proposed volumes of secondary equipment replacement are efficient.*	The derivation of unit costs is not contained in the individual ACAPS documents. Unit costs are derived in accordance with a standardised methodology described in the methodology attachment to our initial proposal. The unit costs derived are listed in a confidential attachment "ID33420_Replacement and DOC plans Unit Rates". This latter document was not reviewed by EMCa.

6.3.2 "the lack of business cases for the proposed work - which, if available, would explain the source and assumptions underpinning estimates such as the contingency margin allowed, lessons learned from previous work (where applicable), the sourcing strategy for material and labour (including the rationale for using internal labour vs external service providers) and how Ausgrid's 'share' of the NNSW materials procurement JV had been taken into account;"

Reference	Quote	Ausgrid's Response
S5.2.2 para 145	*Ausgrid has an established program for switchgear replacement. … We note that there is no direct expenditure provision for replacement on failure because Ausgrid intends to manage such failures within its total repex budget.*	The addendum to ACAPS2012 that EMCa draws this statement from is specific to a single site (City East Zone) and does not suggest the configuration, risks and solutions for this site are generally applicable for Ausgrid. For EMCa to infer that this is therefore the approach for all of the "established program for switchgear replacement" is incorrect and suggests they have misunderstood the document.

Reference	Quote	Ausgrid's Response
S5.2.2 para 149	*Limited information is provided to demonstrate that the cost estimate for the work is efficient.*	This is in relation to the switchgear replacement strategy. The analysis of costs and alternatives for these projects is undertaken in the relevant Area Plans, where all manner of drivers for major investment in an area are considered together to provide the least cost outcome. This is also where the range of alternatives to achieve retirement of the poor condition switchboards is undertaken. EMCa only reviewed one Area Plan and chose one that had no relevance to the switchgear program. In addition, all major projects are subjected to multiple levels of review and challenge via the investment governance process to ensure they are necessary and as cost effective as possible. The Area Plans and the costing information that supports them, which was provided as part of the initial proposal has ample descriptions of the cost and benefits of the switchgear program elements.
S5.2.5 para 181	*Neither ACAPS2003 nor 2009 provide sufficient evidence that the costs incurred, or forecast to be incurred, in undertaking the proposed volumes of secondary equipment replacement are efficient.*	The derivation of unit costs is not contained in the individual ACAPS documents. Unit costs are derived in accordance with a standardised methodology described in the methodology attachment to our initial proposal. The unit costs derived are listed in a confidential attachment "ID33420_Replacement and DOC plans Unit Rates". This latter document was not reviewed by EMCa.

6.3.3 "the lack of a delivery strategy – which we would expect to provide compelling evidence that Ausgrid had adequate risk management strategies to ensure, among other things, that it would not be exposed to undue cost increases in the context of a predominately brownfields (and therefore complex) $3b repex program."

Reference	Quote	Ausgrid's Response
S5.2.2 para 143	*The shift in strategy from high voltage to lower voltage circuit breaker replacement is confirmed in Figure 8. The step change towards replacement of lower voltage units implies a large increase in the volume of work and is not adequately explained by Ausgrid. As this is labour intensive brownfields work, this will increase the volume and complexity of network and site access issues and related logistical tasks.*	Ausgrid acknowledges that a shift from greenfield to brownfield can increase complexity in construction and therefore can place delivery at risk. However, the shift from higher voltages to lower voltages will have the opposite effect. A number of outage constraints arose throughout the last period that led to delays in replacement of higher voltage assets. The shift to lower voltage assets will allow for reduced switching constraints and a more "like for like" type replacement approach.

Reference	Quote	Ausgrid's Response
S5.2.5 para 182	*Neither ACAPS2009 nor 2003 contain sufficient information to instil confidence that Ausgrid can deliver a rapid escalation in the forecast volume of secondary equipment work at an efficient cost.*	This is not a relevant consideration in what is, in reality a minor program of work. Ausgrid manages delivery strategy at the overall portfolio level, including both capex and opex activities, not at the individual program level. Delivery groups are involved in framing programs to provide feedback on delivery issues if there are peculiarities. However, it is not relevant to attribute delivery concerns to an increase (in the case of ACAPS 2003& 2009) of $40m over 5 years in the context of Ausgrid's program.

7 SUMMARY

The summary findings are (largely) sourced from the findings in the individual sections. These have been addressed by the preceding commentary. In this table, for each of the findings of the EMCa report, we identify how they have been addressed either in this review, or in our revised proposal.

Reference	Finding	Resolution
	Repex prudency undermined by systemic failings	
EMCa report p. i para 1	*We have identified systemic issues in Ausgrid's activity forecasts that, in our view, have led to its repex need being overstated. Its repex forecast is likely to have overestimation bias due to:*	We reject this finding based on: refuting the evidence base for some elements; clarifying misunderstandings or lack of awareness of elements of our initial proposal; and accepting and addressing some elements in our revised proposal, which are therefore no longer relevant or not material.
EMCa report p. i para 1	*a lack of robust options, risk and cost-benefit analysis supporting the timing/volume of activity at both a project and portfolio level, with replacement targets seemingly based subjectively around regulatory period end points;*	We refute the claim of lack of options, and have responded to some of the concerns about cost-benefit with clarifications based on the initial proposal. We accept some legitimate criticisms of the documentation of our risk and cost-benefit processes and have improved this in our revised proposal
EMCa report p. i para 1	*a lack of reliable asset condition and failure data for some asset classes; and*	This not a material issue affecting the reasonableness of the forecast.
EMCa report p. i para 1	*the apparent use of multiple risk assessment approaches and tools, the relative coarseness of the risk rating assessments and the subjectivity of the rating assessments, with in-built conservatism evident in key elements of this process.*	We have clarified the risk assessment tools used for our initial proposal. We have expanded and documented our use of risk quantification on material components of the forecast in our revised proposal.
EMCa report p. i para 2	*This view is supported by the need perceived by the Networks NSW (NNSW) Board for the large downward adjustment that it applied to the projected expenditure allowances originally prepared by Ausgrid using its repex planning and budgeting approach.*	This assertion is based on a misunderstanding. We have corrected this misunderstanding in our revised proposal.

Reference	Finding	Resolution
	'Top-down' adjustments likely to be insufficient	
EMCa report p. i para 3	*We understand that the NNSW Board decided to reduce Ausgrid's original capital expenditure allowance by 24%. Normally, we would have increased confidence in a capex program that has had a meaningful 'top-down' challenge. However, such adjustments need to be adequately informed if they are to ensure that the resulting work program is prudent. Moreover, it is not clear by what proportion (if any) the repex component of total capex was reduced.*	This assertion is based on a misunderstanding. We have corrected this misunderstanding in our revised proposal.
EMCa report p. i-ii para 4	*Ausgrid believes that the remaining 76% capex allowance is sufficient to meet its objectives and to maintain risk at current levels. This position appears to be primarily based on a high level assessment of the average age of asset classes. However, the fact that a 24% capex reduction could be made without a material impact on network risk, and without an apparent asset management-based justification for the reduction, is a strong indicator that Ausgrid's forecasting processes have overestimated required repex. In the prior RCP, Ausgrid similarly over-estimated its requirement and spent 44% less on its Replacement and Duty of Care plan than it proposed to the AER. Despite the lower expenditure, Ausgrid's assets continued to perform well.*	This assertion is based on a series of misunderstandings and incorrect assumptions. We have corrected the misunderstanding and provided additional supporting information in our revised proposal.
EMCa report p. ii para 5	*Setting aside the cost estimation biases we have identified (see below), the absence of a risk projection for the new repex profile makes it impossible to conclude whether the reduction was sufficient to render the resultant program prudent and efficient. It would appear that the systemic over-estimation biases in the bottom-up forecast that were built into Ausgrid's prior period Regulatory Proposal have not been addressed.*	This is based on a series of misunderstandings and incorrect assumptions. We have corrected the misunderstanding and provided additional supporting information in our revised proposal.

Reference	Finding	Resolution
	Approach to risk is overly conservative	
EMCa report p. ii para 6	*Ausgrid's investment decision-making relies heavily on risk-based justification. This is a cause for concern as the portfolio level risk assessment tool employed by Ausgrid is high level and Ausgrid uses a variety of project level approaches. In some asset classes, it appears that a subjective approach is used to determine 'unacceptable risks'; in others, a more formal objective approach is used. In addition to this variability, the approaches used indicate a tendency to apply overly conservative risk ratings. This leads to excessive volumes of forecast asset interventions.*	This is based on a limited understanding of the processes employed. We have pointed to supporting information in our initial proposal. We have improved our use of risk quantification on material components of the forecast in our revised proposal.
EMCa report p. ii para 7	*Ausgrid's conservatism is evidenced by its Operational Risk Matrix. Our view is that this is biased towards overly conservative and risk averse outcomes. Most of the available risk ratings are either "extreme" or "high", providing less meaningful prioritisation between projects and programs.*	We accept there is room for improvement, but find the significance less material than claimed. We have undertaken comparative analysis and improved our use of risk quantification on material components of the forecast in our revised proposal.

Reference	Finding	Resolution
	Questionable basis for activity forecasts	
EMCa report p. ii para 8	*Ausgrid's activity forecasts are formed on a bottom-up basis to reflect:* *quantitative asset data: including age, condition, and failure rates;* *qualitative engineering knowledge, experience and judgment; and* *risk assessments.*	We agree with this basic statement of process
EMCa report p. ii para 9	*These are typical elements seen in asset management frameworks. However, a lack of robust options, risk and cost-benefit analysis supporting the timing/volume of activity (at both a project and portfolio level) is evident. Replacement targets are often seemingly based subjectively around regulatory period end points.*	This is a repetition of a finding in the *EMCa report* p. i para 1. We refute the claim of lack of options, and have responded to some of the concerns about cost-benefit with clarifications based on the initial proposal. We accept some criticisms of our risk and cost-benefit were legitimate and have improved this in our revised proposal
EMCa report p. ii para 10	*Aspects of Ausgrid's implementation are susceptible to overestimation bias due to issues relating to the maturity, accuracy and reliability of asset condition data. The conservative and seemingly subjective risk analysis used by Ausgrid will tend to bring forward the timing of interventions, increasing activity volumes in the short-term (and potentially also over the long term if the bias is not corrected).*	This is a repetition of a finding in the *EMCa report* p. i para 1. Some elements in this finding are relevant, and we have improved our use of risk quantification on material components of the forecast in our revised proposal. Other elements are not material or based on misunderstanding of our initial proposal and underlying processes
EMCa report p. iii para 11	*Our conclusion is that Ausgrid is following an asset management approach that is inclined towards good industry practice, but that its application of the approach to the current Regulatory Proposal is biased towards overstating network risk. The effect of this bias is to overestimate the extent of remedial work required and the associated cost. This casts doubt on the prudency of Ausgrid's repex forecast, even after the NNSW Board-enforced reduction.*	We reject this finding in general, because it is based on a series of mistaken assumptions and misunderstandings of our initial proposal. We accept that there are some legitimate areas of concern and have moved to address these in our revised proposal. In summary, this is no longer a valid finding.

Reference	Finding	Resolution
	Cost estimation is biased towards overestimation	
EMCa report p. iii para 12	*In addition to the need for a 'top-down' adjustment, we found further evidence that Ausgrid's cost estimates are likely to be biased towards overestimation, leading to unjustified costs to customers:*	Finding rejected on the basis of lack of factual accuracy and misinterpretation of information.
EMCa report p. iii para 12	*Our review of outturns indicates a systemic bias of actual repex being considerably less than forecast. We have not seen evidence that this bias has been resolved. This indicates inadequate governance over the cost estimation methodology and its application.*	We reject the basis of this finding. The interpretation of the information is incorrect.
EMCa report p. iii para 12	*Its project estimates contain two layers of risk allowance, which appears to be overly conservative. Corporate contingency is applied across portfolios in addition to specific project allowances. If correctly estimated, a base risk allocation alone should provide adequate budgetary envelope*	We reject this finding. It is factually incorrect. This is a misreading of the information in our initial proposal.
EMCa report p. iii para 13	*Ausgrids estimating process allows a contingency for risk to be applied at the final (Gate 3) approval stage to individual projects. We believe this is unnecessarily conservative in a portfolio forecast and recommend that the aggregate contingency amount in Ausgrid's repex portfolio forecast should not be allowed. Whilst Ausgrid claims that it has recognised these shortcomings, we remain unconvinced that the cost estimation approach applied in developing its expenditure forecasts is sufficiently robust. As such, there is an increased likelihood that Ausgrid will prudently incur lower expenditure during the period than it has proposed.*	We reject this finding. It is factually incorrect. This is a misreading of the information in our initial proposal.

Reference	Finding	Resolution
	Repex program has material deliverability risk	
EMCa report p. iii para 14	*Ausgrids proposed expenditure allowance is based on future repex programs that differ significantly from historical work, with higher volumes of smaller projects meaning increased brownfields work. The resulting need for differing skill-sets will create deliverability challenges and may lead to inefficiencies. This will compound delivery issues seen in the previous period.*	We reject the materiality of this issue and the claim that there was no consideration of delivery capability. We have formalised this consideration in our revised proposal and confirmed our view.
EMCa report p. iii para 15	*We found no evidence that Ausgrid considered these issues adequately. In particular, we would have expected to see a resourcing and delivery strategy that identified the challenges, mitigation strategies and a detailed implementation plan already in place to support the forecast uplift in brownfields activity in 2014/15. Further, we would have expected forecasts to be scoped in line with such a strategy. The lack of a delivery strategy leads to schedule and cost risk, particularly early in the period.*	We reject the materiality of this issue and the claim that there was no consideration of delivery capability. We have formalised this consideration in our revised proposal and confirmed our view.
EMCa report p. iii para 16	*We believe the proposed repex programs carry material deliverability risk and that the AER should seek assurances from Ausgrid that the work programs can be achieved.*	We have provided assurance in our revised proposal and confirmed that this is not a material issue.

Reference	Finding	Resolution
	Conclusions	
EMCa report p. iv para 17	*Ausgrid significantly over-estimated its replacement expenditure requirements in the prior RCP. It claims to have achieved significant efficiencies and to now have materially improved its asset management methods. It contends that this is evident in the significant decline in repex over the final two years of the prior RCP. Despite these claimed improvements in operational asset management, Ausgrid has nevertheless forecast increasing repex from recent levels. We have not seen sufficient evidence to clearly show how these claimed efficiencies and improvements were incorporated into its forecasts. We are not convinced that Ausgrid has provided sufficient justification for the extent of repex work proposed.*	We reject this finding mainly on the basis that many of the arguments are founded on misunderstandings, incorrect assumptions and errors of fact. Where there are elements of valid concern, we have addressed them in our revised proposal.
EMCa report p. iv para 18	*In summary, there are significant flaws in Ausgrid's repex proposal. We consider that its proposed repex allowance overstates the prudent and efficient amount that it will reasonably require*	*We reject this finding mainly on the basis that many of the arguments are founded on misunderstandings, incorrect assumptions and errors of fact.* *Where there are elements of valid concern, we have addressed them in our revised proposal.*