



Revenue Proposal to AER 2015 - 2018

**Review of Proposed Replacement
Capital Expenditure in TransGrid's
Revised Regulatory Proposal**

**Report to
Australian Energy Regulator
from
Energy Market Consulting associates**

April 2015

This report has been prepared to assist the Australian Energy Regulator (AER) with its determination of the appropriate revenues to be applied to the prescribed transmission services of TransGrid from 1st July 2014 to 30th June 2018. The AER's determination is conducted in accordance with its responsibilities under the National Electricity Rules (NER). This report covers a particular and limited scope as defined by the AER and should not be read as a comprehensive assessment of proposed expenditure that has been conducted making use of all available assessment methods.

This report relies on information provided to EMCa by TransGrid. EMCa disclaims liability for any errors or omissions, for the validity of information provided to EMCa by other parties, for the use of any information in this report by any party other than the AER and for the use of this report for any purpose other than the intended purpose.

In particular, this report is not intended to be used to support business cases or business investment decisions nor is this report intended to be read as an interpretation of the application of the NER or other legal instruments. EMCa's opinions in this report include considerations of materiality to the requirements of the AER and opinions stated or inferred in this report should be read in relation to this over-arching purpose.

Except where specifically noted, this report was prepared based on information provided by TransGrid to the AER as part of its RRP and prior to 27th February 2015 and any information provided subsequent to this time may not have been taken into account.

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About EMCa

Energy Market Consulting associates (EMCa) is a niche firm, established in 2002 and specialising in the policy, strategy, implementation and operation of energy markets and related network management, access and regulatory arrangements. EMCa combines senior energy economic and regulatory management consulting experience with the experience of senior managers with engineering/technical backgrounds in the electricity and gas sectors.

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Findings

Background

1. TransGrid submitted its Revised Revenue Proposal (RRP) to the AER on 13th January 2015 for a four year regulatory control period 2014/15 to 2017/18, as accepted by the AER in its Draft Decision.
2. TransGrid proposed a capital expenditure forecast in its RRP that is 3% lower than its initial Revenue Proposal (RP), including a \$32.1m¹ reduction in the forecast replacement expenditure ("repex") that is within the scope of our review. This reduction is primarily due to changes to its proposed transmission lines projects expenditure. TransGrid has not materially altered its proposed substation renewal, secondary systems renewal and communications upgrades category expenditure.
3. The AER requested that we review the claims and new information provided by TransGrid in its RRP in relation to our October 2014 report (our "initial review") to consider whether its revised replacement capital expenditure proposal now reflects an efficient and prudent expenditure forecast.
4. The purpose of this review is to consider whether any of the new information provided by TransGrid would cause us to amend our initial findings, in whole or in part, regarding the systemic issues identified in our October 2014 report and our associated assessment of their impact.

Assessment

5. We have applied a governance and management level review that consists of a top-down and bottom-up assessment and which reflects the type of review that we would reasonably expect an Executive and/or Board of a network

¹ The total reduction to the replacement capital expenditure forecast, including other repex, is \$26.6m

service provider (NSP) to undertake in preparing its forecast of replacement capital expenditure.

6. Our methodology, consistent with the requirements of the NER and Better Regulation guidelines, is to undertake an assessment of the governance and management processes and expenditure forecasting methodologies applied by TransGrid. The purpose is to identify systemic issues and to further confirm evidence and/or biases for identified issues through a review of a sample of its proposed expenditure justifications.
7. We consider the methodology that we have applied for this assessment to be fit-for-purpose in advising the extent to which we consider that TransGrid's proposal reflects an efficient and prudent expenditure forecast.
8. We have reviewed the claims made by TransGrid and its consultant AMCL regarding the methodology applied in our initial review and the relevant experience and expertise of our team. We refute these claims and provide our rebuttal responses in section 3 and Appendix A of this report.
9. We consider that the systemic issues identified in our October 2014 report are also present in TransGrid's RRP replacement capital expenditure forecast, as described below:
 - In response to the AER's concerns that its bottom up assessments do not account for inter-relationships and synergies that would be addressed by also undertaking a top down assessment, TransGrid stated in its RRP that *"its network investment process does account for these interrelationships and synergies through optimisation at all stages of the process"*.² TransGrid has not claimed to have undertaken a top-down assessment and we therefore must assume that it has not done so. TransGrid has made a more general assertion that *"its practices optimise the portfolio"*.³ However, we do not see evidence of this;
 - We consider that a properly-conducted top-down assessment by a network business of any initial bottom-up expenditure proposal is an essential component of prudent and efficient expenditure budgeting, forecasting and governance. Moreover, we observe that Networks NSW undertook such a process in relation to NSW DNSPs. We consider that the lack of such a process has led TransGrid to over-estimate the replacement capital expenditure that it will actually require;
 - TransGrid provided an alternative risk assessment in its RRP based on a recalculation and comparison of the risks proposed to be addressed in the current RCP. We have reviewed this additional information and consider that the evidence presented by TransGrid does not support its claims regarding the risk implications of alternative future replacement capital expenditure scenarios. We consider that a bias for over-estimation of the expenditure forecast is still present, due primarily to TransGrid's

² TransGrid RRP, pages 4-5

³ TransGrid RRP, page 5

conservative approach to risk assessment and weaknesses in the application of its risk assessment methodology; and

- In its RPP, TransGrid explained that it applied its risk assessment for project prioritisation within the RCP. However, TransGrid has not presented us with any evidence that its risk assessment was used to optimise its portfolio expenditure forecast. It is our view that TransGrid's risk assessment does not justify which specific projects are required within the RCP and which might be prudently deferred beyond the RCP. For comparative purposes, we observe that Networks NSW undertook a risk-based portfolio optimisation approach for Ausgrid and which led it to propose the deferral of a significant amount of its initially-proposed expenditure.
10. We have reviewed the new information provided by TransGrid in relation to its revised proposed expenditure forecast. We consider that, with the exception of transmission wood pole replacement, the new information does not support any material amendment to the findings in our October 2014 report.
11. We find that TransGrid's revised repex forecast in its RRP does not meet the NER expenditure criteria because it cannot be viewed as being efficient, prudent and reasonable.

Implications of our assessment

12. We consider that the systemic issues identified in our assessment are reflected in a number of biases that have led to an over-estimation of forecast replacement capital expenditure.
13. We consider that TransGrid has not provided sufficient information to support the proposed replacement capital expenditure included in its RRP. We note that the regulatory Guidelines state that:⁴

"The AER intends to assess forecast capital expenditure (capex) proposals through a combination of top down and bottom up modelling of efficient expenditure. Our focus will be on determining the prudent and efficient level of forecast capex. We will generally assess forecast capex through assessing: the need for the expenditure; and the efficiency of the proposed projects and related expenditure to meet any justified expenditure need. This is likely to include consideration of the timing, scope, scale and level of expenditure associated with proposed projects. Where businesses do not provide sufficient economic justification for their proposed expenditure, we will determine what we consider to be the efficient and prudent level of forecast capex. In assessing forecasts and determining what we consider to be efficient and prudent forecasts we may use a variety of analysis techniques to reach our views."

14. We have re-assessed the impact of the systemic issues identified in our initial review to take into account the new information provided by TransGrid regarding category-level replacement expenditures. We consider the

⁴ AER Better Regulation Expenditure Forecast Assessment Guideline for Electricity Transmission, page 17

aggregate impact of these systemic issues on TransGrid's RRP replacement capital expenditure to reflect an over-estimate in the order of 15% to 25%.

15. In our initial review of TransGrid's RP, we assessed the aggregate impact of the systemic issues identified to reflect an over-estimate of between 20% and 30% of the expenditure initially proposed. In its RRP, TransGrid has reduced its forecast by approximately 3%. After making further allowance for TransGrid's reductions to wood pole management, and removing the increases that TransGrid has proposed in its RRP for some categories (and which we consider to be unjustified), our current assessment is consistent with the findings in our October 2014 report.

1 Introduction

1.1 Purpose of this report

16. The purpose of this report is to provide the AER with our response to claims and new information provided by TransGrid in its RRP, specifically:
- Section 5.5.3 of TransGrid's Revised Revenue Proposal 2015-18;⁵
 - Appendix E: AMCL's Review of EMCa report to the Australian Energy Regulator; and
 - Appendix F: Response to EMCa report – 15 January 2015.
17. We have only assessed those aspects of TransGrid's RRP submission that are directly relevant to our October 2014 report to the AER.⁶ Both our current assessment and initial review are based on limited scope reviews consistent with our terms of reference⁷ and which do not take into account all factors, or all reasonable methods, for determining a capital allowance in accordance with the National Electricity Rules (NER). We understand that the AER will establish a capital expenditure allowance for TransGrid based on assessments undertaken by its own staff.

1.2 Scope of requested work

18. The AER issued a Scope of Work to EMCa in February 2015, requesting that we: (i) consider and respond to TransGrid's responses in its RRP; (ii) provide

⁵ The full document title is *TransGrid – Revised Revenue Proposal 2014-19 – 13 January 2015*. The RCP to which the RRP applies is 2014/15-2017/18.

⁶ EMCa, *Review of Proposed Replacement Capex in TransGrid's Regulatory Proposal 2014-2019*, Oct 2014

⁷ The scope of our review considers specific capex projects and programs for replacement works, within the four project groupings identified in the terms of reference from the AER. This expenditure is a subset of the replacement capital expenditure within TransGrid's Revenue Proposal

advice on the issues raised by TransGrid; and (iii) identify whether the results of this assessment have any impact on our original findings.

19. The AER included a specific request for our review to:
 - respond to AMCL's review as part of our assessment of TransGrid's response to our October 2014 report;
 - provide advice to the AER to confirm the range of expenditure reductions, including any supporting information or evidence that explains the basis for why those ranges are reasonably likely to reflect the prudent and efficient costs that a service provider would undertake to meet the capital expenditure objectives; and
 - respond to TransGrid's view that any findings related to the four major replacement programs do not apply to all other categories of replacement expenditure.
20. We proposed a review of the new information provided in which we would:
 - undertake a desktop review of the claims and new information included in TransGrid's RRP;
 - identify any new information or reasoning that might be relevant to our October 2014 findings;
 - expand and/or clarify the reasoning and evidence to support our original findings or, where applicable, amend our original findings; and
 - summarise our findings in relation to any systemic issues identified and the resultant implications of these issues.
21. The assessment in this report is based on the information provided to us through this process.

1.3 Structure of this report

22. Our main findings are summarised at the beginning of this report.
23. In the subsequent four sections, we describe our assessment and conclusions regarding TransGrid's new information in its RRP:
 - In section 2, we provide a summary of TransGrid's revised proposed replacement capital expenditure;
 - In section 3, we consider and respond to the new information provided by TransGrid regarding our assessment methodology;
 - In section 4, we consider and respond to the new information provided by TransGrid regarding its revised replacement expenditure program categories; and
 - In section 5, we provide our concluding remarks.

24. Appendix A responds to the claims made by TransGrid and its consultant AMCL in relation to our original findings and the evidence we relied upon to determine these findings.

2 Expenditure summary of TransGrid's RRP

2.1 TransGrid's revised proposed capex and repex

25. In its RRP, TransGrid has proposed a revised total forecast capital expenditure of \$1,346.9m for the Regulatory Control Period (RCP). This reflects a reduction of 3% from its initial revenue proposal. The changes in total proposed capital expenditure are shown in Table 1 below.

Table 1: Total proposed capital expenditure, 2014/15 to 2017/18 (\$m, 2014)

	Total	Variance to RP
Revenue Proposal	1,387.4	-
Draft Decision	922.3	-34%
Revised Revenue Proposal	1,346.9	-3%

Source: TransGrid RRP

26. TransGrid has not provided a detailed breakdown of its revised proposed capex forecast or of its repex categories in its RRP. We have compared the total proposed capex in TransGrid's RRP with its Capital Accumulation Model supplied with its RRP and find these to be consistent.⁸ We have therefore based our analysis on the Capital Accumulation Model.
27. In its Draft Decision, the AER reduced TransGrid's proposed forecast repex by 30%, including a substitute estimate of \$647.4m.⁹ TransGrid has rejected the

⁸ We were able to reproduce the totals in the CAM with a reasonable level of accuracy, accounting for rounding errors.

⁹ AER Draft Decision, page 46

AER's Draft Decision, stating that it considers that the Draft Decision does not meet the NER capex objectives nor is it in the best long term interest of consumers.

28. In its RRP, TransGrid proposed a revised replacement capex forecast, including an adjustment of \$26.6m, as indicated in Table 2 below.

Table 2: Total proposed replacement capital expenditure, 2014/15 to 2017/18 (\$m, 2014)

	2015	2016	2017	2018	Total	% of Total
Revenue Proposal	229.7	259.1	214.3	222.1	925.2	100%
Draft Decision					647.6	-30%
Revised Revenue Proposal	246.5	255.9	208.9	187.3	898.6	-3%
Difference to RP	16.8	-3.2	-5.5	-34.7	-26.6	

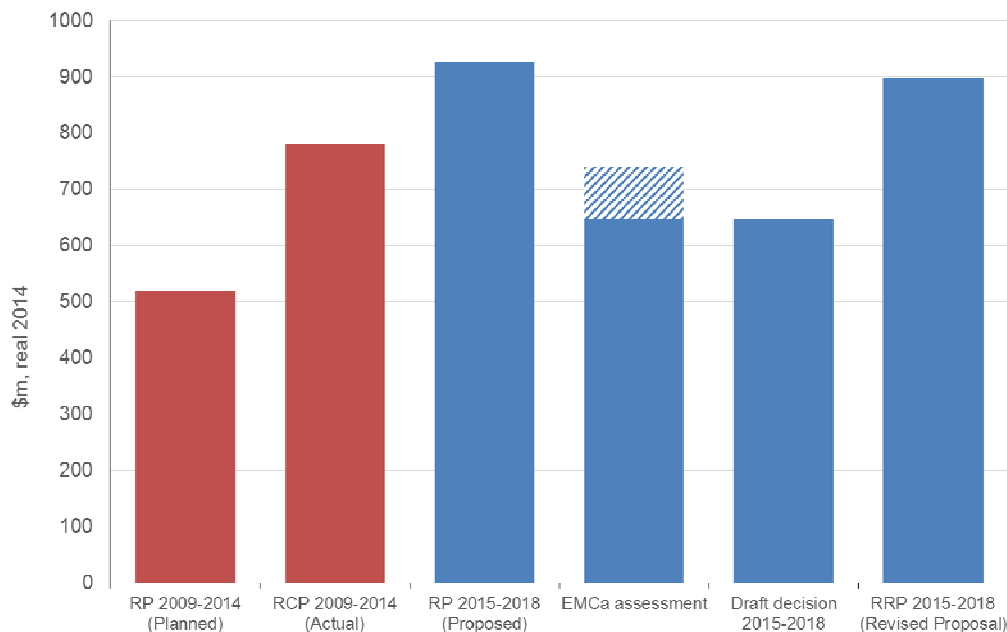
Source: EMCa analysis based upon comparison of TransGrid's Capital Accumulation Model

29. TransGrid has accepted, in part, our findings in relation to transmission wood pole replacement expenditure. However, as discussed in section 4, this adjustment is substantively offset by increases (particularly in 2015) in the other categories of TransGrid's revised forecast expenditure.

2.2 Comparisons of TransGrid's repex proposals

30. Figure 1 below compares TransGrid's proposed and actual replacement expenditure for the previous RCP (2009-2014) with its proposed RP and RRP replacement expenditure for the current RCP (2015-2018). The results of our October 2014 assessment and the AER's Draft Decision are also shown. The hatched area of the initial EMCa assessment bar reflects the 20% to 30% range of probable expenditure over-estimation identified in our October 2014 report (i.e., \$641m - \$734m).

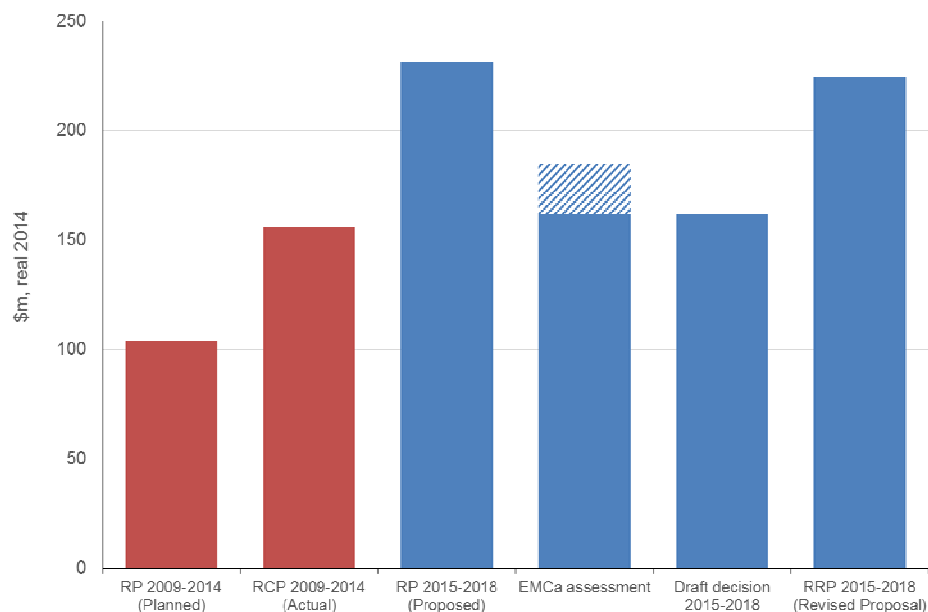
Figure 1: Comparison of proposed replacement capital expenditure, 2014/15 to 2017/18 (\$m, 2014)



Source: EMCa analysis from TransGrid CAM model, TransGrid RP 2009-2014 Figure 7.21 p.73

31. TransGrid has proposed a level of replacement capital expenditure (over a four-year period) in its RRP that significantly exceeds both the proposed and actual replacement capital expenditure in its previous RCP (over a five-year period).
32. Figure 2 below provides an annualised comparison of replacement capital expenditure between the previous and current RCP. We note that TransGrid is proposing a level of annualised replacement expenditure in its RRP that is significantly higher than its planned and actual historical expenditure.

Figure 2: Annualised comparison of historical and proposed replacement capital expenditure (\$m, 2014)



Source: EMCa analysis from TransGrid CAM model, TransGrid RP 2009-2014 Figure 7.21 p.73

3 Assessment of new information on applied methodology

3.1 Introduction

3.1.1 Overview

33. In this section, we consider the new information provided by TransGrid in its RRP, including Appendix E and Appendix F, and whether this leads us to alter the findings set out in our initial review.

AER Issues paper

34. On 8 July 2014, the AER released an Issues Paper on TransGrid, TasNetworks (Transend) and Directlink's revenue proposals. This paper refers to the revised rules and new guidelines developed by the AER that "*set out how we propose to approach important aspects of our review*",¹⁰ including reference to the Better Regulations guidelines. The Expenditure Forecast Assessment Guideline¹¹ describes the AER's position on the capital expenditure approach as follows: "*We intend to use a combination of top down and bottom up assessment to assess forecast capex.*" The guideline includes reference to a number of key changes to the assessment of capex, including "*a greater requirement for the economic justification of expenditure and increased data requirements to support proposals*".

¹⁰ AER Issues paper dated July 2014, page 7

¹¹ AER Better Regulation Explanatory Statement Expenditure Forecast Assessment Guideline, page 54

35. The explanatory statement for the Expenditure Forecast Assessment Guideline outlines the elements of the capex assessment process, as set out below:¹²
- *“reviewing the economic justification for expenditure;*
 - *reviewing the expenditure forecasting methodology and resulting expenditure forecasts;*
 - *top down economic benchmarking;*
 - *reviewing governance and policies;*
 - *trend analysis;*
 - *category benchmarking;*
 - *targeted review of high value or high risk projects and programs; and*
 - *sample review of projects and programs and applying efficiency findings to other expenditure forecasts.”*
36. The Expenditure Forecast Assessment Guideline for Electricity Transmission mirrors these requirements. It also elaborates on the scope of the required governance and policy and project reviews.¹³ Information requirements specific to the review of capex are included in Section 5 of the guidelines.

3.1.2 Technical review of TransGrid's RP

37. The AER engaged EMCa as its technical consultant to help identify systemic issues that may be resulting in forecasting biases in TransGrid's RP replacement capex. As described in our October 2014 report, our approach to this task incorporated an evidence-based assessment of the quality of TransGrid's governance, management, planning, forecasting and budgeting processes. Our assessment was based on a review of process documentation provided by TransGrid. We tested the extent of TransGrid's application of identified processes by reviewing a sample of its repex programs.
38. We consider that our review approach is consistent with the Better Regulations guidelines that were (and remain) in effect prior to our assessment of TransGrid's RP. EMCa has applied this same 'fit-for-purpose' assessment approach in multiple prior reviews of regulatory expenditure proposals for Australian transmission and distribution network service providers.

3.2 General observations

39. Under the propose/respond regulatory model in place in the NEM, the onus is on TransGrid to present clear, consistent and compelling information and evidence to the AER and its consultants in support of its RP. The regulatory review process also provides TransGrid (and other NSPs) with the opportunity

¹² AER, Better Regulation Explanatory Statement Expenditure Forecast Assessment Guideline, pages 54-55

¹³ AER, Better Regulation Expenditure Forecast Assessment Guideline for Electricity Transmission page 15

to review and respond to the AER's Draft Decision and matters raised in reports provided to the AER, such as our October 2014 report. To the extent that any such reports indicate that TransGrid did not provide sufficient information to support its RP, TransGrid has the further opportunity to provide such additional information as it deems necessary and/or appropriate through its RRP.

40. TransGrid has generally chosen not to provide information to address the issues identified in our October 2014 report and has sourced input from its advisors that, similarly, does little to address these issues. Instead, TransGrid has sought to make a case that EMCa should have undertaken a different body of work involving detailed engineering reviews. Further, and to the extent that TransGrid did not provide sufficient evidence to support aspects of its proposed expenditure, TransGrid has stated that EMCa should have attempted to develop such evidence or, in its absence, should not have formed any conclusion(s).
41. We undertook a governance level top-down review that was supported by a sample-based bottom up assessment. This approach is impacted by TransGrid's ability to provide sufficient information and evidence to credibly demonstrate that its proposal meets the NER expenditure criteria. We are firmly of the view that the onus is on the NSP, and not the AER and/or its technical consultant(s), to provide sufficient information and evidence for this review.

3.3 Top-down assessment

42. In its Draft Decision, the AER placed significant weight on the absence of a top-down assessment and made reference to the findings in our October 2014 report. In its RRP, TransGrid has stated that "*the absence of a top-down assessment does not mean that a top-down assessment would result in a reduction in expenditure*".¹⁴ It is our view that a top-down assessment process is standard in a well-governed and well-managed regulated network business. We consider that the absence of such an assessment indicates that TransGrid has not adequately demonstrated that its proposal meets the expenditure criteria.
43. In its RRP, TransGrid has proposed an aggregate risk assessment as an alternative to a top-down governance and management assessment. We have reviewed this risk assessment information to determine whether it has addressed our initial concerns.
44. TransGrid has presented a distribution of risk scores for projects contained in the 2009-13 and 2015-18 RCPs and concluded that the expenditure forecast achieves a similar level of risk mitigation. This is presented as evidence of a top-down review.

¹⁴ TransGrid RRP, page 40

45. We have reviewed the information provided and observe that:
- the underlying determination of risk scores has not been subjected to a rigorous top-down challenge and therefore our concerns regarding over-estimation of risk have not been addressed;
 - when the dominant risk is used to produce the same top-down assessment, referred to as the 'conservative risk assessment' by TransGrid, a different distribution of projects is generated. Some projects classified as being below the Draft Decision capital allowance by TransGrid have a higher risk than those above the capital allowance. As stated in our October 2014 report, we find the basis of this aggregation of risks to be of concern and we are of the view that the highest risk projects may not be appropriately prioritised in TransGrid's forecast; and
 - TransGrid did not provide evidence of any constraints being applied to assess the risk tolerance of the proposed expenditure, or reference to an alternate outcome measure, as a component of this top-down review.
46. We consider that TransGrid's alternate top-down assessment (i.e., its aggregate risk assessment) has not adequately demonstrated an effective review or challenge of the portfolio to determine that the optimum level of risk will be reflected in the expenditure forecast.
47. Our initial concerns regarding inadequate top-down assessment and focus at the individual project and program level have not been addressed. Accordingly, the new information provided does not support a different conclusion.

3.4 Prioritisation approach

48. TransGrid stated that prioritisation analysis was included in the information provided to the AER with its RRP. We understand that this analysis was provided in response to AER requests relating to its risk assessment.¹⁵ We reviewed this information as part of our assessment of TransGrid's top-down assessment and risk assessment. In its Appendix F, TransGrid also refers to its program management office as providing a prioritisation function across its investments by evaluating customer impacts, compliance requirements and reputation. The supplied information does not address the concerns that we raised in our October 2014 report.
49. We note that AMCL included reference to TransGrid's capital prioritisation criteria in its list of non-conformances. This provides further evidence of our concern. We conclude that no change to our initial assessment is warranted.

¹⁵ Specifically AER requests relating to the risk assessment contained in responses referred to as AER TransGrid R2, AER TransGrid R5, AER TransGrid R6 and AER TransGrid R7.

3.5 Network Investment Risk Assessment Methodology

3.5.1 Risk assessment method

50. We have reviewed the additional information provided by TransGrid regarding its risk assessment methodology, including TransGrid's claim that if changes were made to its risk assessment method to address our concerns, there would be no associated changes to its capital program requirements.
51. From the information supplied, we observe that:¹⁶
- the proposed projects appear to have been assessed against the corporate risk framework;
 - 81 projects, comprising 58% of the expenditure forecast (\$617m), have been identified as 'Medium' risk;
 - there is a difference in the classification of risks between the corporate risk management framework and the Network Investment Risk Assessment Methodology (NIRAM), in relation to 'Low', 'Medium' and 'High' risks; and
 - 46 projects comprising 17% of the expenditure forecast (or \$178m) are reclassified from 'Medium' in the corporate risk matrix to 'Low' risk when applied to the NIRAM risk matrix. We derived risk ratings using the NIRAM risk matrix,¹⁷ as shown in Figure 3, from the information supplied by TransGrid that is currently mapped to the corporate risk framework, as shown in Figure 4.

Figure 3: TransGrid NIRAM risk matrix

Example of Costing Risk			Consequence				
			Minimal	Minor	Moderate	Major	Catastrophic
			\$0.16m	\$1.58m	\$15.81m	\$158.11m	\$500.00m
Likelihood	Almost Certain	1/year	0.16	1.58	15.81	158.11	500.00
	Likely	0.75/ year	0.12	1.19	11.86	118.59	375.00
	Possible	0.3/ year	0.05	0.47	4.74	47.43	150.00
	Unlikely	0.065/ year	0.0103	0.10	1.03	10.28	32.50
	Rare	0.015/year	0.0024	0.0237	0.24	2.37	7.50

Table 4 – Risk Matrix

Source: TransGrid, Network Investment Risk Assessment Methodology, page 9

¹⁶ We conducted our analysis based on the risk information supplied in TransGrid AER Capex R6. Note that total forecast expenditure does not reconcile to the RRP or the multiple information requests

¹⁷ We understand that the NIRAM has been used in the development of the project documentation

Figure 4: TransGrid corporate risk matrix

Likelihood/Consequence	Minimal	Minor	Moderate	Major	Catastrophic
Almost Certain	Low	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	Extreme	Extreme
Possible	Low	Medium	Medium	High	Extreme
Unlikely	Low	Low	Medium	Medium	High
Rare	Low	Low	Medium	Medium	High

Source: TransGrid, RINR-S-RM001 Risk Management Framework, Attachment 3, page 19

52. By itself, we do not consider the assessment of risk by TransGrid using different frameworks (i.e., corporate risk framework and NIRAM) to be an issue. Rather, the underlying issues relate to the consistent use/application of different risk frameworks, the extent to which the different frameworks produce different results and how these results are subsequently interpreted and incorporated into the repex forecast as a component of TransGrid's RRP.
53. There appears to be a material difference in risk scores arising from application of the different risk frameworks. We are concerned that application of the corporate risk matrix can result in a higher risk score, with an associated upward bias on forecast expenditure. This outcome is consistent with the conclusion we reached in our October 2014 report (i.e., that the method of aggregation of risk ratings contributes to over-estimation of risk). Accordingly, we consider that a proportion of projects is likely to be subject to this over-estimation bias and could be considered for deferral.
54. TransGrid clarified in its response to the AER, that:

*"The assessed levels of risk are addressed as set out in the Network Investment Risk Assessment Methodology and Risk Management Framework. Essentially, extreme and high risks are required to have plans in place to manage the risk to an acceptable level and medium risks require consideration of additional controls and a cost benefit assessment should be undertaken."*¹⁸
55. We observe that many of the projects do not contain a cost-benefit analysis to justify the timing and scope of work (including for 'Medium' risk projects as nominated by TransGrid). In the absence of such justification, and which would show evidence of consideration of deferral, we consider it likely that

¹⁸ TransGrid AER Capex R2, page 2

TransGrid's proposed replacement project expenditure needs are over-stated in its RRP.

3.5.2 Comparison of risk assessment methods

56. We note that the risk scoring system applied by TransGrid in the 2015/18 RCP (both for its RP and RRP) has been updated compared to the previous RCP. The risk scoring system (5x5 matrix) shown in Figure 5 below was used for the 2009/14 RCP.¹⁹ Whilst not part of our review, we note that the 5x5 risk matrix will result in a larger number of extreme risks (as indicated in red) than the current corporate risk framework. This makes it difficult to compare risk mitigation targets and activity outcomes across the prior and current RCPs.²⁰

Figure 5: Risk scoring system (5x5 matrix) applied during 2009/10-2013/14

Consequence	Insignificant	Minor	Moderate	Major	Catastrophic
Likelihood					
Almost Certain	4	10	17	19	20
Likely	3	8	14	18	19
Possible	2	6	10	14	18
Unlikely	0	2	8	12	17
Rare	0	0	6	10	14

Source: TransGrid AER Capex R2

57. Moreover, we observe that the risk ratings included in many of the project and programs that we reviewed are consistent with use of the old 5x5 matrix, whereas we expected to see evidence that the updated NIRAM risk matrix had been used. However, the values of risk cost do appear to be consistent with the NIRAM matrix. The degree to which either (or both) of these assessment methods was relied on by TransGrid in its RRP remains unclear.

Application of risk score vs risk cost

58. TransGrid stated that “EMCa has placed too much emphasis on the dollar value of risk in the decision-making process, whereas in reality the risk dollars represent a relative score to enable comparison between projects and to support investment decision making”.²¹ However, we note that TransGrid has used this risk score to support its claims of a top-down review process and approval of a prudent expenditure forecast.
59. We also note that TransGrid enhanced its risk assessment methodology in response to perceived weaknesses in its approach: “However, the Network Asset Replacement Project Evaluation Procedure does not provide a methodology of converting the risk score into a risk cost that could be incorporated and used directly in the project economic evaluation of various options. This also prevents the determination of a combined risk-adjusted

¹⁹ TransGrid AER Capex R2, page 1

²⁰ As the risk scoring includes a higher number of extreme ratings, there is likely to be a higher number of projects included to achieve the desired level of risk reduction

²¹ Appendix E, page 21

project delivery cost for option comparative purposes. Hence, an enhanced methodology was required.”²² We therefore consider that TransGrid’s claims are in conflict with its own documentation.

60. In its response to a question by the AER in relation to its RRP, TransGrid stated that: *“The annualised project/program cost of risk mitigation was lower than the annualised risk value for all projects/programs with either an extreme or high annualised risk value. This indicates that it is prudent to address the risks rather than not address the risks”.*²³
61. The above response suggests that risk assessment is an important element in TransGrid’s decision making process. Whilst it may not be the key determining factor, we maintain that the weakness in its approach that we have identified is likely to have resulted in a systemic bias towards over-estimation of its forecast expenditure. Our review identified that the:
- summation of five risk costs disproportionately represents the cost of risk;
 - assessment of risk has been undertaken at too high a level to identify meaningful risk mitigation actions, which has resulted in unnecessarily large investment projects; and
 - existence and effectiveness of current risk mitigation controls and management measures was not included in the risk assessment.
62. TransGrid state that *“to further demonstrate the fit for purpose nature of its risk assessment process, TransGrid has recast the values of risk for the portfolio of pre DG3 projects using a conservative application of the alternative method proposed as good practice by EMCa. TransGrid used the single value of the maximum of the safety, reliability or environmental risk only. Following this recast, all projects proposed in the portfolio are still required.”*²⁴ We make two observations in relation to TransGrid’s analysis, which we consider to contradict this assertion:
- for the ‘Medium’ risk projects, five projects were determined to have an annualised project/program cost of risk mitigation that is higher than the annualised risk value. However, those projects exceeding \$100m were considered to be included for “other reasons”, including: (i) providing other benefits; (ii) difference in assessment criteria; and (iii) risk being understated.²⁵ If these other reasons were valid, then we would have expected to see this rationale form a large part of TransGrid’s detailed project justification, but it did not; and
 - 46 projects totalling \$178m move from ‘Medium’ risk to ‘Low’ risk when the maximum risk value is mapped to the NIRAM risk matrix rather than the

²² TransGrid Network Risk Assessment Methodology, page 3

²³ TransGrid AER Capex R6, page 2

²⁴ TransGrid Appendix F, page 26

²⁵ TransGrid AER Capex R6

corporate risk matrix. Accordingly, some of these projects may be reasonable candidates for deferral into the next RCP.

63. In both cases above, the changes to the risk assessment method should have led to changes to TransGrid's capital program if they were properly applied, but TransGrid has chosen not to do so.
64. As discussed in Appendix A, we understand that risk assessment is not the sole determining factor in proceeding with a project. However, we consider that there is sufficient evidence to conclude that an over-estimation bias exists in TransGrid's application of its risk assessment frameworks and the subsequent development of its expenditure forecast. There is no change to our initial assessment in this regard.

3.6 Options analysis and assessment

65. TransGrid disagreed with the finding in our October 2014 report that options analysis was limited to large discrete options within the project approvals. The concern raised in our October 2014 report was that options to address or mitigate identified risks were not fully explored or included in TransGrid's options analysis. For example:
 - whilst the piecemeal option for substation renewal was described as comprising *"the minimum replacement of equipment needed to address the specific risks that have been identified,"* the analysis of the identified risks or changes in condition did not form part of the justification to confirm the selected option. If the identified equipment was not tested against the changes in the identified risks, it is not possible to ascertain whether it is prudent and efficient; and
 - the OPGW strategy reflected a combination of multiple projects, and whilst some staging and interdependencies were included in the supplied documentation, the options analysis was limited to a single recommended option versus the 'do nothing' option. We do not consider this to demonstrate robust options analysis and assessment.
66. In our initial review, we noted that (in some cases) the expenditure forecast was dominated by what appeared to be a technology-driven strategy, and that TransGrid claimed that the strategy would deliver "increased benefits". In our view, this is not a sufficient justification of these benefits. In TransGrid's RRP, AMCL state that *"in some cases substantial technology upgrades are required to enable more efficient management of the network and to prevent technological obsolescence and associated costs and risks, that can be expected to realise value in a more sustainable and reliable manner over a longer period."*²⁶ TransGrid has not provided additional information to support the justifications claimed in these cases. In the absence of this evidence, no change to our initial assessment is warranted.

²⁶ Appendix E, page 21

3.7 Asset Management certification to ISO55000

67. In our October 2014 report, we noted that TransGrid was in the process of seeking full certification to ISO 55000. We understand that it has since achieved certification. We note that certification is based on an assessment of its level of conformance to elements within an assessment framework and not against industry practice²⁷ or the objectives of the NER.
68. We have also observed that, in some instances, the recent certification review undertaken by AMCL made similar observations to our own assessment in the areas of governance and management and which broadly align with the systemic issues identified in our October 2014 report. These observations are detailed in Appendix A in our response to TransGrid's claims.

3.8 Summary

69. Our October 2014 report was based on a review of TransGrid's replacement capital expenditure forecast to identify evidence of systemic issues that may result in forecasting biases in TransGrid's RP.
70. In its RRP, TransGrid has provided new information (and clarifications) regarding its top-down assessment, risk assessment approach and asset management system certification. TransGrid has also made a number of claims to dispute certain findings from our October 2014 report.
71. We have considered the new information provided and the claims made by TransGrid and its consultant AMCL in its RRP. We find that the new information includes assertions that lack supporting evidence and logic and which, in some cases, conflict with other statements by TransGrid and its consultants. Having given due consideration to the information that TransGrid provided, we find that TransGrid did not provide sufficient evidence to lead us to modify the findings on systemic issues as set out in our October 2014 report.

²⁷ We acknowledge that industry practice is likely to be a consideration in the development of the assessment framework for certification

4 Assessment of new information on revised proposed expenditure

4.1 Overview

72. In this section, we consider TransGrid's RRP as it relates to the sample of TransGrid's replacement capital expenditure projects that we reviewed in our October 2014 report.
73. TransGrid has proposed a revised total repex forecast in its RRP²⁸ as presented in Table 3 below. Total replacement capital expenditure is \$898.6m, comprised of \$591.1m of major program expenditure and \$307.5m of "other" expenditure. TransGrid's RRP reflects a \$26.6m reduction in total repex compared to its RP.

Table 3: Summary of proposed replacement expenditure (\$m, 2014), RRP

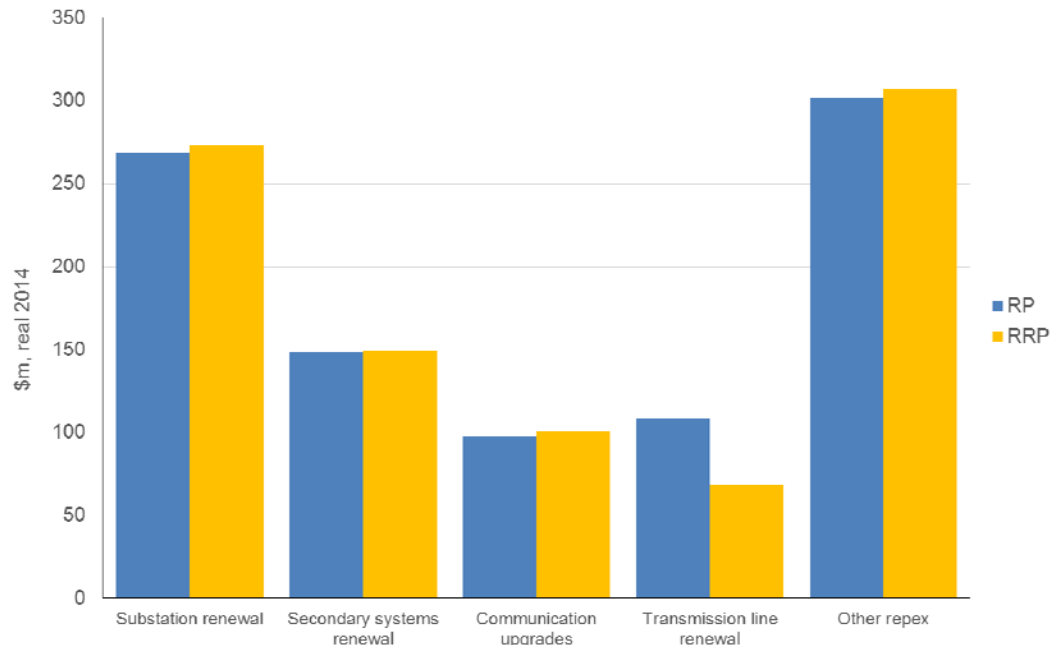
	2015	2016	2017	2018	Total
Replacement capex					
- substation renewal	90.3	56.7	59.3	66.7	273.0
- secondary systems renewal	44.4	45.5	26.4	32.7	149.0
- communication upgrades	10.0	35.8	25.4	29.5	100.7
- transmission line renewal	18.7	33.0	6.6	10.3	68.5
Sub-total	163.4	170.9	117.7	139.1	591.1
- other repex	83.1	84.9	91.2	48.2	307.5
Replacement total	246.5	255.9	208.9	187.3	898.6

Source: EMCa analysis based upon comparison of TransGrid's Capital Accumulation Model

²⁸ The expenditure forecast was derived from information provided in TransGrid's Capital Accumulation Model. The review of the differences to the expenditure categories was provided by the AER, and included in this report for comparison purposes

74. We observe that the reduction in the transmission line renewal forecast category is partially offset by modest increases in the other expenditure categories, as shown in Figure 6 and Table 4 below.

Figure 6: Differences in proposed replacement expenditure (\$m, 2014), between RP and RRP



Source: EMCa analysis from AER summary data derived from TransGrid's CAM Model

Table 4: Differences in proposed replacement expenditure (\$m, 2014), between RP and RRP

	2015	2016	2017	2018	Total
Replacement capex					
- substation renewal	4.6	0.0	0.0	-0.2	4.4
- secondary systems renewal	3.9	0.2	-1.4	-2.3	0.4
- communication upgrades	3.2	0.1	0.0	0.0	3.3
- transmission line renewal	-0.4	-3.6	-4.0	-32.2	-40.2
- other repex	5.5	0.1	-0.1	-0.1	5.5
Replacement total	16.8	-3.2	-5.5	-34.7	-26.6

Source: EMCa analysis based upon comparison of TransGrid's Capital Accumulation Model

75. We note that the transmission lines renewal forecast expenditure has been reduced by \$40.2m. This reduction is partially offset by an aggregate increase of \$13.5m across the other major repex categories, primarily associated with increases in the current year (2015) forecast. TransGrid did not provide a rationale for these increases. The overall impact is a \$26.6m reduction in total replacement capex over the RCP.

4.2 Assessment

76. In our initial review, we examined a sample of projects to identify evidence of systemic issues. We subsequently assessed the likely impact of the identified issues on each of the project groupings that we reviewed. In this section, we consider the new information provided by TransGrid in its RRP and Appendix F for each of the expenditure categories and advise whether the new information has impacted our October 2014 findings.

4.2.1 Substation renewal

Summary of TransGrid's RRP

77. TransGrid submits that the basis for reductions in scope and deferrals in our initial review is not adequately supported. TransGrid considers our findings regarding the substation renewals expenditure forecast to be "*unfounded and unreasonable*".
78. TransGrid has included some new information regarding the substation renewal projects that we reviewed. TransGrid's revised expenditure forecast of \$273.0m in its RRP compares with \$268.6m in its RP. TransGrid has not explained this increase.

Correction of errors in EMCa's report

79. We have identified three items in our October 2014 report that require correction. Refer to Table 5 below.

Table 5: Substation renewal errors identified in October 2014 report

EMCa report reference	Description
114	The reference to 330kV in relation to the Wagga substation secondary systems should have read 132 and 66kV
114	The reference to 220kV in relation to the Vales Point substation secondary systems should have read 132kV
134	The Liddell completion date should be 2020, and not 2019 as stated

Source: EMCa analysis

80. We have considered the impact of the above changes in our revised assessment.

Summary of our assessment

81. We have reviewed the detailed information provided in TransGrid's RRP. In general, it reflects information previously provided to the AER and which was considered in our initial review. In some instances, TransGrid's response has focused on specific comments in our October 2014 report such as the management and re-issue of relatively new items of plant, where this was not the main area of concern.

82. Notwithstanding, we have identified and considered any new information provided and updated our assessment of the sample of projects as follows:
- Canberra substation: the secondary works SSB solution would be a preferred solution due to the condition of control cables; and
 - Other: some additional environmental, fencing, auxiliary services and other civil works in projects are likely to be prudent.
83. We consider our assessment and observations regarding the remaining sample of projects to be otherwise unchanged.

Implications for proposed expenditure allowance

84. We consider that the systemic issues identified in our October 2014 report have not been adequately addressed for the substation renewals forecast expenditure. TransGrid did not provide evidence of sufficient options analysis and/or consideration of alternate solutions that it might have explored, including the opportunity for prudent deferrals.
85. Our assessment of the impact of the systemic issues on the sample of project expenditure included a number of aspects:
- i. We considered opportunities for optimisation across the portfolio to address the identified bias towards over-estimation of risk and timing of proposed expenditure. Of the five projects reviewed, we consider that three are candidates for timing review and conclude that at least one project could be prudently deferred into the next RCP (i.e., 20%);
 - ii. Given the small project sample, we have conservatively proposed a deferral rate of 15 to 20% as a reasonable estimate;
 - iii. For projects subject to deferral, we consider that it would be prudent to include expenditure for immediate risk mitigation. In our view, this rate would be higher than for secondary systems renewal projects due to the higher cost of individual plant items. We consider that a rate of between 20 to 30% of any deferred expenditure would be reasonable to include in the forecast; and
 - iv. We also considered opportunities to reduce/modify scope and consider alternate options. Of the projects we reviewed, excluding the projects considered for deferral, we determined that alternate solutions could remove up to 5% of the forecast expenditure.
86. Our assessment remains unchanged from our October 2014 report. We conclude that the impact of the systemic issues is likely to have resulted in an over-estimation of the expenditure forecast of between 10% and 20%.
87. Accordingly, we consider that TransGrid's forecast replacement capital expenditure for substation renewal, reduced by this amount, would more reasonably reflect that of a prudent and efficient service operator.

4.2.2 Secondary systems renewal

Summary of TransGrid's RRP

88. TransGrid rejected the findings in our initial review regarding its substation renewals expenditure forecast. TransGrid submits that the basis for reductions in scope and deferrals is not adequately supported. It considers that our October 2014 report includes “*assertions with incomplete, inaccurate or misleading regard to the information*” provided to the AER.
89. TransGrid has included some new information regarding the secondary systems renewal projects that we reviewed. TransGrid's revised expenditure forecast of \$149.0m in its RRP compares with \$148.6m in its RP. TransGrid has not explained this difference.

Correction of errors in EMCa's report

90. We have identified one item in our October 2014 report that requires correction. Refer to Table 6 below.

Table 6: Secondary system renewal error identified in October 2014 report

EMCa report reference	Description
135	The reference to condition reports for Sydney West substation cabling were related to Liddell substation cabling and not Sydney West.

Source: EMCa analysis

91. We have accounted for the impact of the above change in our revised assessment.

Summary of our assessment

92. We note TransGrid's comments in relation to deliverability of the proposed program. We also make the general observation that augmentation work, depending on scope, can differ markedly from replacement work in terms of complexity and ease of implementation. Accordingly, any direct comparison regarding deliverability may be of limited value.
93. The new information supplied by TransGrid includes assessments for condition, supportability and compliance. However, we remain concerned that the objective to replace technologies by a target end date is more likely to drive an aggressive program and less likely to consider how condition and risk is changing over time. Further, TransGrid has not provided information that would justify the level of work proposed in the forthcoming RCP (including consideration of reasonable deferrals).
94. In light of the new information provided, we have updated our assessment of the sample of projects, namely:

- ANM substation: we find that the new information regarding the assessment of an immediate risk with critical clearance times improves the justification for this work; and
- Sydney West substation: the clarified condition of the secondary cables improves the justification for this work.

Implications for proposed expenditure allowance

95. We consider that the systemic issues identified in our October 2014 report have not been adequately addressed for the secondary systems renewals forecast expenditure. Based on our reasoned consideration of TransGrid's new information and the systemic nature of the issues identified, it is our view that the secondary systems renewal forecast does not meet the expenditure criteria because it cannot be viewed as being efficient and prudent.
96. Our assessment of the impact of the systemic issues on the sample of project expenditure included a number of aspects:
 - i. We considered opportunities for optimisation across the portfolio to address the identified bias towards over-estimation of risk and timing of proposed expenditure. Of the four projects reviewed, we consider that two are candidates for timing review and conclude that at least one project could be prudently deferred into the next RCP (i.e., 25%);
 - ii. Given the small project sample, we have conservatively proposed a deferral rate of 20% to 25% as a reasonable estimate;
 - iii. For projects subject to deferral, we consider that it would be prudent to include expenditure for immediate risk mitigation. In our view, this rate would be lower than for substation renewal projects due to the lower cost of individual scope items. We consider that a rate of 10% to 20% of any deferred expenditure would be reasonable to include in the forecast; and
 - iv. We also considered opportunities to reduce/modify scope and consider alternate options. Of the projects reviewed, excluding the projects considered for deferral, we determined that alternate solutions could remove up to 5% of the forecast expenditure.
97. We conclude that the impact of the systemic issues is likely to have resulted in an over-estimation of the expenditure forecast of between 15% and 25%. Accordingly, we consider that TransGrid's forecast replacement capital expenditure for secondary systems renewal, reduced by this amount, would more reasonably reflect that of a prudent and efficient service operator.
98. This revised assessment represents a reduced adjustment relative to our October 2014 report. It reflects our updated consideration of the associated risks and opportunity for further optimisation within the program, including:
 - clarification of the condition of control cables;
 - reduced scope for consideration of alternative solutions; and
 - emergence of other drivers of secondary systems renewal expenditure, such as maintaining critical clearance times.

4.2.3 Transmission lines renewal

Summary of TransGrid's RRP

99. TransGrid submits that the basis for reductions in scope and deferrals in our initial review is not adequately supported.
100. TransGrid has included some new information regarding the transmission lines renewal projects that we reviewed. TransGrid's revised expenditure forecast of \$68.5m in its RRP compares with \$108.6m in its RP.
101. TransGrid has reconsidered its wood pole replacement forecast and proposed a targeted option for two of four lines: line 99F and line 99J. Accordingly, TransGrid has updated its replacement capex forecast, reducing it by \$40.2m over the 2015/18 RCP. We understand this \$40.2m reduction to equal the total expenditure associated with these two projects. The remainder of the forecast is materially unchanged.
102. In its RRP, TransGrid has also proposed additional operating expenditure for life extension. This is outside the scope of our review. However, we note that the financial treatment of life extension, whilst subject to individual capitalisation policies, is typically treated as capital expenditure.

Summary of our assessment

103. We note TransGrid's comments in regards to the classification of transmission line works and have adopted the term "*transmission line renewals*" to include transmission line wood pole replacement, transmission line renewal and transmission line life extension projects.
104. TransGrid has reviewed its management strategy for wood pole replacement, and the associated reduction in its expenditure forecast.
105. We also note that: (i) the information supplied by TransGrid included assessments for condition of individual towers; and (2) the accuracy of the cost estimate reflects the planning stage expected for a forecast. However TransGrid did not provide us with additional information on which to revise our assessment for these components of the program.

Implications for proposed expenditure allowance

106. We have adjusted our original assessment to reflect the described change to TransGrid's wood pole replacement projects. As we have not been provided with additional information on which to base a revised assessment, we maintain that the impact of systemic issues identified in our October 2014 report is likely to exist in the remainder of the category.
107. Our assessment of the impact of the systemic issues on the sample of project expenditure included a number of aspects:
 - i. We considered opportunities for optimisation across the portfolio to address the identified bias towards over-estimation of risk and timing of

proposed expenditure. For the projects that we reviewed, we did not identify any prospective candidates for deferral; and

- ii. We also considered opportunities to reduce scope and consider alternate options, such as more targeted management strategies. For the projects that we reviewed, we determined that alternate solutions could remove 10% to 20% of the forecast expenditure.
108. We consider that TransGrid has taken steps towards addressing the systemic issues that we identified in its originally-proposed wood pole replacement expenditure. However, for the remainder of the transmission lines renewal expenditure forecast, we conclude that the systemic issues remain and that their impact is likely to have resulted in an over-estimation of between 10% and 20%.
109. Regarding the total transmission line renewal forecast,²⁹ we consider that the overall impact of the systemic issues is likely to have resulted in an over-estimation of the expenditure forecast of between 5% and 15%.
110. Accordingly, we consider that TransGrid's forecast replacement capital expenditure for transmission lines renewal, reduced by this amount, would more reasonably reflect that of a prudent and efficient service operator.

4.2.4 Communications upgrade and replacement

111. TransGrid has rejected our initial findings regarding communications upgrade and replacement. TransGrid submits that the basis for reductions in scope and deferrals in our initial review is not adequately supported. TransGrid notes that one of the key outcomes of the OPGW strategy (OPGW being the largest component of this expenditure category) is to establish fault tolerant communications rings, which cannot be established by individual projects.
112. TransGrid has not included new information regarding its communications upgrade and replacement repex. TransGrid's revised expenditure forecast of \$100.7m in its RRP compares with \$97.4m in its RP. TransGrid has not explained this increase.

Summary of our assessment

113. Whilst we did not find reference to the establishment of fault tolerant communications rings in our review of project 0699,³⁰ as suggested by TransGrid, we did find reference to the establishment of protected rings and interpret this to have a similar meaning. This formed part of the discussion regarding the need for the project. However, a large component of the discussion in TransGrid's documentation was dedicated to developing new capacity, described as "*establishing high capacity telecommunications rings*"

²⁹ We applied our original assessment of systemic issues of between 10 and 20% to the transmission line renewals forecast capital expenditure of \$40m, being the expenditure not associated with wood pole replacement and the subject of the review of targeted management options. We then derived a percentage based on the total proposed transmission line renewal forecast expenditure.

³⁰ 0699 Establishing High Capacity Telecommunications Rings (OPGW Strategy)

so as to gain the full benefit of new technologies, rather than to mitigate any identified risks.

114. We note that the OPGW strategy was one of five projects where TransGrid states that the annualised project/program cost of risk mitigation is higher than the annualised risk value. TransGrid also states that *"the risk score alone does not fully reflect the benefits associated in the justification of that particular project"*.³¹ However, TransGrid has not elaborated with any meaningful information on the implied additional benefits that we would expect for this size of project, consistent with the regulatory Guidelines.
115. We also found evidence that, whilst these projects were considered as part of a broader strategy, there was some reference to the staging of projects (including the protected rings) beyond the current RCP. We consider this finding to undermine TransGrid's argument that these projects should be wholly included in the forecast for the next RCP.
116. As noted in our October 2014 report, the benefits (and timing of benefits) associated with this strategy have not been adequately demonstrated. For example, TransGrid has stated that: (i) approximately 24% of the forecast is contingent on other works;³² (ii) benefits will arise from the retirement of multiple microwave sites; and (iii) additional operating expenditure savings will arise from new capacity. In the absence of information to justify these benefits, we find that the expenditure forecast remains unproven.

Implications for proposed expenditure allowance

117. We were not provided with evidence of sufficient options analysis and/or consideration of alternate solutions that TransGrid had explored, such as the opportunity for prudent deferrals.
118. Our assessment of the impact of the systemic issues on the sample of project expenditure included a number of aspects:
- i. We considered opportunities for optimisation across the portfolio to address the identified bias towards over-estimation of risk and timing of proposed expenditure;
 - ii. Whilst we expect that some level of expenditure is likely to be prudent to address constraints identified in the communications network and potential obsolescence of some equipment, it is likely that some of the OPGW strategy forecast expenditure can be deferred. This would extend the strategy over a longer period of time. We did not see sufficient evidence to support the justification of including all OPGW projects in the current RCP as proposed by TransGrid;

³¹ AER TransGrid Capex R6, page 1

³² We understand that this includes wood pole replacement projects which were the subject of a review of the management strategy by TransGrid and included works that were in advance of the required needs date. We consider that the timing and inclusion of this expenditure is therefore not supported.

- iii. In the absence of better information, we consider that the program is overestimated by 50% and could be completed over two RCPs. We are also guided by the statements in the Better Regulations Guidelines that refer to the use of actual historical expenditure as a reasonable indicator of required expenditure;³³
 - iv. It is our view that there is a greater inter-dependence between the secondary system renewal projects and substation renewal projects for the delivery of the OPGW strategy than has been described and which we consider provides further opportunity for optimisation; and
 - v. We also considered opportunities to reduce scope and consider alternate options, such as more targeted management strategies.
119. We were not provided with additional information from which to revise our assessment for this program. Our assessment remains unchanged from our October 2014 report. We conclude that the impact of the systemic issues is likely to have resulted in an over-estimation of the expenditure forecast of between 50% and 60%.
120. Accordingly, we consider that TransGrid's forecast replacement capital expenditure for communications upgrades and replacement, reduced by this amount, would more reasonably reflect that of a prudent and efficient service operator.

4.2.5 Other items of repex

121. We note TransGrid's comments that the nature of other parts of replacement capital are different, consisting of a different proportion of individual asset replacements than specific programs of replacement. We were asked to consider whether the systemic issues identified are likely to also exist in this "other" component of TransGrid's proposed repex program. We were not asked to undertake reviews of specific projects in this area.
122. We consider that, on the balance of probability, it is reasonable to expect that the same systemic issues evident in our top-down assessment of the four repex project categories are likely to be present (to varying degrees) in the remainder of the replacement capital program. It is our view that the underlying impact of systemic issues for the "other" category of expenditure is more likely to reflect the general range of over-estimation observed across the four major repex categories of between 15% and 25%.³⁴
123. Accordingly, we consider that a reasonable estimate of the level of underlying impact of the systemic issues in TransGrid's "other" category of repex is between 15% and 25%. Specifically, we consider that the absence of an

³³ We refer to the Better Regulation | Expenditure Forecast Assessment Guideline for Electricity | Transmission, page 8 in relation to approach assumptions that "*past actual expenditure was sufficient to achieve the expenditure objectives in the past*" and page 9 in relation to economic justification which states "*Without adequate economic justification, we are unlikely to determine forecast expenditure is efficient and prudent*".

³⁴ We derived this percentage range by calculating the corresponding capex ranges for each expenditure category and aggregating across the four major repex categories

adequate top-down assessment and challenge process, over-estimation of risk and associated over-forecasting biases are equally applicable to the “other” category of TransGrid’s repex forecast.

4.3 Summary

124. We have reviewed the new information provided by TransGrid in its RRP as it relates to the four major repex project categories within the scope of our review and adjusted our findings accordingly.
125. We have reassessed the impact of the systemic issues on TransGrid’s forecast repex program expenditure and consider this to have resulted in an aggregate over-estimation of expenditure between 15% and 25% across the four project categories that we reviewed.
126. It is our view that the nature of the systemic issues identified are likely to exist in other parts of the replacement capex forecast, at a similar level to that determined for the reviewed categories of repex.
127. The conclusion in our October 2014 report was that the aggregate impact of identified systemic issues had resulted in a total over-estimation of expenditure between 20% and 30% in TransGrid’s RP. When considered alongside the reductions to the transmission line wood pole management expenditure already included in TransGrid’s RRP, our revised assessment is within 3% of our October 2014 report.
128. In Table 7 below, we have compared our revised assessment with an adjusted total repex forecast of \$885m (to remove the total \$13.5m increase in repex categories other than transmission line renewal over the 2015/18 RCP). We note that this assessment is within 1% of our October 2014 report.

Table 7: Changes to EMCa assessment (\$m, 2014/15)

Proposal / assessment	Forecast expenditure (\$m)
Revenue Proposal	925
EMCa assessment of impact 20-30% (RP)	641 - 734
Draft decision	641
Revised Revenue Proposal	899
	reduction of 3%
EMCa assessment of impact 15-25% (RRP)	659 - 749
	increase of 2-3%
EMCa assessment of impact 15-25% (RRP)	645 - 735
on a base of \$885m	increase <1%

Source: EMCa analysis

5 Concluding remarks

129. We consider that TransGrid has not provided sufficient information to support the proposed increase in replacement capital expenditure included in its RRP. We note that the regulatory Guidelines state that:³⁵

“The AER intends to assess forecast capital expenditure (capex) proposals through a combination of top down and bottom up modelling of efficient expenditure. Our focus will be on determining the prudent and efficient level of forecast capex. We will generally assess forecast capex through assessing: the need for the expenditure; and the efficiency of the proposed projects and related expenditure to meet any justified expenditure need. This is likely to include consideration of the timing, scope, scale and level of expenditure associated with proposed projects. Where businesses do not provide sufficient economic justification for their proposed expenditure, we will determine what we consider to be the efficient and prudent level of forecast capex. In assessing forecasts and determining what we consider to be efficient and prudent forecasts we may use a variety of analysis techniques to reach our views.”

130. In our assessment, we have applied a methodology that is consistent with the requirements of the NER and Better Regulations Guidelines and which we consider to be fit for the intended purpose of assisting the AER to establish a prudent regulatory expenditure allowance for TransGrid.
131. Our findings on the existence of systemic issues from our review of TransGrid's RRP are unchanged. Following TransGrid's reduction in its proposed repex allowance and the provision of additional information from TransGrid, we have re-assessed the impact of the systemic issues that we identified in our initial review. The effect is to reduce our initial assessment of forecast expenditure over-estimation from a range of 20% - 30% (\$641m - \$734m on an RP base of \$925m) to a range of 15% - 25% (\$659m - \$749m on an RRP base of \$899m). After removing the increases that TransGrid has proposed for some

³⁵ AER Better Regulation Expenditure Forecast Assessment Guideline for Electricity Transmission, page 17

categorises, and for which it has provided no justification, our estimate of the resulting reasonable range would be between \$645m to \$735m.

Appendix A: Our assessment of TransGrid's claims

Overview

132. TransGrid has detailed its response to the Draft Decision on the capital expenditure forecast in Section 5 of the RRP and in Appendices E and F as described below. In this Appendix A, we consider TransGrid's claims and those of its consultant (AMCL) and provide our response.

133. TransGrid states: "*TransGrid does not consider that the AER's capital expenditure forecast in the draft decision reasonably reflects the capital expenditure criteria. TransGrid considers that the AER's capital expenditure forecast understates the efficient costs of achieving the capital expenditure objectives because:*

- *the review of replacement expenditure undertaken by EMCa, on which the AER has relied to reduce replacement expenditure, lacks analysis and sound reasoning;*
- *the rationale provided by the AER to reduce security/compliance expenditure is unsound; and*
- *despite justifying reductions in expenditure on the basis that TransGrid had not provided a top-down assessment, the AER has failed to provide an adequate top-down assessment to justify its substitute forecast.*"³⁶

AMCL report

134. TransGrid has relied on the assessment of its consultant AMCL, where it states that "*AMCL found that in EMCa's report:*

³⁶ TransGrid RRP, page 37

- *there is a disconnect between the observations made and conclusions drawn;*
- *there is a lack of evidence and analysis to justify the proposed percentage reductions in funding;*
- *EMCa appears to apply distribution-focused management strategies that are generally unsuitable to TransGrid's transmission business and assets; and*
- *there is a misunderstanding of TransGrid's application of its risk assessment processes.*³⁷

135. TransGrid has provided the review undertaken by AMCL as Appendix E in its submission. We have reviewed this submission and provide our response in the sections that follow.

TransGrid's response to EMCa's report

136. TransGrid states that it "*considers that, while some of EMCa's observations are fair, others reflect errors of fact and insufficient regard to the information TransGrid provided to the AER accompanying the revenue proposal.*"³⁸
137. TransGrid has also provided a comprehensive response to EMCa's report as provided in Appendix F. We have reviewed this submission and provide our response in the sections that follow.

Disconnect between the observations made and conclusions drawn

138. TransGrid and AMCL have included examples where they believe that a disconnect exists between the observations made and conclusions drawn. In the following sub-sections, we consider and respond to the examples referred to in TransGrid's and AMCL's submissions.

Reference to insufficient evidence, or items not well defined or understood or limited observation³⁹

139. We have previously noted that the scope of our assessment is a top-down governance level review and that the focus of the supporting project reviews is to confirm the existence of systemic issues.

Emphasis on the dollar value of risk in decision making⁴⁰

140. AMCL state that "*in our opinion, EMCa has placed too much emphasis on the dollar value of risk in the decision-making process, whereas in reality the risk dollars represent a relative score to enable comparison between projects and*

³⁷ TransGrid RRP, page 37

³⁸ TransGrid RRP, pages 41 and 53

³⁹ TransGrid RRP Appendix E, page 3

⁴⁰ TransGrid RRP Appendix E, page 4

to support investment decision making. It is not used as financial justification of projects.”⁴¹

141. We note that our observations on TransGrid's risk management processes align with the findings from the recent ISO55001 audit conducted by AMCL.⁴² We also note that AMCL describe a non-conformance against the audit as follows: *“Use of the corporate risk management framework for asset level risk assessments is not effective. It does not provide a sufficiently granular resolution for these assessments, resulting in a general over-estimation of risk and ad-hoc modifications to the risk assessment process to compensate.”⁴³*
142. Our assessment identified that the same over-estimation of risk identified by AMCL represents a systemic issue for TransGrid and is likely to result in a repex forecast that exceeds an efficient and prudent level.
143. We made further observations on the application of risk in its Network Investment Risk Assessment Methodology (i.e., in the method of aggregating risks) which we consider to provide further evidence of this systemic issue.
144. AMCL consider that important considerations have been overlooked by EMCa in terms of: (i) migration of risk cost from risk score; (ii) not used as financial justification; (iii) used as an indicator of required action; and (iv) the cost of failure reflects the Board's appetite for risk. We have noted the changes to TransGrid's risk framework identified by (i) and we have based our assessment on TransGrid's current risk assessment methodology including the Board's appetite for risk identified by (iv). We considered statements from TransGrid regarding how it has applied its risk assessments, including the identification of projects, selection of options and prioritisation across its portfolio. We recognise that these are important considerations and we have taken them into account in our assessment.

Long-term capital expenditure plan⁴⁴

145. We consider that a long-term forecast reflects the maturity of an asset management system, whereby the NSP understands the financial and non-financial implications of its replacement plans over time. In the absence of long term replacement plans, the NSP is more likely to exhibit a short-term planning orientation that leads to a bias to over-forecast its expenditure requirements. In our experience, an understanding of the long term capital plans (financial and non-financial) promotes an optimal program.
146. We stated in our October 2014 report that *“there was no evidence provided of long term (>=10 years) strategic capital expenditure planning analysis, or management of a longer-term pipeline of asset replacement and refurbishment*

⁴¹ Appendix E, page 4

⁴² Appendix E, page 4

⁴³ TransGrid ISO 55001 Certification Report v1.0, page 14

⁴⁴ TransGrid RRP Appendix E, page 4

plans of which the proposed RCP expenditure should be considered an essential component.”

147. We consider that AMCL made a similar observation in its description of non-conformances: *“The financial (e.g. costs over next 30 years) and non-financial (e.g. forecast condition and performance) implications of the asset class renewal plans are not clearly expressed.”*⁴⁵
148. TransGrid states that the value of its two long term planning documents – network vision and network development strategy - is in *“understanding the industry environment and considering replacement plans within the range of possible future directions of the industry.”* Whilst these plans provide direction to the business, we did not observe adequate linkage of these plans to the forecast expenditure on the network, and specifically within the RCP.
149. TransGrid and its consultant AMCL have stated that EMCa has not given due consideration to fundamental shifts that have led to the increase in TransGrid's renewal expenditure. However in a propose-respond regulatory regime, it is TransGrid's role to demonstrate that its proposed expenditure forecast reflects a prudent and efficient level and to provide clear and robust evidence to justify the expenditure. We have reviewed and given due consideration to relevant material that TransGrid has provided.

Deliverability of projects⁴⁶

150. We consider that, whilst we observed that TransGrid had a reasonable level of control of project delivery, the increase in replacement projects included in the proposed expenditure forecast represents unique delivery challenges. Based on our review of a sample of projects, we consider that there is a reasonable likelihood that some projects will slip into the next RCP.
151. Substation renewal projects are complex and require substantial time in planning, design and staging during construction due to the requirement to maintain an acceptable level of network risk while undertaking the work. Technical, operational, commercial, resourcing and weather-related challenges can arise when detailed designs are undertaken, approvals are provided and construction occurs. This can lead to schedule delays. While strong portfolio and project management is essential, the timeframes for an efficient project with an acceptable level of risk can also be impacted by the sequencing of the work required and potential interdependencies between projects in order to maintain network operational risk to an acceptable level.
152. The use of average project timeframes will naturally result in some projects being completed earlier and some later. As stated in our October 2014 report, the number of renewal projects with an expenditure level above \$8m has increased from four to eleven - and approximately 50% of the expenditure in the last period was associated with one project. As a result, there are more

⁴⁵ TransGrid ISO 55001 Certification Report v1.0, page 14

⁴⁶ TransGrid RRP Appendix E, page 4

projects to deliver, coupled with the inherent risks associated with project delivery.

Summary

153. We conclude that there is no change to our assessment arising from our review of TransGrid's claims of a disconnect between observations made and conclusions drawn.

Lack of evidence and analysis to justify the proposed percentage reductions in funding

154. We note AMCL's reference to adequate coverage of all projects in the submission and scope of the review undertaken.⁴⁷ We consider this to reflect a failure by AMCL to take full account of the regulatory framework under which TransGrid has submitted its revenue proposal and the review approach that is subsequently undertaken by the AER and its consultants. This does not require assessment of all submitted projects nor does it require that, in advising the AER or in making its determination, technical consultants or the AER are required to adopt a project-based review methodology such as AMCL has assumed.
155. In our consideration of TransGrid's response, and at the request of the AER, we have included additional information supporting our assessment of the impact of the systemic issues identified in our governance level top-down review. This is provided in section 3.
156. We conclude that there is no change to our assessment arising from our review of TransGrid's claim.

Applying distribution-focused management strategies that are generally unsuitable to TransGrid's transmission business and assets

157. We have included examples of management strategies that a prudent and efficient network service provider is likely to consider as part of its options analysis, based on the experience of our team. We did not recommend that TransGrid apply any specific management strategy to its business as this is outside the scope of our review and inconsistent with our understanding of the NER capital expenditure objectives.
158. In the following sub-sections, we have reviewed the examples referred to in TransGrid's response.

⁴⁷ Section 2.1 and 2.2, Appendix E, pages 12-14

Use of system-wide performance indicators⁴⁸

159. In our October 2014 report, we stated that *“performance outcomes including asset health and risk levels, both as drivers of the need for expenditure and as impacted by the proposed expenditure levels, were not defined or well understood”*. In our assessment of proposed expenditure, we broadened our observation to include *“other relevant performance measures to determine if the current levels are appropriate...”*
160. We consider that indicators which provide a summary of the non-financial impact(s) of expenditure are essential to understanding and determining the optimal expenditure forecast, and are used to independently support the need for expenditure. Whilst we are agnostic as to the indicators used by the NSP, we do look for evidence of how the performance indicators selected support the expenditure forecast. TransGrid did not provide evidence of relevant trends and analysis to support its proposed replacement capital expenditure forecast. We included this point in our findings.
161. AMCL makes a related statement in regards to non-financial indicators in the non-conformance reports of the recent audit review: *“The financial (e.g. costs over next 30 years) and non-financial (e.g. forecast condition and performance) implications of the asset class renewal plans are not clearly expressed.”*⁴⁹ We consider that AMCL's statement in regards to the non-financial, and specifically performance, indicators supports our own observations.
162. TransGrid states that: *“Many renewals have been delayed due to the high number of growth projects over the last 10 years.”*⁵⁰ Whilst TransGrid purports this to be a driver of its increased repex, we did not see performance trends that demonstrate the impact of the decision to delay renewal projects, and the corresponding influence that this had on the replacement capex forecast (such as an increase in safety risk or reduction in network security). In the absence of more substantial information from TransGrid, we noted the absence of outcome performance indicators in terms of cost and risk in our report. We consider that performance information is essential to ensure an appropriate outcome is achieved from a top-down review.
163. In the absence of any further information being provided by TransGrid, we confirm that no change to our assessment is warranted.

Use of spares⁵¹

164. AMCL contends that holding spare transformers to replace failed transformers is not an appropriate management strategy for transmission assets. TransGrid states that it already holds a minimum amount of spares, and submits that its

⁴⁸ TransGrid RRP Appendix E, page 16

⁴⁹ TransGrid ISO 55001 Certification Audit Report v1 0

⁵⁰ TransGrid RRP Appendix E, page 17

⁵¹ TransGrid RRP Appendix E, page 19 and Appendix F, page 46

consultant “*supported the use of an N-1 approach to ensure redundancy on the system.*”

165. Whilst we agree that holding spare transformers to replace failed transformers is not appropriate in all situations, there are cases where the holding of strategic spares is logical. We are aware of the adoption of such strategies by TNSPs. We would expect the impact of the relevant security criteria to have been detailed in the justification for each project including, where relevant, a risk assessment to address each of the consequence categories described in TransGrid's risk framework. Assessment of a tolerable level of risk, which is not the same as adopting a run to failure approach as described by AMCL, is prudent.
166. As noted in our October 2014 report, TransGrid did not provide sufficient evidence included in the needs analysis or options analysis, or sufficient consideration of the hierarchy of controls, to mitigate the identified risks. Where the use of a spare transformer is not considered acceptable to TransGrid, we expect that further consideration would be given to the replacement of critical assets and evaluated in the context of its ability to defer a much larger replacement project. This consideration would be expected to be included in the information supporting the proposed expenditure.
167. We conclude that there is no change to our assessment arising from our review of TransGrid's claim.

Wood pole nailing⁵²

168. In the absence of better information from TransGrid, we identified opportunities for TransGrid to consider a more targeted management approach for its wood pole replacement program. In our October 2014 report, we included reference to wood pole reinforcing (or nailing) as an example of risk mitigation options that could be considered in its options analysis. We expect that a prudent and efficient service provider would consider targeted management options - including consideration of practices common to other Australian NSPs.
169. We note that TransGrid has, in its RRP, adopted targeted options for two of the transmission lines proposed for wood pole replacement in its initial RP. We conclude that there is no change to our assessment arising from our review of TransGrid's claim.

Use of condition data

170. TransGrid stated that the condition based management approach using health indices and failure curves outlined in our October 2014 report “*is typically used in distribution networks, and is best suited to managing a large number of assets with low consequences and high probabilities of failure.*”⁵³ However, TransGrid has stated that, despite referring to this management approach as “*typically used in distribution networks,*” it had considered and trialled the use

⁵² TransGrid RRP, page 58

⁵³ TransGrid RRP Appendix F, page 9

of health indicators and failure curves in 2008, found "*the results of the indices to be similar to those obtained using its own approach and thresholds*" and subsequently abandoned the approach.

171. We note that, in recent reviews of other transmission businesses,⁵⁴ the AER has observed the use of condition based maintenance and replacement programs, prioritised by risk assessments. We have also observed its use in overseas jurisdictions⁵⁵ in which we have undertaken reviews. We note that TransGrid is only now at the point of trialling a condition and risk based approach.
172. We consider that, in the absence of information provided by TransGrid, it was reasonable for us to conclude that TransGrid should consider the application of a condition based management approach consistent with our October 2014 report. We conclude that there is no change to our assessment arising from our review of TransGrid's claim.

Misunderstanding of TransGrid's application of its risk assessment processes

173. TransGrid claims that too much emphasis has been applied on the cost of risk in our October 2014 report, as the cost of risk is only used in comparison and prioritisation of projects.
174. As noted in our October 2014 report, we looked for evidence of sufficient justification of TransGrid's replex forecast. This included using risk assessment to assess whether the expenditure forecast was prudent. We did not find evidence that TransGrid applied risk or a suitable alternate measure to determine the prudent level of expenditure and that the absence of an adequate top-down assessment led to a bias towards over-expenditure.
175. In our October 2014 report, we noted that the investment planning process required an assessment of pre-investment and post-investment risk. We were advised that this was a key determinant of the options analysis for each project. For the sample of projects that we reviewed, the risk assessments (including application of risk cost) were applied. Notwithstanding, TransGrid's evidence did not demonstrate that this approach was used consistently or that the selected options were without bias.
176. We observed that the optimisation of the portfolio was not evident, other than by application of the risk assessment process. We were advised that TransGrid had made improvements to its risk assessment process to include a risk cost, in place of a risk score. We observed an overestimation bias in the assessment of risk. We considered that this is likely to have resulted in an expenditure forecast that was subject to the same over-estimation bias. The recent information provided by TransGrid supports this conclusion.

⁵⁴ For example Electranet, SP PowerNet

⁵⁵ For example Transpower New Zealand

177. We consider that our observations in relation to risk are validated by AMCL's audit review observations regarding TransGrid's over-estimation of risk. We conclude that there is no change to our assessment arising from our review of TransGrid's claim.

Procedural fairness

Review process

178. In our review of TransGrid's revenue proposal, we undertook a top-down governance level review supported by a sample-based bottom-up assessment. Where we have made observations regarding the sample of reviewed projects, these are included as evidence of the systemic issues and biases that we identified within TransGrid's repex capital forecast.
179. We consider that many of the claims made by TransGrid in its RRP appear to indicate that TransGrid did not take adequate account of the requirements of the NER and the review process undertaken by the AER as outlined in the Better Regulations Guidelines. We list these matters below.

Information requests

180. In our review of TransGrid's RP, we issued a request for information based on the scope of our review and provided a detailed agenda prior to our onsite meeting. Our assessment was based on our observations at that meeting, together with information supplied prior to, at, and following the onsite meeting pursuant to EMCa information requests.
181. We consider that TransGrid had sufficient opportunity to provide relevant information to explain and support the replacement capital expenditure forecast and enable us to complete a fulsome review.

Limitations of review

182. AMCL make reference to the limited scope of review, availability of personnel and quality of documentation made available. AMCL also cite examples that it considers "*indicates lack of information and limited review*."⁵⁶
183. As previously noted, the scope of our review was a top-down governance level review and the focus of the project reviews was to confirm the existence of systemic issues. Our review serves as an input to the AER's determination. It was not presented as a substitute for the AER's full assessment addressing all NER requirements and criteria.
184. We consider that our methodology is consistent with, and fit-for-purpose for, the requirements of the AER, the NER and the Better Regulations Guidelines.

⁵⁶ Appendix E, pages 12-13

Summary

185. As to fair process, TransGrid provided its response to our questions at the on-site meeting and to our requests for additional information. TransGrid had the opportunity to provide its own clarification(s) and/or additional information that it deemed necessary or relevant at its discretion. Further opportunity to correct any perceived misunderstanding is also provided through the RRP process.
186. We have examined the updated information from TransGrid in its RRP and have taken this into account in our revised assessment. Our review is necessarily a review of the information that TransGrid chose to supply.

Management of capital allowance

187. In its RRP, TransGrid has misinterpreted statements made in our October 2014 report relating to the management of its capital allowance.
188. Our understanding of the NER and the regulatory framework is that the AER is responsible to approve a capital allowance for TransGrid (and other NSPs) for a given RCP. Our review considered whether TransGrid's replacement capital forecast appropriately met the requirements of the NER capital objectives. We provided our independent advice in that respect. We did not, nor were we asked to by the AER, make a determination regarding the capital allowance for TransGrid.
189. We consider that augex and repex have different drivers and the associated expenditure forecasts should be separately justified. We have not stated, as asserted by TransGrid, that they should be separately managed. We note that augmentation capital expenditure may address the needs previously identified by a replacement capital expenditure program through upgrade, replacement or retirement. A project may have multiple drivers. This should not diminish the need for adequate justification of the proposed expenditure, whether repex or augex. We would expect the TNSP to bring any specific interdependencies to the reviewers' attention.

Focus of project reviews

190. We reviewed a sample of projects to test for evidence of the systemic issues that we identified in our governance level review. The selection criteria are included in our October 2014 report. As a component of our assessment, we had cause to review elements of additional projects to confirm the presence of systemic issues and to assess the likely impact of those systemic issues.
191. In our onsite meeting, we were made aware of the introduction of an improved investment planning process.⁵⁷ We therefore focused our assessment on confirming the evidence of any changes as a result of the improved process, and whether these changes might materially impact our findings. We found that the impact of the issues that we identified were equally applicable to projects

⁵⁷ EMCa report, pages 10-11

prepared under the former investment planning process as they were under the new process.

192. TransGrid state that: *“Over 50% of the project reports reviewed are in construction or almost complete for which the analysis was completed some time ago.”*⁵⁸ Our own analysis suggests that 30% of the expenditure of the projects under review were identified as committed projects; however, many of those had a small amount, or no expenditure, in the current RCP. Sydney West (being the largest project) had \$28m of \$41m total expenditure allocated to the current RCP.⁵⁹
193. TransGrid state that greater weight should be applied to a review of its projects and programs undertaken by GHD⁶⁰ than by our review. The GHD report focused on the quality of project documents such as the inclusion of asset condition, needs statements, etc. It appears not to have considered how risks were assessed or how the portfolio of work was optimised. Therefore, we consider this report to be an incomplete analysis of the forecast. Notwithstanding, TransGrid claim that: *“Based on GHD’s review we believe there is sufficient evidence to show that the investments explicitly considered as part of this review reflect good industry practice and are prudent and efficient.”*⁶¹
194. The GHD report states that: *“GHD expects that by diligently addressing the improvement opportunities identified through our three phase review across all projects, TransGrid should be able to demonstrate their proposed expenditure is prudent and efficient.”* TransGrid did not provide evidence that this had been completed and, if implemented, the areas of improvement were not clearly evident in our review of TransGrid’s revised project information. TransGrid’s claims in regards to GHD’s report therefore do not appear to be supported by the report itself.
195. In its covering letter, the GHD report concludes that *“the documents examined demonstrated that appropriate internal processes and governance procedures are in place”*.⁶² However, we consider this statement to be inconsistent with the recent audit review performed by AMCL which identified areas of non-conformance in the areas of governance and asset management planning.
196. We also referred to a review conducted in 2004, which identified improvement opportunities that we consider are consistent with the AMCL audit review and our October 2014 report. We acknowledge that this was incorrectly attributed to TransGrid in our October 2014 report. The author was the ACCC, prepared

⁵⁸ Appendix E, page 18

⁵⁹ We have separately accounted for any conclusions based on our review of this project.

⁶⁰ TransGrid Revenue Proposal Appendix K, Review of Network Investment Plans and Supporting Documents

⁶¹ Ibid, page 15

⁶² Ibid, Cover letter, page 2

as part of the revenue determination process, but the AMCL audit review indicates that the same issues appear to still exist ten years later.