



**Transpower Individual Price-Quality Path  
2020-25**

**Review of aspects of Transpower's  
response to the Draft Decisions  
and Reasons Paper - ICT**

**CONFIDENTIAL**

**Report to**

**Commerce Commission**

**from**

**Energy Market Consulting associates**

**August 2019**

*This report has been prepared to assist the New Zealand Commerce Commission (Commission) with its assessment of Transpower's Regulatory Proposal for Regulatory Control Period 3 (RCP3), for the period from 1<sup>st</sup> July 2020 to 30<sup>th</sup> June 2025, which is required to be conducted in accordance with the individual rules and tests included in the individual price-quality path (IPP) regulation under Part 4 of the New Zealand Commerce Act 1986 (the Act).*

*This report covers a particular and limited scope as defined by the Commission and should not be read as a comprehensive assessment of proposed expenditure that has been conducted making use of all available assessment methods.*

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*Some numbers in this report may differ from those shown in Transpower's RCP3 Proposal or other documents due to rounding.*

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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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# Executive Summary

## Purpose of this report

1. The purpose of this report is to provide the Commerce Commission ('Commission') with our assessment of elements of Transpower's '*Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper*' ('Submission') and supporting information.
2. This assessment builds on the analysis and findings from our assessment of Transpower's initial capex proposal for its 2020-2025 RCP3 Proposal<sup>1</sup> as set out in our initial RCP3 Report.<sup>2</sup>

## Scope of work and approach to our review of Transpower's Submission

3. The scope for our assessment of Transpower's Submission comprises the following aspects of ICT in Transpower's RCP3 Proposal:
  - lifecycle-driven capex;
  - benefits-driven capex;
  - cybersecurity capex;
  - Information Services Team-related staff costs.
4. Our assessment is based on our review of new and clarifying information in Transpower's Submission and in supporting documents, including Transpower's (i) responses to our requests for information, and (ii) feedback on our Initial RCP3 Report.<sup>3</sup>
5. This report should be read in conjunction with our initial RCP3 Report.

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<sup>1</sup> Transpower, *Securing our Energy Future 2020-2025, Regulatory Control Period 3, RCP3 Proposal*, November 2018

<sup>2</sup> EMCa, *Transpower Regulatory Control Period 3 Proposal – Review of Aspects of the Proposed ICT Expenditure*, May 2019.

<sup>3</sup> Transpower, *Interim Feedback on EMCa Review of Transpower's Proposed ICT Expenditure*, 10 June 2019

## Response to general assertions in Transpower's Submission and other feedback on our initial Report

6. Transpower provided interim feedback on our initial RCP3 Report to the Commission in which it infers that we made errors which, if corrected, would have led us to different conclusions. We have reviewed the feedback from Transpower and concluded that our initial draft RCP3 Report included four errors of fact, however none of these had a material impact on our findings. We corrected them in the published version.
7. The remainder of the matters that Transpower identifies either provide new or clarifying information, or Transpower's opinions. We have considered this information in the current assessment.

## Assessment of new information on ICT governance framework

8. Transpower has provided new and clarifying information which has addressed some of our questions about the application of its ICT governance framework. However, we remain of the view that Transpower has not provided the necessary justification to support a finding that all of its proposed RCP3 ICT expenditure is likely to be prudent and efficient. This is because:
  - the proposed portfolio of work is dominated by projects for which (i) either the problem or the options to address the problem require more definition, or (ii) there are multiple solutions or scenarios still to be considered; and
  - even for projects for which Transpower claims it has high certainty about the need and solution, it has no evidence to show that it has suitably considered options or risks.

## Assessment of new information on lifecycle-driven capex

9. Transpower's new and clarifying information has mitigated but not eliminated our concerns regarding the likely prudence and efficiency of its proposed lifecycle-driven work. We remain of the view that it is likely that Transpower will identify opportunities to:
  - defer work; and/or
  - implement cheaper options; and/or
  - reduce the assumed cost estimate.
10. Based on the new and clarifying information, we now consider that 90% of the proposed lifecycle-driven ICT capex is likely to be prudent and efficient. We therefore recommend that in its Final Determination the Commission includes a \$9.5m reduction of Transpower's proposed lifecycle-driven capex of \$94.8m.

## Assessment of new information on benefits-driven capex

11. Transpower's new and clarifying information has mitigated but not eliminated our concerns regarding the likely prudence and efficiency of its proposed benefits-driven ICT work. We remain of the view that Transpower will identify opportunities to:
  - Prioritise its benefits-driven expenditure more prudently; and/or
  - implement cheaper options; and/or
  - reduce the initial cost estimate.

12. We also remain of the view that realised benefits will be less than Transpower has claimed.
13. On this basis, we now consider that 75% of the proposed lifecycle-driven ICT capex is likely to be prudent and efficient. We therefore recommend that in its Final Determination the Commission includes a \$9.2m reduction of Transpower's proposed benefits-driven capex of \$36.7m.

#### Assessment of new information on cybersecurity capex

14. Additional information provided by Transpower does now show a shift in its Cyber security investments to adopt security standards commensurate with the needs of a critical infrastructure organisation.
15. Our finding remains that Transpower's proposed cybersecurity capex is the minimum it should incur. To this end, the (updated) proposed RCP3 capex of \$9.2m should not be adjusted.
16. We have not changed our suggestion that the Commission should monitor Transpower's compliance with an internationally recognised Cybersecurity standard.

#### Assessment of new information on IST staff costs

17. Based on the new information provided by Transpower, the number of IST staff that are effectively fully operational (i.e. as opposed to the proportion whose time is capitalised to ICT projects) is reasonable. We recommend no adjustment to Transpower's proposed IST staff opex in the Commission's Final Decision.

# 1 Introduction

## 1.1 Purpose of this report

18. The purpose of this report is to provide the New Zealand Commerce Commission ('Commission') with our assessment of specified aspects of Transpower's ICT capex in its Submission<sup>4</sup> to the Commission. This assessment builds on the analysis and findings from our assessment of the relevant aspects of Transpower's RCP3 Proposal<sup>5</sup> as set out in our initial RCP3 Report<sup>6</sup>.
19. We have assessed those aspects of Transpower's Submission and related information that are directly relevant to the scope of requested work. This does not take into account all factors, or all reasonable methods, for determining a capital allowance in accordance with individual price-quality path (IPP) regulation under Part 4 of the New Zealand Commerce Act 1986 (the Act). We understand that the Commission will establish a capital expenditure allowance for Transpower based on assessments undertaken by its own staff.

## 1.2 Scope of requested work

20. The scope for our assessment of Transpower's Submission comprises the following aspects of ICT in Transpower's RCP3 Proposal:
  - lifecycle-driven capex;
  - benefits-driven capex;
  - cybersecurity capex; and

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<sup>4</sup> Transpower, *Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper*, 27 June 2019

<sup>5</sup> Transpower, *Securing Our Energy Future 2020 – 2025, RCP3 Proposal*, November 2018

<sup>6</sup> EMCa, *Transpower RCP3 Proposal - Review of Aspects of the Proposed ICT Expenditure*, May 2019

- Information Services Team (IST) staff costs.

## 1.3 Our approach

21. Our assessment underpinning this Report is experience-based (as was our initial RCP3 Report for the Commission). The steps we followed are:
  - desktop review of Transpower's Submission and other relevant information provided with the Submission;
  - review of new and clarifying information in Transpower's Interim Feedback document<sup>7</sup> and supporting documents;<sup>8</sup>
  - review of responses to information requests made following the finalisation of our initial RCP3 Report;
  - assessment and reporting indicative findings to the Commission; and
  - Report drafting and finalisation.
22. This report needs to be read in conjunction with our initial RCP3 Report.

## 1.4 Structure of this report

23. Our main findings are summarised in the executive summary of this report. In the subsequent six sections, we describe our assessment and conclusions regarding Transpower's new information in its RRP:
  - In Section 2, we provide an overview of Transpower's Submission and of its Interim Feedback;
  - In section 3, we consider feedback on our assessment of Transpower's governance and management framework
  - In Section 4, we consider and respond to the new information provided by Transpower regarding its lifecycle-driven capex;
  - In Section 5, we consider and respond to the new information provided by Transpower regarding its benefits-driven capex;
  - In Section 6, we consider and respond to the new information provided by Transpower regarding cybersecurity capex.; and
  - In Section 7, we consider and respond to the new information provided by Transpower regarding its IST staff costs.

## 1.5 Information sources

24. We have examined relevant documents provided by Transpower in support of the projects and programs in the categories of expenditure that the Commission has

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<sup>7</sup> Transpower, *Interim Feedback on EMCa review of Transpower's Proposed ICT Expenditure*, 10 June 2019

<sup>8</sup> Transpower, *ICT Capex Forecast and Benefits spreadsheet.xls*

designated for review. These documents are referenced directly where they are relevant to our findings.

25. Unless otherwise stated, the basis of all expenditure is 2017/18 dollars and expenditure figures have been sourced from Transpower's RCP3 Proposal, Submission, Interim Feedback, and supporting documentation.

## 2 Background

### 2.1 Introduction

26. This section provides a high-level overview of Transpower's Submission as it relates to the aspects of ICT expenditure that are in scope. This section also responds to Transpower's claims of errors in our initial RCP3 Report.

### 2.2 Overview of Transpower's Submission

27. In its submission Transpower rejects the full \$32.5m adjustment in the Draft Decision to its originally proposed \$146.1m expenditure. It considers that the reduction is not justified because:
- the Draft Decision is informed by EMCA's report which contains material inaccuracies and incorrect assumptions;
  - Transpower does not agree with the Commission's view (echoed by EMCA) that the level of detail provided in its RCP3 Proposal was insufficient to substantiate a capex proposal;
  - there is no basis for a portfolio level adjustment on the grounds of estimate inaccuracy;
  - its RCP3 proposal incorporated a 14% reduction from its RCP2 starting point which is commensurate with EMCA's expectation;
  - it also undertook an estimate challenge at a project level to ensure reasonable expectation of project cost;
  - the Draft Decision is inconsistent in its treatment of costs and benefits;
  - the Draft Decision does not consider the impact of reduced spending on 'not-yet-quantified' benefits.
28. Transpower provides more detailed information which we consider in sections 3-7 of this report.

## 2.3 Consideration of Transpower's claims of errors in our initial RCP3 Report

### 2.3.1 Overview

29. As noted in section 2.2, Transpower considers that our initial RCP3 Report contained material inaccuracies and incorrect assumptions. Transpower's Interim Feedback document expressed its view that if EMCa had the benefit of additional information from Transpower we would have reached a different conclusion.

### 2.3.2 Our response

30. In response to Transpower's claimed errors, we (i) corrected four minor inaccuracies,<sup>9</sup> and (ii) clarified information regarding the referenced AER consultation paper.<sup>10</sup> The changes did not affect our findings. The changes were made in the published version of our initial RCP3 Report.
31. We also note that Transpower acknowledges that the spreadsheet it provided to support its proposed benefit-driven investments contained errors...'*that would have made it difficult to reconcile the benefits listed in the submission.*' Transpower provided an updated version of the spreadsheet which we have now considered.
32. We reviewed what Transpower labelled as 'inaccuracies and incorrect assumptions' before finalising our initial RCP3 Report. We concluded that we reasonably interpreted the information provided to us by Transpower prior to receiving its Interim Feedback document. Transpower had provided new and clarifying information and expressed differences of opinion. Transpower also advised that it intended to respond in more detail to these issues in its Submission. Transpower also offered in its Interim Feedback document to meet with us to clarify our concerns. However, the process of responding to the Commission's Draft Decision provides the opportunity to clarify matters, which Transpower has now done.

### 2.3.3 Review process

33. The findings in our initial RCP3 Report were based on information provided to us by Transpower at the time of preparing that report. This included Transpower's RCP3 Proposal (and supporting material), information provided during a teleconference, and responses to ours and the Commission's information requests. We based our findings on information available to us at the time the findings were made, and which was stated in our report.

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<sup>9</sup> Three of which involved expenditure values, and one which involved incorrect ordering of a category of expenditure

<sup>10</sup> Paragraphs 21 and 22

34. Where Transpower has supplied new information following our initial RCP3 Report for the initial RCP process, we have taken this new information into account in the assessment that we document in the current report (including its Interim Feedback).
35. In comparing Transpower's claims of 'errors' against the text in specific paragraphs from our initial RP report that Transpower references, in most cases Transpower has not explained what 'error' has occurred. Rather, we observe additional information or Transpower expressing a difference of opinion. We have nevertheless taken the information and opinions that Transpower has provided into account in reviewing the findings for the current report.

## 3 Assessment of new information on ICT governance framework

### 3.1 Overview

36. In our initial RCP3 Report we considered Transpower's approach to developing its RCP3 ICT proposal. Transpower has provided new and clarifying information regarding our assessment of its governance and management framework, which we consider in this section. We consider other elements of Transpower's feedback pertaining to lifecycle-driven capex, benefits-driven capex, cybersecurity capex, and IST staff costs in sections 4-7.

### 3.2 Summary of new information from Transpower

#### 3.2.1 New information in the Interim Feedback document

37. Transpower has provided new or clarified information in its response to our assessment of its governance and management<sup>11</sup> in its Interim Feedback document, which we summarise as follows (in two groups).

##### Strategy and portfolio management

38. Transpower advised that:

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<sup>11</sup> Section 3 of our initial RCP3 Report

- it did not use its Portfolio Planning Management (PPM) tool in deriving its ICT portfolio;
- its proposed investments are aimed at maintaining the current risk profile;
- the investment mix of 33% for benefits-driven capex is not a target but a ceiling;
- an IRR hurdle of 8% represents a positive NPV ( $IRR > WACC$ ) and Transpower disagrees with EMCa that a hurdle rate of 15% is an appropriate filter for benefits-driven projects
- the impact of increasing the hurdle rate from 8% to 15% would be:
  - a reduction of \$16.5m of ICT benefits-driven capital investment;
  - an increase of \$3.8m in opex during the RCP3 period;
  - an increase of \$9.3m capex during the RCP3 period; and
  - unqualified benefits not realised will have to be considered as well as future quantifiable benefits into RCP4;
- project estimates are iteratively challenged after being estimated by the relevant delivery group;
- Transpower's project estimates are P50 by nature, there is an equal chance for the estimate to be over or under that amount, cancelling out uncertainty; and
- Transpower's originally proposed \$210.7m (\$12/13) RCP2 ICT capex was reduced by 10% in the Final Decision, not 26%, if the impact of the removal of provision for a revised Transmission Pricing Methodology (TPM) is taken into account.

### Project level justification

- EMCa was incorrect in stating that '*Transpower has not developed any business cases for RCP3*' – Transpower has developed Capability and Systems Change Initiative ('CSCI') documents for each initiative;
  - Transpower does not consider that the detail in business cases are required to substantiate a capex proposal;
  - in response to an Information Request, Transpower provided samples of CSCI documents; and
  - Transpower provided revised benefits calculation spreadsheets which addressed the errors in the spreadsheet that we reviewed as part of its RCP3 Proposal.
39. Other issues raised by Transpower in respect of our assessment of its governance and management framework provided no new or clarifying information.

## 3.3 New information in the Submission

40. In addition to the new information provided in its Interim Feedback, Transpower's submission included the following:

- underinvestment in ICT capex would constrain its ability to respond to ‘... *emerging technology trends such as Internet of Things (IoT), expanded use of analytics and machine learning and automation...*’<sup>12</sup>
41. Transpower also provided information related more directly to the four aspects of ICT expenditure with our scope, which we consider in sections 4-7.

## 3.4 Our assessment

### 3.4.1 Findings in our initial RCP3 Report

42. In our initial RCP3 Report the major concerns we expressed based on the information provided with the application of Transpower's governance and management system were:
- application of the PPM was not clear;
  - evidence of options analysis is not clear;
  - the impact of the proposed RCP3 ICT program on risk<sup>13</sup> is opaque;
  - deliverability of the ICT program is uncertain;
  - the estimate challenge has not been applied;
  - the IRR hurdle rate is low and not consistent with good electricity industry practice (GEIP); and
  - Transpower's expenditure forecasting methodology showed evidence of poor historical performance.

### 3.4.2 Revised findings

43. Transpower has provided new and clarifying information that reduces our concerns regarding:
- The application of the PPM;
  - The apparent lack of application of its estimate challenge;
  - The application of the IRR as a means of testing the economic merits of benefits-driven projects (which we discuss further in section 5); and
  - The RCP2 initial versus adjusted forecast.
44. However, the cornerstones of our concerns with Transpower's ICT expenditure forecast remain unaddressed, as discussed below.

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<sup>12</sup> Transpower, *Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper*, 27 June 2019, p.10

<sup>13</sup> With risk measured in accordance with the framework in ISO31000:2018, which is referenced in Transpower's risk management policy

### Project need and solution certainty remains low

45. As noted in our initial RCP3 Report, Transpower's advice is that the proposed RCP3 ICT portfolio is dominated by projects with:
- *Low level of certainty – either the problem or the concept solution options require more definition, or*
  - *Medium certainty – We know what we want to do but there are multiple solutions or scenarios.*<sup>14</sup>
46. The availability of the 'Capability and Systems Change Initiative' (CSCI) documents, which it did not previously advise us that it had, is an improvement on the relative paucity of information to support the \$146.1m expenditure that was provided to us as part of our review of Transpower's RCP3 Proposal. However, they do not include options or risk analyses and they do not offset the relative immaturity of Transpower's project and portfolio development.

### Lack of business cases undermine confidence in the forecast

47. Transpower claims in its Interim Feedback document<sup>15</sup> that our statement that 'Transpower has not developed any business cases for RCP3' is incorrect because it has developed CSCI documents. We are confused by this statement. Transpower had not developed any business cases for its proposed RCP3 projects and as far as we are aware, has still not done so. CSCI documents are not business cases, they are project briefs.
48. In our initial RCP3 Report the context of our request for provision of Transpower's business cases to support the proposed ICT expenditure is clear:
- 'GEIP for developing a robust expenditure forecast includes identification of a number of credible options and analysing their technical and economic merit against the counterfactual ('business-as-usual').'*<sup>16</sup>
49. The absence of business cases undermined our confidence in the forecast expenditure and continues to do so.
50. Transpower advised that it did not have any business cases approved or otherwise for its RCP3 ICT portfolio despite \$31.1m (\$17/18) worth of projects in 2020/21 and a further \$28.7m worth of ICT projects 'planned' in the following year.
51. Transpower's inference in its Interim Feedback and Submission is that we expected it to have developed business cases for all 266 of its proposed RCP3 ICT projects by 2018/19. This is not the case. However, we expected to see some evidence of the application of its governance and management process through at least some business cases, even in preliminary form. Logical candidates would be the higher cost, bespoke (non-recurrent) projects commencing in the first year of RCP3.
52. By way of contrast with Transpower's position, we recently reviewed ICT expenditure for three Australian DNSPs on behalf of the Australian Energy Regulator for which the businesses provided detailed (preliminary) business cases and supporting evidence of

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<sup>14</sup> Transpower, *AM004 ICT Planning Framework*, page 18

<sup>15</sup> Transpower *Interim Feedback on EMCa review of Transpower's Proposed ICT Expenditure*, 10 June 2019, referring to paragraph 73 of our initial RCP3 Report

<sup>16</sup> EMCa, *Transpower RCP3 Proposal - Review of Aspects of the Proposed ICT Expenditure*, May 2019, p.13

assumptions (including benefits) for every project for their respective 2020-25 RCPs. We consider this to demonstrate application of good electricity industry practice.

53. Whilst we did not describe explicitly in our initial RCP3 Report what we consider the features of a good business case include, for the avoidance of confusion, we offer a summary, as follows:
- Need/driver for expenditure – cognisant of the drivers (i.e. safety, reliability, compliance, serviceability) including appropriate application of the corporate risk framework. Links to previous projects (e.g. where it is a continuation of similar work) is explicit;
  - Options analysis – comprehensive and economically robust, including identification of all options considered, cost-benefit analyses and an explicit link(s) between the proposed investment to the overarching. Any tangible benefits claimed (e.g. reduced opex) must be quantified and separately justified (and taken into account in the opex expenditure forecast);
  - Cost and benefits estimation – demonstrating that the cost is a reasonable estimate of the efficient cost and including full disclosure of the basis for the cost and benefits estimates;
  - Procurement and delivery plan – demonstrating that the work can be delivered at the nominated efficient cost; and
  - Full assessment of risks to efficient and effective project delivery – including delivery capacity, and approvals risk.

### Business case preparation costs

54. We note in the CSCI documents that Transpower estimates its Business Case Preparation costs. We assume the intent is for these to be capitalised and will therefore be added to the project cost, although we have not seen an explanation for Transpower's policy in this regard.

### Summary

55. The combination of a high number of proposed projects with low or medium certainty and the absence of any business cases has not been materially offset by the availability of CSCI documents and the other clarifying and new information provided by Transpower.
56. The relatively immature state of development of Transpower's forecast projects means that we consider it reasonable to assume that as projects move further through the project lifecycle, it will find some opportunities to:
- defer work; and/or
  - undertake cheaper options than currently assumed and costed; and/or
  - reduce the cost estimates.

## 4 Assessment of new information on lifecycle-driven ICT capex

### 4.1 Introduction

57. In this section we consider new information provided by Transpower, including that discussed in section 3, on our assessment of its proposed lifecycle-driven capex.

### 4.2 Summary of Draft Decision

58. The Commission's Draft Decision was to reduce Transpower's proposed lifecycle-driven ICT capex by \$14.2m (-15%), from \$94.8m to \$80.6m. The Commission largely relied upon EMCa's advice in making its decision.

### 4.3 Summary of new information from Transpower

#### 4.3.1 New information in Transpower's Interim Feedback

59. Transpower has provided new or clarifying information in its Interim Feedback document, which we summarise as follows:

- Hyper converged infrastructure was recently rejected as a viable alternative to Converged Infrastructure to host critical applications after a lengthy market exercise;
- Its estimates are targeted at P50; and

- During RCP1 and RCP2 life-cycle projects have been delivered in 'both of these portfolios and therefore we are confident in estimations given historical costs'.<sup>17</sup>

## 4.3.2 New information in Transpower's Submission

60. Transpower has not changed its proposed lifecycle driven capex for RCP3. It advises that the \$14.2m reduction in the Draft Decision should not apply because:<sup>18</sup>
- the reduced expenditure allowance is insufficient to allow it to deliver key business-enabling IST infrastructure without increasing opex costs;
  - its planning process is in line with good industry practice.
61. Transpower further submits that:
- its RCP3 estimation for capex expenditure is appropriate;
  - it has made portfolio reductions in line with expectations;
  - reduced lifecycle capex will increase opex; and
  - reduced lifecycle capex will be sub-prioritised based on risk and cost.
62. In the table below we summarise Transpower's analysis of the impact of various levels of ICT lifecycle-driven capex.

Table 1: Transpower's assessment of impact of lifecycle capex reductions

Scenario	RCP3 capex impact (\$m)	RCP3 opex impact (\$m)	RCP3	
			operational risk impact	Impact
2.6% reduction	-2.5	2.75	Low	Opex impact but risk tolerable
7.6% reduction	-7.2	7.92	Medium	Opex impact and increased risk
Draft decision	-14.2	15.62	High	Opex impact and unacceptable risk

Source: Transpower, Submission pp. 13-14, redrawn by EMCa

## 4.4 Our assessment

### 4.4.1 Findings in our initial RCP3 Report

63. In our initial RCP3 Report our major concerns with the lifecycle-driven projects mirrored the concerns we raised in our assessment of Transpower's governance and management framework:
- The projects were at a relatively immature level of development, with 85% (145) of the 170 lifecycle-driven projects rated by Transpower as having scopes of work that were of low-medium uncertainty;
  - Lack of transparency regarding the inherent risks being addressed;
  - no evidence of options analysis; and

<sup>17</sup> Transpower *Interim Feedback on EMCa review of Transpower's Proposed ICT Expenditure*, 10 June 2019, referring to paragraph 124 of our initial RCP3 Report

<sup>18</sup> Transpower, *Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper*, 27 June 2019, p. 11

- lack of confidence in the challenge to cost estimates.

## 4.4.2 Revised findings

### CSCI documents increase confidence

64. As discussed in section 3, Transpower has provided (at our request) a sample of CSCI documents for lifecycle driven projects which we have reviewed. The documents help us understand the proposed solution better. Whilst drawn from a relatively small sample, the needs analysis sections in each CSCI and the discussion of key assumptions provides us with more understanding of the risks that are being addressed.

### Project development remains relatively immature

65. However, consistent with Transpower's 'project need and certainty ratings', we did not observe in the CSCIs meaningful discussion (if any) about possible alternatives. There is no options analysis nor is there any risk analysis in these documents.

### Transpower has provided limited new evidence of risk

66. As indicated above, whilst Transpower has provided the requested sample of CSCI documents for us to review, the CSCI documents do not include risk analysis. Transpower has made qualitative statements about risk (see the table above) but it has not provided any compelling qualitative analysis to support its assessment about 'unacceptable risk'.

### Transpower has not provided sufficiently compelling evidence to support forecasting accuracy claims

67. Transpower claims that its estimates are at P50 level, however approximately 60% of its Lifecycle projects have a needs and scenario certainty rating of P2 (*'we know what we want to do but there are multiple solutions or scenarios'*) and 25% have a P3 rating (*'Either the problem or concept solutions options require more definition'*). In our view, Transpower's claim of P50 accuracy for projects for which there is a high degree of uncertainty about the need or the solution, is not a compelling case for changing our view about the prudence or efficiency of the proposed expenditure.
68. For the reasons expressed in sections 3.4.2, we therefore do not have confidence in Transpower's summary in the table above that any reduction in capex expenditure will lead to the impacts on RCP3 opex and risk.

## 4.5 Implications for proposed expenditure allowance

69. Transpower's new and clarifying information has mitigated but not eliminated our concerns regarding the likely prudence and efficiency of its proposed lifecycle-driven work. However, we remain of the view that it is likely that during the course of the development of business cases for the work the bias will be towards Transpower identifying opportunities to:

- defer work; and/or
  - implement cheaper options; and/or
  - reduce the assumed cost estimate.
70. Taking into account the new information provided by Transpower, and our residual concerns, we now consider that 90% of the proposed lifecycle-driven ICT capex is likely to be prudent and efficient. We therefore recommend that the Commission include a \$9.5m ICT capex reduction from this category its Final Determination.

## 5 Assessment of new information on benefits-driven capex

### 5.1 Introduction

71. In this section we consider new information provided by Transpower, including that discussed in section 3, on our assessment of its proposed lifecycle-driven capex.

### 5.2 Summary of Draft Decision

72. The Commission's Draft Decision was to reduce Transpower's proposed benefits-driven ICT capex by \$18.4m (-50%), from \$36.7m. The Commission largely relied upon EMCa's advice in making its decision.

### 5.3 Summary of new information from Transpower

#### 5.3.1 New information in Transpower's Interim Feedback

73. Transpower has provided new or clarifying information in its Interim Feedback document, which we summarise as follows:

- A corrected ICT capex forecast and benefits spreadsheet;
- A replacement table summarising the distribution of IRR results, shown below, which is based on the corrected spreadsheet and is intended to correct Figure 15 in our initial RCP3 Report;
- At our request, a sample of benefits-driven CSCI documents;

- The impact of reductions of ICT capex on opex and capex in the RCP3 and RCP4 periods (we have not reproduced this information here because Transpower provided similar information in its Submission, which we include in the next sub-section).

Table 2: Corrected IRR results

IRR	Sum of RCP3 cost (\$m)	Sum of sum opex benefit RCP3 (\$m)	Sum of sum capex benefit RCP3 (\$m)	Sum of cost deferral (\$m)
< 8% IRR	1.1	0	0	1.5
8 ≤ IRR ≤ 15%	15.4	3.8	2.8	5
> 15% IRR	20.2	7.7	3.5	65
<b>Total</b>	<b>36.7</b>	<b>11.5</b>	<b>6.3</b>	<b>71.5</b>

Source: Transpower Interim Feedback on EMCa review of Transpower's Proposed ICT Expenditure, 10 June 2019, referring to paragraph 164 of our initial RCP3 Report; redrawn by EMCa

### 5.3.2 New information in Transpower's Submission

74. Transpower has not changed its proposed benefits-driven capex for RCP3. It advises that the \$18.4m reduction in the Draft Decision should not apply because:<sup>19</sup>
- Benefits-driven ICT projects are fundamental to the delivery of grid efficiencies and its ability to take advantage of new technologies; and
  - The reduced benefits-driven expenditure allowance is insufficient to allow it to deliver on key ICT investments to support grid expenditure; treatment of costs and benefits should be consistent.
75. Transpower provided two tables relating to benefits-driven capex, one of which repeats information in its RCP3 Proposal and which we referred to in our initial RCP3 Report. It also presents a table summarising the impact (quantified and unquantified) of three benefits-driven ICT capex reduction scenarios, an EMCa-redrawn version of which is presented below.

Table 3: Transpower's assessment of impact of lifecycle capex reductions

REDUCTION SCENARIOS				QUANTIFIED IMPACT			
% reduction	# projects	RCP3 ICT Capex reduced		RCP3 opex	RCP3 capex	RCP4 opex	RCP4 capex
A	0%	0.0	0.0	0.0	0.0	0.0	0.0
B	5%	5.0	-1.7	0.5	1.5	0.1	0.0
C	20%	14.0	-7.2	1.9	1.6	3.8	0.6
D	50%	34.0	-18.0	6.3	5.4	8.1	2.9

Source: Transpower, Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper, 27 June 2019, p. 14; redrawn by EMCa

76. We removed the qualitative impact statements for the table provided by Transpower, but include them as follows:
- Scenario A: None. The RCP Proposal.

<sup>19</sup> Transpower, Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper, 27 June 2019, p. 14

- Scenario B: Unable to achieve the forecasted corporate efficiencies
- Scenario C: Unable to achieve the forecasted corporate, project delivery and maintenance efficiencies
- Scenario D: Unable to achieve the forecasted corporate, project delivery and maintenance efficiencies. Cannot continue evolving our asset management practice and meet our regulatory requirements and expectations.

## 5.4 Our assessment

### 5.4.1 Findings in our initial RCP3 Report

77. In our initial RCP3 Report our major concerns with the benefits-driven projects mirrored the concerns we raised in our assessment of Transpower's governance and management framework, but which were exacerbated by errors in Transpower's benefits spreadsheet:
- Information to support the claimed benefits was not compelling;
  - Certainty of benefits is low; and
  - 8% hurdle rate does not capture uncertainty.

### 5.4.2 Revised findings

#### Updated benefits spreadsheet and CSCI documents improves confidence

78. The updated spreadsheet and the sample of CSCI documents that we reviewed combine to give us more confidence in Transpower's assertions regarding the link between expenditure and benefits. It also illustrates that far more of the projects (in aggregate dollar terms) have IRRs in excess of 15% than we inferred from its original spreadsheet.
79. As in our initial RCP Report, we observe that deferral of a \$60m refresh of Transpower's WAN by spending \$8m on six 're-arrangement' projects generates the majority of the \$71.5m cost deferral benefit.

#### Project development remains relatively immature

80. However, consistent with Transpower's 'project need and certainty ratings', we observe in the CSCI documents discussion about possible alternatives to the costed options. There is no options analysis nor is there any risk analysis in these documents, and the detail behind the benefits is not compelling. It requires a 'leap of faith' to believe that the proposed capex will, in all 62 projects will be realised or that the proposed costs will not be exceeded.

#### Transpower has provided limited new evidence of risk

81. As indicated above, whilst Transpower has provided the requested sample of CSCI documents for us to review, the CSCI documents do not include risk analysis. Transpower has made qualitative statements about risk (see the table above) but it has

not provided any compelling quantitative analysis to support its assessment about 'unacceptable risk'.

### Transpower has not provided evidence to support its forecasting accuracy

82. Transpower claims that its estimates are at P50 level, however approximately 25% of its Lifecycle projects have a needs and scenario certainty rating of P2 (*'we know what we want to do but there are multiple solutions or scenarios'*) and 60% have a P3 rating (*'Either the problem or concept solutions options require more definition'*).<sup>20</sup> In our view, Transpower's claim of P50 accuracy for projects for which there is a high degree of uncertainty about the need or the solution, is not a compelling case for changing our view about the prudence or efficiency of the proposed expenditure.
83. For the reasons expressed in sections 3.4.2, we therefore do not have confidence in Transpower's summary in the table above that any reduction in expenditure will lead to the quantified impacts on RCP3 capex and opex.

### The majority of the benefits accrue from two categories

84. As shown in Table 7 in our initial RCP3 Report, the majority of the benefits identified by Transpower are derived from two categories: IT telecoms, network and security services, and Transmission systems in aggregate representing only 66% of the proposed capex. The assessment in Table 3 above does not appear to align with this analysis and this suggests to us that better means of prioritising expenditure may be available.

## 5.5 Implications for proposed expenditure allowance

85. Transpower's new and clarifying information has mitigated but not eliminated our concerns regarding the likely prudence and efficiency of its proposed benefits-driven ICT work. However, we remain of the view that it is likely that during the course of the development of business cases for the work the bias will be towards Transpower identifying opportunities to:
- Prioritise its benefits-driven expenditure more prudently; and/or
  - implement cheaper options; and/or
  - reduce the assumed cost estimate.
86. We also remain of the view in the absence of compelling information to the contrary, and consistent with our experience, we expect benefits to be on balance less than claimed.
87. On this basis we now consider that 75% of the proposed lifecycle-driven ICT capex is likely to be prudent and efficient. We therefore recommend that the Commission include a \$9.2m ICT capex reduction from this category its Final Determination.

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<sup>20</sup> EMCa, *Transpower RCP3 Proposal - Review of Aspects of the Proposed ICT Expenditure*, May 2019, p.32



## 6 Assessment of new information on cybersecurity capex

### 6.1 Introduction

88. In this section we consider new information provided by Transpower, including that discussed in section 3, on our assessment of its proposed cybersecurity capex.

### 6.2 Summary of Draft Decision

89. The Commission's Draft Decision was to not adjust Transpower's proposed Cybersecurity capex. It did however adopt a recommendation from EMCa to require Transpower to adopt a recognised international cyber security framework, such as the Electricity Subsector Cyber Security Capability Maturity Model (ES-C2M2) standard and use independent assessment against it as an input to its expenditure prioritisation and overall approach.

### 6.3 Summary of new information from Transpower

#### 6.3.1 New information from Transpower's Interim Feedback

90. Transpower has provided new or clarifying information in its Interim Feedback document, which we summarise as follows:

- Transpower has adopted the Voluntary Cyber Security Standards for Industrial Control Systems (VCS-ICS) v1.0 which are based on NERC CIP;
- Transpower's cybersecurity (Security Services deliver area) proposed capex is \$9.2m, not the \$8.3m estimated by EMCa;
- It is not aware of any critical infrastructure companies in New Zealand or Australia using the ES-C2M2 standard or assessing themselves against it; and
- The proposed investment will be impacted by the recommended reduction in life-cycle allowance.

## 6.3.2 New information in Transpower's Submission

91. Transpower has provided new or clarifying information in its Submission document, which we summarise as follows:
- *'We assess ourselves on a regular basis and continuously work with New Zealand government agencies and other industry participants to adapt and refine our approach as required.'*<sup>21</sup>

## 6.4 Our assessment

### 6.4.1 Findings in our initial RCP3 Report

92. In our initial RCP3 Report we recommended no adjustment to the proposed cybersecurity capex, which we estimated to be \$8.3m on the basis of the information available to us at the time. We also recommended that Transpower adopts a recognised international cyber security framework, such as the ES-C2M2 standards and use assessment against it as an input to its expenditure prioritisation and approach.

### 6.4.2 Revised findings

#### Proposed capex is higher

93. Transpower has advised that its actual proposed RCP3 cybersecurity capex is \$9.2m, which is \$0.9m higher than we assumed. We accept this advice.

#### New information shows alignment to international cybersecurity standards

94. Additional information provided by Transpower does show a shift in their Cyber security investments to adopt security standards commensurate with the needs of a critical infrastructure organisation. The recent cyber events and cyber threats to overseas utilities have solicited a step change in their security posture focused on threats to Operational Technology.

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<sup>21</sup> Transpower, *Submission on Transpower's individual price-quality path from 1 April 2020: draft decisions and reasons paper*, 27 June 2019, p. 18

### No evidence is provided of assessment against the VCS-ICS

95. We note that Transpower states that it has assessed its cybersecurity preparedness against this standard, but it has provided no evidence to this effect in its Submission.

### There is no evidence of impact to cybersecurity of lifecycle-driven capex

96. Transpower has not provided the details to support its claim. Regardless, Transpower is in the best position as to how to best meet its cybersecurity obligations.

### C2M2 standard is being adopted as part of the AESCS Framework

97. EMCa is aware of at least four Australian Network Service Providers that have adopted the ES-C2M2 standard and that have assessed their cybersecurity maturity against it.
98. The Australian Energy Market Operator (AEMO) is establishing a tailored cyber security framework, the Australian Energy Sector Cyber Security Framework (AESCSF), and supporting tools to set the foundation for the future of energy cyber security in Australia. ES-C2M2\* was used as the foundation of the AESCSF, with alignment to the National Institute of Standards and Technology Cyber Security Framework (NIST CSF).<sup>22</sup>
99. Our key point in suggesting Transpower would benefit from alignment with such an international standard is the value of the assessment process for identifying gaps and priorities.

## 6.5 Implications for proposed expenditure allowance

100. Our initial finding was that Transpower's proposed cybersecurity capex is the minimum it should incur, and we provided feedback on how it could be more progressive in assessing its strategies and expenditure profile. The updated proposed RCP3 capex of \$9.2m does not change our view.
101. We also suggested that the Commission should monitor Transpower's compliance with internationally recognised Cybersecurity standards. We have not changed our view on this recommendation.

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<sup>22</sup> AEMO, *Australian Energy Sector Cyber Security Framework – Education Workshop*, October 2018, slide 6

# 7 Assessment of new information on IST staff costs

## 7.1 Introduction

103. In this section we consider new information provided by Transpower, including that discussed in section 3, on our assessment of its proposed IST staff costs.

## 7.2 Summary of Draft Decision

104. The Commission's Draft Decision was to reduce Transpower's proposed IST staff costs by \$5.9m. The Commission largely relied upon EMCa's advice in making its decision.

## 7.3 Summary of new information from Transpower

### 7.3.1 New information in Transpower's Interim Feedback

105. In its Interim Feedback document, Transpower provided revised information concerning:

- its cost allocation methodology (capitalising opex) results in 43% of employee time is invested in defining and delivering projects and not charged to opex;
- the roles and functions of its various groups; and
- an updated table to the one it provided in response to Information Request RFI040 and presented in our report at table 10.

## 7.3.2 New information in Transpower's Submission

106. No new information was provided in Transpower's Submission regarding ICT staff costs.

## 7.4 Our assessment

### Updated IST staff numbers

107. The table below shows the updated IST staff numbers compared to the original information provided to us by Transpower as part of our initial RCP3 assessment.
108. From the additional information, we also accept that the role of the Digital Technology Services department of IST is not a Digital Enablement team and its functions extends to general operational and device support.

### Capitalisation of IST staff costs to capex

109. The additional information provided indicates that 43% of the time of the 151.4 IST FTEs is capitalised to projects. As a result of this we can re-set the FTE staff numbers across the six IST departments, which is represented in the Table below.

Table 4: Original and updated IST staff numbers

TEAM	HEADCOUNT	
	Original numbers	Updated numbers
GM IST	4.0	4.0
Digital Technology Services	23.0	23.0
Network and security services	32.0	32.0
Enterprise services	40.9	40.9
Critical services	43.5	27.5
Strategy and architecture	8.0	8.0
	<b>151.4</b>	<b>135.4</b>

Sources: [1] Transpower response to RFI040 - IST in business support including cybersecurity; [2] Transpower Interim Feedback on EMCa review of Transpower's Proposed ICT Expenditure, 10 June 2019, referring to paragraph 195 of our initial RCP3 Report

110. Based on the information provided, a total of 77.2 IST staff are notionally full-time supporting IT systems on an operational basis (i.e. not booking any of their time to capex). On this basis the IST staff levels do not appear to be excessive.
111. We noted in the section 3.4 of this report that each CSCI document records a 'Invex. Cost' that appears to be the cost for Business Case preparation. We assume that this cost includes capitalised IST staff costs, and that based on extrapolation of information in the sample of 20 CSCI documents we received, the aggregate costs would be many millions of dollars. However, we have not assessed whether these costs are reasonable.

## 7.5 Implications for proposed expenditure allowance

112. We recommend that the Commission does not adjust opex attributable to IST staff levels.