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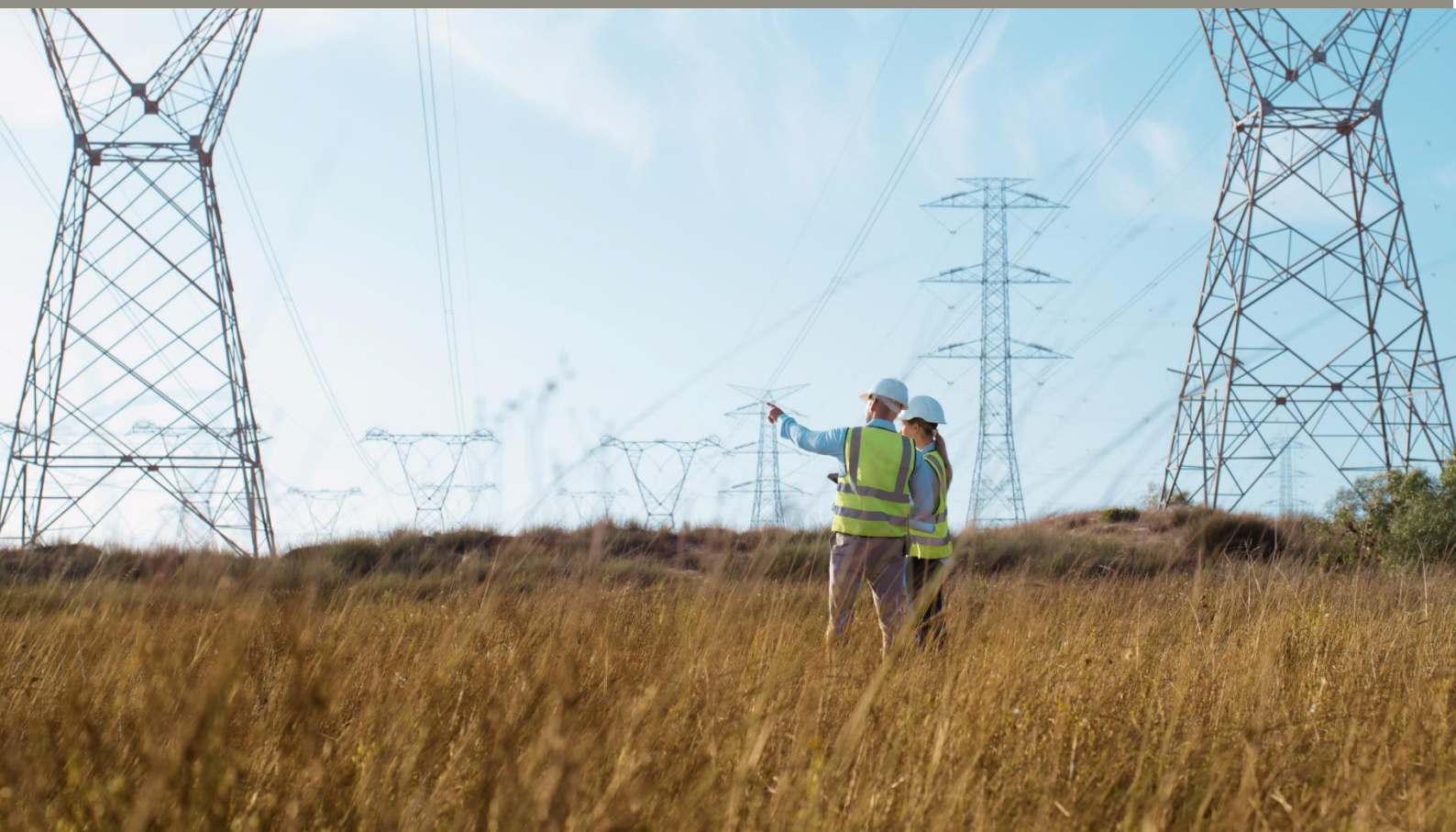
COMMERCE COMMISSION NEW ZEALAND
Te Komihana Tauhokohoko

Transpower's Redclyffe major capex project proposal

Final decision - Attachments A to D

28 April 2026



Associated documents

Publication date	Reference	Title
31 January 2012	[2012] NZCC 2	Transpower Capital Expenditure Input Methodology Determination ('principal determination')
13 December 2023	[2023] NZCC 39	Transpower Capital Expenditure Input Methodology (IM Review 2023) Amendment Determination 2023
29 August 2024	ISBN 978-1-991287-75-5	Transpower's individual price-quality path for the regulatory control period commencing 1 April 2025
11 December 2024	[2024] NZCC 40	Transpower Capital Expenditure Input Methodology (treatment of insurance entitlements) Amendment Determination 2024
28 April 2026	[2026] NZCC 09	Transpower Capital Expenditure Input Methodology (Major Capex Incentive Formula) Amendment Determination 2026

Contents

Attachment A Our decision-making framework

Purpose of this attachment

A1 This chapter provides an overview of the decision-making framework we apply in reaching our decisions on Transpower's major capex project (MCP) proposal.

The Capex Input Methodology

A2 Regulation under Part 4 of the Act (Part 4) seeks to promote the long-term benefit of consumers of regulated services.[1] These regulated services include electricity transmission services provided by Transpower.

A3 The input methodologies (IMs) under Part 4 are the upfront rules, processes, and requirements of Part 4 regulation.[2,3] Their purpose is to promote certainty for suppliers and consumers in relation to the rules, requirements and processes applying to regulated services under Part 4.[4] The IMs apply to electricity transmission services provided by Transpower.

A4 One of the IMs that applies to Transpower is the Capex IM.[5] The two major functions of the Capex IM are to provide for the scrutiny of Transpower's proposed and actual investments, and to incentivise Transpower to deliver those investments efficiently

MCPs

A5 Under clause 3.3.2 of the Capex IM, Transpower may only recover its costs relating to a MCP if we have first approved it.

A6 Transpower submits an MCP proposal to us.[6] If we do not reject the MCP proposal,[7] we must either:[8]

A6.1 approve the project; or

A6.2 decline the project (and in the case of a major capex project (staged), the approval or declinature is of one or more staging projects).[9]

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1 Commerce Act, s 52A.
2 Transpower Input Methodologies Determination [2012] NZCC 17 (Transpower IM).
3 Transpower Capital Expenditure Input Methodology ('principal determination') (Capex IM).
4 Commerce Act, s 52R.
5 Along with the Capex IM, Transpower is subject to the Transpower IM which set out IMs for: cost allocation, asset valuation, treatment of taxation, cost of capital, specification of price, the incremental rolling incentive scheme, and reconsideration of the price-quality path.
6 Capex IM, clause 3.3.3(1).
7 Capex IM, clause 3.3.4 states that we may reject an MCP if it does not comply with the requirements in clause 7.4.1, or if Transpower has not complied with the requirements specified in clause 3.3.1 of the Capex IM.
8 Capex IM, clauses 3.3.5(1)(a) and (b).
9 We will refer to "projects" to cover both staging projects and non-staged major capex projects.

A7 If we approve an MCP, we must also determine the major capex allowance (MCA),[10] major capex incentive rate,[11] and any exempt major capex.[12]

A8 Before we can approve or decline an MCP, we must:

A8.1 publish the MCP;[13]

A8.2 evaluate the MCP in accordance with the evaluation criteria in the Capex IM, including any further information we have received in the evaluation process;[14] and

A8.3 consult in the following ways:[15]

A8.3.1 make and publish a draft decision or decisions on the MCP;

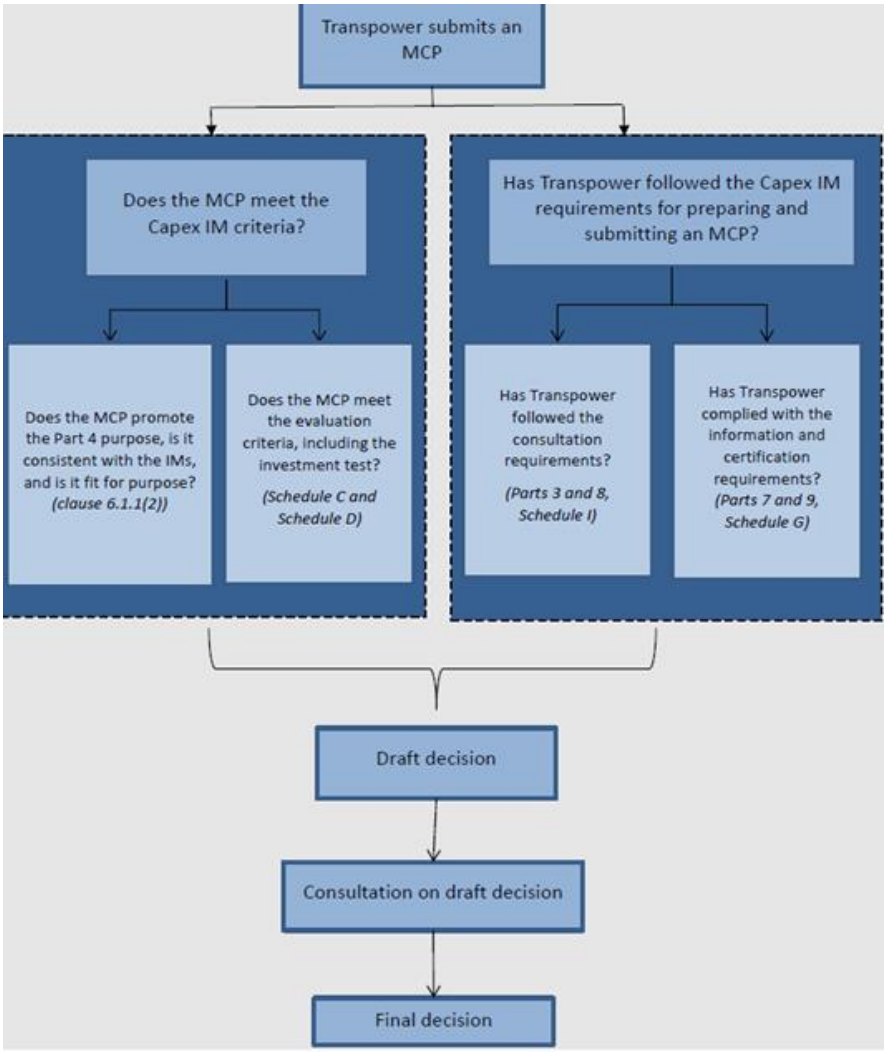
A8.3.2 seek the written views of interested persons on anything published; and

A8.3.3 seek the written views of interested persons on others' submissions.

A9 Figure A.1 below shows, at a high level, how our evaluation and decision fit into the Capex IM's regulatory approval process for MCPs.

[10] Capex IM, clause 3.3.5(7)(a).
[11] Capex IM, clause 3.3.5(7)(b).
[12] Capex IM, clause 3.3.5(7)(c).
[13] Capex IM, clause 8.1.1(1)(a).
[14] Capex IM, clause 3.3.5(5)(b)(i)-(ii).
[15] Capex IM, clauses 3.3.5(5)(a) and 8.1.1(1)(a)(ii) to (iv).

Figure A1 Capex IM regulatory approval process for MCPs



Capex IM evaluation criteria

A10 This attachment sets out the evaluation criteria against which we evaluate an MCP under the Capex IM.

A11 The Capex IM requires us to evaluate an MCP against three sets of criteria:

A11.1 the general criteria for evaluating all capex proposals in Part 6;

A11.2 the specific criteria for MCPs in Schedule C; and

A11.3 the investment test in Schedule D, Division 1.

The purpose of Part 4 of the Act

A12 The purpose of Part 4 of the Act is to promote the long-term benefit of consumers in markets where there is little or no competition, and little or no likelihood of a substantial increase in competition.[16] 'Competition' means 'workable or effective competition'.[17]

A13 To promote workable or effective competition that is in the long-term benefit of consumers, we must promote those outcomes produced in workably competitive markets which are specified in s 52A(1). Section 52A(1) of the Act specifies the following four outcomes that we must promote so that regulated suppliers, including Transpower:

A13.1 have incentives to innovate and invest;

A13.2 have incentives to improve efficiency and provide services at a quality that reflects consumer demands;

A13.3 share the benefits of efficiency gains with consumers, including through lower prices; and

A13.4 are limited in their ability to extract excessive profits.

General criteria for evaluating MCPs

A14 The general criteria for evaluating all capex proposals under the Capex IM are:

A14.1 whether what is proposed is consistent with the Capex IM and, where relevant, the Transpower IMs;[18]

A14.2 the extent to which what is proposed will promote the purpose of Part 4 of the Act;[19] and

A14.3 whether the data, analysis, and assumptions underpinning what is proposed are fit for the purpose of the Commission exercising its powers under Part 4 of the Act, including consideration as to the accuracy and reliability of data and the reasonableness of assumptions and other matters of judgement.[20]

Assessing whether what is proposed is consistent with the input methodologies

A15 The first general criterion is that an MCP must be consistent with the Capex IM and, where relevant, the Transpower IMs. We will discuss the Transpower IMs first.

A16 The Transpower IMs provide for recoverable costs associated with MCPs and the revenue impact of such projects we have approved.[21,22]

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16 Commerce Act 1986, s 52A(1).
17 Commerce Act 1986, s 3(1).
18 Capex IM, clause 6.1.1(2)(a).
19 Capex IM, clause 6.1.1(2)(b).
20 Capex IM, clause 6.1.1(2)(c).
21 Transpower IM, clause 3.1.3(1)(d).
22 Transpower IM, clause 3.7.4(4).

A17 The Capex IM sets out the requirements that Transpower must follow when developing and proposing a staged major capex project, and that we must follow when evaluating an MCP for such a project.[23]

A18 When assessing whether an MCP is consistent with the Capex IM, we evaluate the proposal's compliance with:

A18.1 the process requirements;[24]

A18.2 Transpower's consultation requirements;[25]

A18.3 the information requirements;[26] and

A18.4 the certification requirements.[27]

The process requirements

A19 The Capex IM requires Transpower to notify us of its intention to plan a major capex project or a staged major capex project.[28]

A20 Transpower must agree the following with us:

A20.1 a consultation programme;

A20.2 an approach to considering non-transmission solutions (NTSs);

A20.3 an application date; and

A20.4 an approval timeframe.[29]

A21 Together with Transpower, we must publish the matters agreed on above and regularly review and update these matters.[30] We may (after considering Transpower's views) amend any of these matters to ensure they remain appropriate and reasonable.[31]

Transpower's consultation requirements

A22 The requirements for Transpower's consultation programme and its approach to considering NTSs are set out in clause 8.1.3 of the Capex IM.

A23 Transpower must consult with interested parties on the following matters:[32]

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23 Capex IM, Part 3.
24 Capex IM, clause 3.3.3.
25 Capex IM, clause 8.1.3.
26 Capex IM, Schedule G.
27 Capex IM, clause 9.2.1.
28 Capex IM, clause 3.3.1(1) and (2).
29 Capex IM, clause 3.3.1(3).
30 Capex IM, clause 3.3.1(6).
31 Capex IM, clause 3.3.1(7).
32 Capex IM, clause i1(1).

A23.1 the investment need;

A23.2 each demand and generation scenario variation;

A23.3 key assumptions;

A23.4 long-list of options, including any potential NTSs (ie, the long-list consultation); and

A23.5 short-list of options including the results of the investment test (ie, the short-list consultation).

The information requirements in a major capex proposal

A24 In the MCP Transpower must provide to us the following:

A24.1 information on the investment need;[33]

A24.2 information on the relevant demand and generation scenarios;[34]

A24.3 information relating to each investment option;[35]

A24.4 information relating to proposed investment;[36]

A24.5 MCP outputs;[37]

A24.6 information on consultation;[38]

A24.7 information on NTSs;[39] and

A24.8 any additional supporting material Transpower reasonably considers is relevant to our decision on the MCP.[40]

A25 The Capex IM also requires that:[41]

A25.1 the number of investment options in an MCP is appropriate, given the magnitude of the estimated expenditure and the complexity of the investment need associated with the proposed investment; and

A25.2 the specificity of information, and the rigour and comprehensiveness of the analysis for each investment option described in an MCP, must be commensurate with the estimated expenditure and complexity of that option.

[33] Capex IM, clause G2.
[34] Capex IM, clause G3.
[35] Capex IM, clause G4.
[36] Capex IM, clause G5.
[37] Capex IM, clause G6.
[38] Capex IM, clause G7.
[39] Capex IM, clause G8.
[40] Capex IM, clause G9.
[41] Capex IM, clause 7.4.1(2) and (3).

Certification requirements for MCPs

A26 Transpower's chief executive officer (CEO) must certify in respect of an MCP that:[42]

A26.1 the information provided by Transpower under Schedule G of the Capex IM was derived from, and accurately represents in all material respects, Transpower's operations;

A26.2 the proposed investment to which the information under Schedule G relates, was approved in accordance with the applicable requirements of Transpower's director and management approval policies; and

A26.3 the MCP complies, in all material respects, with the information requirements set out in Schedule G.

A27 Our assessment of Transpower's compliance with the general criteria is set out in Attachment B.

Specific criteria for evaluating MCPs

A28 The specific criteria for evaluating an MCP are set out in Schedule C of the Capex IM, and are as follows:

A28.1 we must evaluate whether the proposed investment satisfies the investment test.[43]

A28.2 we must have regard to at least one of the following factors:

A28.2.1 whether the investment and investment options reflect good electricity industry practice (GEIP), are technically feasible, can be implemented in terms of all the application statutory planning and regulatory requirements, and can be integrated in the network and market operations;[44]

A28.2.2 whether the estimated time for construction, commissioning date, and completion date are reasonable;[45]

A28.2.3 whether key assumptions around outage planning are reasonable;[46]

A28.2.4 the extent that Transpower has had regard to views of interested parties in consultations;[47] and

A28.2.5 the impact of sensitivity analysis on the electricity market benefit of the proposed investment and investment options.[48]

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42 Capex IM, clause 9.2.1.
43 Capex IM, clause C1(1).
44 Capex IM, clause C2(a).
45 Capex IM, clause C2(b).
46 Capex IM, clause C2(c).
47 Capex IM, clause C2(d).
48 Capex IM, clause C2(e).

A28.3 we must also evaluate Transpower's proposed:

A28.3.1 MCA;[49]

A28.3.2 MCP outputs;[50]

A28.3.3 approval expiry date;[51]

A28.3.4 major capex incentive rate;[52]

A28.3.5 exempt major capex;[53] and

A28.3.6 commissioning date assumptions.[54]

A29 The Capex IM lists evaluation techniques and approaches we may use in the specific evaluation but enables us to use any other technique of approach we consider appropriate in the circumstances.[55] We can also consider any additional information that we judge is relevant.[56]

A30 We discuss our assessment of the MCP against specific criteria in Attachment C, and our evaluation of the MCP under the investment test in Attachment D.

Our decision on an MCP

A31 After evaluating an MCP, we can decide either to:

A31.1 approve the MCP proposal as proposed by Transpower;[57] or

A31.2 decline the MCP proposal.[58]

[49] Capex IM, clause C1(3)(a).
[50] Capex IM, clause C1(3)(d).
[51] Capex IM, clause C1(3)(e).
[52] Capex IM, clause C1(3)(f).
[53] Capex IM, clause C1(3)(g).
[54] Capex IM, clause C1(3)(h).
[55] Capex IM, clause C7.
[56] Capex IM, clause C7(f).
[57] Capex IM, clause 3.3.5(1)(a).
[58] Capex IM, clause 3.3.5(1)(b).

Attachment B Our evaluation of the proposal against the general criteria

Purpose of this attachment

B1 This attachment sets out our evaluation of:

B1.1 the Redclyffe 220kV switchyard resilience (RDF) major capex project (MCP) proposal against the general criteria for capex proposals set out in Part 6 of the Capex Input Methodology (Capex IM); and

B1.2 Transpower's consultation against the requirements of the Capex IM.

B2 All dollar values in this paper are expressed in 2025 values, unless expressed otherwise.

B3 All project cost estimates and allowances are 50th percentile (P50) values unless expressed otherwise.[59]

The general criteria in Part 6 of the Capex IM

B4 The general evaluation criteria set out in Part 6 of the Capex IM are:[60]

B4.1 whether what is proposed is consistent with the Capex IM and, where relevant, the Transpower IMs;

B4.2 the extent to which what is proposed will promote the purpose of Part 4 of the Act; and

B4.3 whether the data, analysis, and assumptions underpinning what is proposed are fit for the purpose of exercising our powers under Part 4 of the Act.

Whether the proposed expenditure is consistent with the Capex IM and, where relevant, the Transpower IMs

Transpower's proposal is consistent with the Capex IM

B5 To be consistent with the Capex IM, the proposed expenditure must be 'major capex' as defined in the Capex IM,[61] and Transpower must meet the notification, consultation, information, and certification requirements that apply.[62]

[59] P50 values are the amounts mentioned in Transpower's RDF MCP proposal. This means that there is 50% chance the actual cost of RDF MCP will not exceed the MCA. Values such as 30th percentiles (P30) and 70th percentile (P70) are used for the MCP incentives.
[60] Capex IM, clause 6.1.1(2).
[61] Capex IM, clause 1.1.5(2).
[62] Capex IM, clause 3.3.1, clause 7.4.1, Schedule I, Schedule G, and clause 9.2.1, respectively.

B6 We are satisfied that the proposed expenditure is major capex, and that Transpower has met the Capex IM requirements on notification, consultation, information, and certification. The details of our assessment of the individual requirements follow.

The proposed expenditure is major capex

B7 The Capex IM defines 'major capex' as expenditure that is:[63]

B7.1 incurred to meet the grid reliability standards (GRS) or provide a net electricity market benefit;

B7.2 forecast to have an aggregate capital cost exceeding $30 million; and

B7.3 not asset replacement, asset refurbishment, business support, or information system and technology assets.

B8 The proposed expenditure for Transpower's RDF MCP proposal is consistent with the Capex IM definition because:

B8.1 the proposed investment provides a quantified net electricity market benefit of $12.2 million, meeting the economic limb of the GRS;[64]

B8.1.1 meet the requirements of clause D1(1)(b) of Schedule D of the Capex IM, and provide the highest positive net electricity market benefit;[65] and

B8.1.2 in Attachment D we discuss which limb of the clause D1(1)(b) requirements is applicable in this case;

B8.2 the major capex allowance (MCA) (excluding potential non-transmission service (NTS) of the proposed investment is $47.0 million ($ nominal));[66] and

B8.3 the proposed investment is not incurred in relation to asset replacement, asset refurbishment, business support or information system and technology assets; rather, it will enhance the resilience of the RDF Grid Exit Point (GXP).

Transpower has met the notification requirements under the Capex IM

B9 Transpower notified us of its intention to plan the RDF MCP, on 22 April 2025, consistent with clause 3.3.1(1) of the Capex IM.[67]

B10 Transpower's notification also proposed the matters required under clause 3.3.1(2) of the Capex IM. On 22 May 2025, Transpower agreed with us a consultation programme, including the short-list consultation.[68]

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63 Capex IM, clause 1.1.5(2).
64 *Transpower NZ Ltd*, RDF MCP Application, Table 5, p. 17, available here.
65 *Transpower NZ Ltd*, RDF MCP Attachment 3 – Benefit Modelling, Table 4, p. 7, available here.
66 *Transpower NZ Ltd*, RDF MCP Application, Table 1, p. 4, available here.
67 *Transpower New Zealand Ltd*, Letter of Notification under clause 3.3.1(1) available here.
68 *Commerce Commission*, letter to Transpower agreeing matters under clause 3.3.1(2) of the Capex IM, available here.

B11 Under clause 3.3.1(7) of the Capex IM, the Commission and Transpower must regularly review whether the consultation programme remains appropriate and reasonable. We may amend the consultation programme to achieve that outcome.

Transpower has satisfied the consultation requirements

B12 The Capex IM requires Transpower to consult with interested parties on the following matters when preparing an MCP:[69]

B12.1 investment need;

B12.2 each demand and generation scenario variation;

B12.3 key assumptions;

B12.4 a long-list of options to meet each investment need; and

B12.5 a short-list of investment options to meet each investment need.

B13 Transpower engaged with the local stakeholders including Unison Networks, the network distributor for Hawke's Bay region on a number of possible solutions that would best enhance the power supply resilience for Hawke's Bay region. This was due to:[70]

B13.1 limited viable options to improve the resilience, especially at its RDF GXP;

B13.2 Unison is the only electricity distribution business that is connected to the RDF GXP; and

B13.3 the urgency of the remediation works programme following Cyclone Gabrielle.

B14 Unison in its submission stated that:[71]

> As part of Transpower's consultation process, Unison has reviewed and engaged on the long-list and short-list options for enhancing the resilience of Redclyffe substation.

B15 We are satisfied that a more targeted consultation process was sufficient in this instance to confirm the investment need and identify short-list options and preferred investment.[72]

B16 Transpower's short-list consultation must:[73]

B16.1 describe the relevant demand and generation scenarios to be used for the investment test;

B16.2 provide information on the relevant key assumptions;

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[69] Capex IM, clause I1.
[70] *Transpower NZ Ltd*, RDF MCP short-list consultation, paras 30-32, pp. 11-12, available here.
[71] *Unison,* Submission to Transpower's short-list consultation, para 3, available here.
[72] Capex IM, clause 8.1.3(2)(b),
[73] Capex IM, clause I3.

B16.3 describe each investment option, including its features, submissions on the option from the long-list consultation, and likely electricity market benefit or cost elements and project costs; and

B16.4 describe Transpower's preliminary application of the investment test.

B17 Transpower carried out its short-list consultation between 11 February 2025 and 11 March 2025.[74]

B18 Transpower prepared its short-list of investment options using a number of criteria, namely:[75]

B18.1 timeframes – the duration of completing the required works efficiently in the shortest period;

B18.2 costs – the estimated capex being prudent;

B18.3 practicalities – accounting for any risk of relocation or rebuild, land access, consents/approvals and environmental issues;

B18.4 future growth – allowing for future demand growths as well as their geographical localities; and

B18.5 long-term resilience – increasing the resilience to comply with present design standards.

Our evaluation of Transpower's consultation

B19 As part of its consultation process, Transpower asked six specific questions in its short-list consultation and received five submissions in response.

B20 Submitters were generally supportive of Transpower's preferred development option and the criteria it used to derive the preferred development option.

B21 Overall, submitters supported:[76]

B21.1 the need to ensure a resilient network for Hawke's Bay region;

B21.2 the choice of short-list investment options and the preliminary application of the investment test;

B21.3 that short-list investment Option 2 had the highest positive net electricity market benefit; and

B21.4 that Option 2 was robust under sensitivity analysis.

B22 The four submitters were:

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74 *Transpower New Zealand Ltd*, RDF MCP – Short-list Consultation, available here.

75 *Transpower NZ Ltd*, RDF MCP Attachment 2 – Need for investment and options, Section 4, p. 4 and 5, available here.

76 *Transpower NZ Ltd*, RDF MCP Attachment 6 – Stakeholder consultation, section 6.1, p. 4, available here.

B22.1 Unison Networks;[77]

B22.2 Firstlight Network;[78]

B22.3 Hawke's Bay Regional Council;[79]

B22.4 Hawke's Bay Regional Recovery Agency;[80] and

B23 All four submitters agreed that increasing transmission network resilience in the Hawke's Bay region is necessary based on the damage and disruptions caused by Cyclone Gabrielle.[81] The submitters accepted that short-list investment Option 2 is a cost-effective option, considering enhanced resilience and timeliness of the investment.[82]

B24 The concern raised by Unison Networks and supported by Hawke's Bay Regional Council and Hawke's Bay Regional Recovery Agency, was the lack of road access to RDF substation site following a high impact low probability (HILP) flood event.

B25 Transpower's response to lack of road access post HILP flood event noted that:[83]

> Transpower notes the points raised by Unison and HBRC. Transpower has designed the site to reduce the criticality of getting workers to site after an event, The site is designed to continue operating during and after floods up to the 1-in-450 year event level, in part to allow adequate time to establish safe access to the site and reduce the risks associated with workers needed on site during lesser flood events. Transpower still views access via Springfield Road as important but less critical with the improvements proposed at Redclyffe.

B26 Unison Networks also highlighted that Transpower had not addressed the load growth north of Napier due to decarbonisation.[84]

B27 Transpower responded to the load growth point raised by Unison stating that "it is our intention to continue dialogue and information sharing with both EDBs through our annual transmission planning studies regarding the future needs for bulk supply north of Napier".[85]

B28 Following our review, we are satisfied with Transpower's approach to consultation and how it has considered the points raised by submitters.

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77 Unison submission, available here.
78 Firstlight submission, available here.
79 Hawke's Bay Regional Council submission, available here.
80 Hawke's Bay Regional Recovery Agency, available here.
81 *Transpower NZ Ltd*, RDF MCP Attachment 6 – Stakeholder consultation, section 6.1, p. 4, available here.
82 Submissions available here.
83 Transpower's summary of submission doc., available here.
84 Unison submission, available here.
85 Transpower's summary of submission doc., available here.

Transpower has satisfied the information requirements under the Capex IM

B29 Schedule G of the Capex IM sets out the information that Transpower needs to provide in an MCP.[86]

B30 Transpower provided a table mapping the information required under the Capex IM with the information provided in its MCP and the attachments.[87]

B31 Of its three short-list options, Transpower is effectively using Option 1 as the counterfactual case to satisfy the investment need. Transpower states that:[88]

> Option 1 provides a useful base case for comparison of the options that provide improved flood resilience (Options 2 and 3). Option 1 is effectively a "do nothing" option and we have calculated the expected net electricity market benefits of Option 2 and 3 relative to option 1.

B32 To comply with clause G8, Transpower in its notice of intention states:[89]

> Non-transmission solutions were not considered directly relevant as solutions to this investigation. Redclyffe provides Hawke's Bay's main connection to the grid and without action to improve the resilience of its physical switchyard assets we would expect that a similar flood will result in a similar interruption to power supply.

B33 We are comfortable that a non-transmission solution will not be relevant in meeting the investment need of the RDF MCP and are satisfied that Transpower did not consider non-transmission solutions (NTS) in this instance.

B34 Our view is that an NTS could not reasonably replace the functionality of a GXP like RDF. RDF is a key 220kV to 110kV transmission interconnection node and load supply point in the Hawke's Bay region.

B35 In accordance with clause 3.3.5(4) of the Capex IM, we sought further information to assist our evaluation of the proposal using a Request for Information (RFI). We sought information on the following:

B35.1 resilience benefit present value calculations;

B35.2 present value analysis of investment test application;

B35.3 detailed explanation of resilience analysis of the short-list options;

B35.4 base capex included in the MCP;

B35.5 explanation of an additional risk adjustment;

B35.6 resilience value of changing orientation of 220kV circuit-breakers; and

B35.7 Transpower's view on future bulk load in north Napier.

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[86] Transpower's summary of submission doc., available here.
[87] *Transpower NZ Ltd*, RDF MCP Attachment 1 – Compliance with the Capex IM, available here.
[88] *Transpower NZ Ltd*, RDF MCP Proposal, section 3.1, p. 12, available here.
[89] *Transpower NZ Ltd*, Notice of intention dated 22 April 2025, p. 3, available here.

B36 Transpower responded to our RFI on 7 July 2025.[90] We discuss the RFI response material and our review of that material throughout Attachments C and D where relevant.

B37 Having reviewed the RDF MCP proposal material and the additional information provided by Transpower, we are satisfied that the data, analysis and assumptions underpinning what is proposed, are fit for purpose, reliable and accurate.

B38 We have reviewed the RDF MCP and attachments against clauses G1 to G9 of Schedule G of the Capex IM, and are satisfied that Transpower has met the information requirements and is sufficient for us to make our decision on RDF MCP.

Transpower satisfied the certification requirements under the Capex IM

B39 Clause 9.2.1 of the Capex IM requires that, before Transpower submits an MCP to us, Transpower's chief executive officer (CEO) must certify the MCP according to requirements in that provision.

B40 Transpower provided a certificate signed by its CEO.[91]

B41 We reviewed this certificate against clause 9.2.1 of the Capex IM and we are satisfied that it meets the relevant requirements.

Delivering the proposal will promote the purpose of Part 4 of the Act

B42 Under the general evaluation criteria, we must consider "the extent to which what is proposed will promote the purpose of Part 4 of the Act".[92] Alongside the investment test under Schedule D, we consider this is an important test for expenditure proposed under the Capex IM.

The purpose of Part 4 of the Act

B43 The purpose of Part 4 of the Act is to promote the long-term benefit of consumers in markets where there is little or no competition, and little or no likelihood of a substantial increase in competition.[93] 'Competition' means 'workable or effective competition'.[94]

B44 To promote workable or effective competition that is in the long-term benefit of consumers, we must promote outcomes in regulated markets that are consistent with outcomes produced in workably competitive markets.

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90 *Transpower NZ Ltd,* RDF MCP, RFI001, issued on 19 June 2025 and responded on 7 July 2025.
91 *Transpower NZ Ltd*, RDF MCP Attachment 8 – CEO certification available here.
92 2012 Capex IM Reasons paper, at para 1.3.7.
93 Commerce Act 1986, s 52A(1).
94 Commerce Act 1986, s 3(1).

The RDF MCP will promote the purpose of Part 4 by providing for Transpower to deliver the right investment at the right time

B45 The purpose of Part 4 of the Act, particularly as set out in section 52A(1)(a) and (b), will be promoted by delivering the right investment at the right time to meet an identified need.

B46 The Capex IM requires Transpower to apply the investment test to select the investment option with the lowest expected net market cost, or highest expected net electricity market benefit as the proposed investment.[95] This can include a qualitative assessment to take account of associated unquantified benefits, or cost elements, in certain circumstances.[96]

B47 The investment test under Schedule D of the Capex IM, is a net electricity market benefit test that uses a range of future scenarios to identify the investment option, with the lowest expected net market cost in meeting the GRS, or highest expected net market benefit to meet forecast demand. The test is designed to identify the most efficient investment option as the proposed investment in an MCP.

B48 We consider the investment test enables the selection of the right investment based on the available information, and corresponding assumptions about the future composition of the power system.

B49 Transpower has identified the risk to security of power supply in the event of a flooding similar to the Cyclone Gabrielle event in February 2023. We consider:

B49.1 the investment will make the grid, especially RDF substation, more resilient to mitigate the risk of future power outages; and

B49.2 approving this project allows Transpower to make the investments to provide a service that reflects consumer demands.

B50 Based on our evaluation in Attachments C and D, we are satisfied Transpower has proposed the right transmission investment to meet the investment need.

Delivering the RDF MCP provides the highest expected net electricity market benefit

B51 Consistent with section 52A(1)(b) of the Act and the Capex IM, a proposed investment must be the investment option with the highest expected net electricity market benefit when compared with alternative options.[97]

B52 Following our review of the proposal, we are satisfied Transpower's proposed investment provides the highest expected net electricity market benefit when compared with alternative investment options.

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[95] Capex IM, clause D1.
[96] Capex IM, clause D1(1)(c).
[97] Capex IM, clauses D1(1)(b) and D1(1)(c)(i).

Attachment C Evaluation of the proposal against the specific criteria

Purpose of this attachment

C1 In this attachment we set out our evaluation of Transpower's Redclyffe 220kV switchyard resilience (RDF) major capex project (MCP) proposal against the specific criteria set out in Schedule C of the Capex Input Methodology (Capex IM), as required under clause 6.1.1(4) of the Capex IM.

The specific criteria for evaluating an MCP

C2 There are two parts to our evaluation of the RDF MCP under Schedule C of the Capex IM, and we may use one or more of the techniques listed under clause C7. The two parts are:

C2.1 evaluating the RDF MCP against specific criteria broken down as follows:[98]

C2.1.1 *investment test:* clause C1(1) requires us to evaluate whether the proposed investment satisfies the investment test in Schedule D of the Capex IM; and

C2.1.2 *specific components:* clause C1(3) requires us to evaluate, to the extent applicable to the proposed investment, specific components of the proposed investment.

C2.2 evaluating the RDF MCP, having regard to the general factors under clause C2, and the specific factors relating to individual components of the RDF MCP.

C3 Clause C2 requires us to have regard to at least one of the factors listed in clause C2(a) to (e) when evaluating an MCP. The factors listed in clause C2 are:[99]

C3.1 whether the proposed investment and investment options;

C3.1.1 reflect good electricity industry practice (GEIP);

C3.1.2 are technically feasible;

C3.1.3 can be implemented in terms of statutory process and regulatory consents; and

C3.1.4 can be integrated into the system and market operations;

C3.2 whether the estimated time to deliver the project is reasonable compared to the proposed commissioning date or completion date;

C3.3 whether key assumptions around outages are reasonable;

[98] Capex IM, clauses C1(1) and C1(3).
[99] Capex IM, clause C2.

C3.4 the extent to which, in complying with the consultation programme or approach to consider non-transmission services (NTSs), Transpower regards the views of interested parties; and

C3.5 the impact of the sensitivity analysis on electricity market benefit, or cost element of the proposed investment and investment options.

C4 The specific components described in clause C1(3) we must evaluate are:[100]

C4.1 the major capex allowance (MCA) and maximum recoverable costs (clause C3);

C4.2 approval expiry date and commissioning date assumptions (clause C4);

C4.3 MCP outputs (clause C5); and

C4.4 major capex incentive rate (clause C6).

C5 When evaluating the specific components in clauses C3 to C6, we must have regard to at least one of the factors set out under each clause. We may also employ the evaluation techniques set out in clause C7.[101]

C6 Our evaluation of these MCP components and how we tested the RDF MCP against the requirements of Schedule C are outlined below.

Clause C1(1) – whether the MCP satisfies the investment test

C7 Our evaluation of Transpower's application of the investment test is outlined in Attachment D.

C8 In reviewing Transpower's application of the investment test, we carried out our own analysis. We took a two-step approach.

C8.1 Firstly, we looked at whether Transpower's inputs and assumptions were reasonable and met the requirements of Capex IM, and whether the preferred investment passed the investment test.

C8.2 Secondly, we cross-checked Transpower's investment test application to satisfy ourselves that components of the proposal would deliver net electricity market benefits.

C9 In reviewing the economic analysis results in Transpower's proposal, we consider Transpower has taken a robust approach in applying the investment test, and that the costs and benefits have been reasonably calculated.

C10 Following our review, we are satisfied Transpower has calculated net electricity market benefits of the investment options that outweigh the costs of those investment options, and in aggregate, Transpower's RDF MCP proposal passes the investment test.

[100] Capex IM, clause C1(3).
[101] Capex IM, clause C7.

C11 In summary, our decision is that the proposed investment meets the investment test under Schedule D of the Capex IM. Specifically, we are satisfied:

C11.1 with the values Transpower has used for the parameters of the investment test;

C11.2 that the proposed investment has the highest positive expected net electricity market benefit of the investment options it considered; and

C11.3 that the proposed investment is robust to sensitivity analysis.

Clause C2 – general evaluation of the MCP

C12 Under clause C2 of Schedule C, we must have regard to at least one of the factors listed in clause C2(a) to (e) when evaluating a major capex proposal.[102]

C13 Our analysis below sets out how we had regard to each of these factors in evaluating the RDF MCP.

Clause C2(a)(i) – do the investment options considered reflect GEIP

C14 In evaluating the MCP, we had regard to whether Transpower's proposed investment, and investment options reflect GEIP. We consider GEIP reflects an appropriate planning, implementation and delivery framework of a prudent supplier.[103]

C15 We consider Transpower's transmission planning and performance standards are appropriate. These standards have underpinned Transpower's analysis to investigate options to enhance flood resilience at RDF GXP to cater for high impact low probability (HILP) event equivalent to 1-in-450-year ARI flood event.

C16 Transpower states in its proposal that:[104]

> The impacts on consumers from electricity interruptions following Cyclone Gabrielle highlighted the need to further review our resiliency at Redclyffe substation. The substation had been one of 12 sites identified in a 2020 study as vulnerable to flooding and a detailed investigation was planned. As a result of Cyclone Gabrielle, we are accelerating this work.

C17 We consider Transpower has been prudent in selecting and consulting on investment options to address the investment need. Transpower has proposed an appropriate investment strategy given the need date it has identified.

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[102] Capex IM, clause C2(a-e).

[103] 'Good electricity industry practice' is defined in Part 1 of the Code as: good electricity industry practice in relation to transmission, means the exercise of that degree of skill, diligence, prudence, foresight and economic management, as determined by reference to good international practice, which would reasonably be expected from a skilled and experienced asset owner engaged in the management of a transmission network under conditions comparable to those applicable to the grid consistent with applicable law, safety and environmental protection. The determination is to take into account factors such as the relative size, duty, age and technological status of the relevant transmission network and the applicable law.

[104] *Transpower NZ Ltd*, Application, section 3, p. 10, available here.

C18 Based on our review of Transpower's planning, analysis and evaluation provided in its proposal, Transpower's operations reflect that of a prudent and efficient operator. Based on this review, the investment options Transpower selected and consulted reflect GEIP. Our decision is that the requirements of clause C2(a)(i) have been met.

Clause C2(a)(ii) – are the proposed investment and investment options technically feasible

C19 The proposed investment, and the other two investment options that Transpower considered in its short-list consultation, use equipment and network upgrades that are similar to those it has previously implemented. The installation and commissioning methods for these assets are well proven over the years, both locally and internationally.

C20 The proposal to increase the flood resilience at RDF involves:[105]

C20.1 raising the height of 220kV outdoor switchgear, by building an elevated platform to mount the switchgear as well as other outdoor auxiliary equipment;

C20.2 replacing HV equipment, including circuit-breakers, disconnectors, busbars and current transformers, capacitive voltage transformers and outdoor junction boxes; and

C20.3 building a digital substation control building.

C21 We are satisfied Transpower's choice of well proven equipment and resilience design mitigations in its short-list investment options are all technically feasible. Our decision is that the requirements of clause C2(a)(ii) have been met.

Clause C2(a)(iii) – are the proposed investment and investment options able to be implemented in terms of the statutory processes under the Resource Management Act 1991 (RMA), other regulatory consents, and obtaining property and access rights

C22 Transpower's short-list investment Option 3 is to relocate RDF substation north of Napier. Compared to the preferred investment Option 2:[106]

C22.1 estimated timeframe to relocate and complete the new substation is ten years compared to two years under Option 2;

C22.2 practicalities associated with rerouting transmission lines, land access consenting and environmental issues could lead to implementation risks; and

C22.3 relocating will not provide additional resilience to that under investment Option 2.

C23 Transpower's proposed works programme for the RDF MCP outputs, is at its existing site, so it already has full property and access rights for those investments.

[105] *Transpower NZ Ltd*, Proposal, Table 1, p. 4, available here.
[106] *Transpower NZ Ltd*, RDF MCP Attachment 2 – Need for Investment and Options, section 4, p. 4, available here.

C24 Transpower should have ample time to engage with relevant authorities to acquire approvals should these be required for such process as transportation of equipment to site.

C25 Based on Transpower's experience with similar projects, we consider the requirements of clause C2(a)(iii) are met.

Clause C2(a)(iv) – can the proposed investment and investment options be integrated into system and market operations

C26 Transpower's works programme proposed in the RDF MCP will improve RDF GXP's resilience to flooding.

C27 Since the existing network and assets at RDF are well integrated into the system and market operations, the improvement in RDF substation's flood resilience will at least maintain that. At times of adverse climatic conditions up to 1-in-450-year ARI flood event, the system integration and market operation, under the revised design standard, is expected to remain intact.

C28 We consider the proposed investment will meet the requirements of clause C2(a)(iv), because the investment in RDF improved flood resilience will maintain its integration into the system and market operations.

Clause C2(b) – is the estimated time to achieve commissioning date or completion date reasonable

C29 The commissioning date assumption is the date by which Transpower assumes the last asset of the RDF MCP will be commissioned.[107]

C30 Transpower has proposed a commissioning date for all assets in its proposal by December 2027.[108] All works associated with the RDF MCP will be installed within Transpower's existing RDF substation site.

C31 We have evaluated the commissioning date assumption and considering that all the works will be carried out at Transpower's existing site, this mitigates risks when compared with new sites. Since Transpower is experienced with similar works throughout its grid, Transpower is confident that it will meet the proposed commissioning date.

C32 Our view is that the proposed investment meets the requirements of clause C2(b).

Clause C2(d) – in complying with clause 3.3.1(9) with respect to the consultation programme, did Transpower have regard to the views of interested persons

C33 In Attachment B, we have reviewed Transpower's consultation programme and its response to stakeholder feedback. Our view is that Transpower has considered the views of the stakeholder as part of its RDF MCP proposal process.

[107] Capex IM, clause 1.1.5(2).
[108] *Transpower NZ Ltd*, Application, Table 1, p. 4, available here.

C34 Our decision is that the requirements of clause C2(d) have been met.

Clause C3 – evaluation of the major capex allowance and maximum recoverable costs

Evaluation of the major capex allowance

C35 Transpower has proposed an MCA of $47.0 million, ($ nominal). Table C1 summarises the components of the proposed MCA.

Table C1 Summary of the RDF MCA components[109]

MCA component	Amount ($m 2025 unless otherwise stated)
Transmission lines construction works	3.3
Civil and primary plant works	16.8
Protection and miscellaneous works	5.3
Communications and switching costs	0.9
Freight	0.5
Design and investigation costs	3.4
Transpower and contractor overhead	9.3
Environmental and property costs	0.5
Additional risk adjustment	3.9
P50 estimate of cost	43.9
Inflation related cost	1.2 ($m nominal)
Interest During Construction (IDC)	2.0 ($m nominal)
MCA (sum of P50 cost, inflation and IDC)	**47.0 ($m nominal)**

We are satisfied with the components of the proposed major capex allowance

C36 The MCA we have reviewed is $47.0 million ($ nominal).

C37 Following our review, we are satisfied with the underlying calculations, cost estimates and reports provided by Transpower, verify Transpower's calculation of its proposed MCA.

C38 We consider the RDF MCP proposal cost estimates are reasonable, subject to a commissioning date of 31 December 2027.

[109] The summary components of the proposed MCA were provided to us by Transpower as separate information.

C39 In coming to this conclusion, we are mindful that estimating the capital costs of projects in an MCP is a complex engineering process that requires:

C39.1 producing conceptual designs;

C39.2 conducting site investigations;

C39.3 scoping the projects, and then preparing the scope of work packages; and

C39.4 estimating the quantity of work for each work package.[110]

C40 In reviewing the estimated costs, we sought to form a view on whether Transpower had:

C40.1 adequately scoped the works;

C40.2 estimated the quantities;

C40.3 applied the unit costs where applicable;

C40.4 allowed for preparation costs for turnkey portions of the projects; and

C40.5 derived contingencies in a reasonable manner.

C41 We outline our approach to assessing the MCA and the analysis we carried out in the following paragraphs.

Our approach to evaluating the MCA

C42 Under clause C3 of Schedule C, we must consider at least one of the following factors when evaluating the MCA:

C42.1 how Transpower used the MCP outputs, key drivers, key assumptions, and cost modelling to determine the P50 and MCA cost (clause C3(a));[111]

C42.2 the capital costing methodology and formulation, including unit rate sources, the method used to test the efficiency of unit rates, and the level of contingencies included (clause C3(b));

C42.3 the impact of forecast costs on other Transpower costs, including the relationship with operating expenditure (clause C3(c));

C42.4 mechanisms for controlling actual capital expenditure with respect to the MCA (clause C3(d)); and

[110] Examples of work packages include site excavation, fencing, installing security lights, constructing the foundation for the equipment, building foundation, freighting equipment onto sites and installing the MCP's primary assets.

[111] The MCA is the allowance for the MCP and is based on the base cost estimate plus the fiftieth percentile of uncertainties, or P50 cost estimate. Under clause 1.1.5(2) of the Capex IM, 'P50' means the estimated aggregate project costs where the probability of the actual aggregate project costs being lower than that estimated is 50%.

C42.5 the efficiency of the proposed approach to procurement of goods and services (clause C3(e)).

C43 In evaluating Transpower's proposed MCA, we considered the factors under clauses C3(a) and C3(b) because they best enable us to form a view on whether Transpower's estimated cost of the project, and the subsequent derivation of the MCA, are reasonable.

C44 To assess the capital cost of the MCP's proposed investment, Transpower provided us with:[112]

C44.1 an overview of their preparation of cost estimating capex, estimating the P50 cost;

C44.2 a breakdown of the various components and their estimated costs for each short-list option; and

C44.3 the annual spread of the capital costs.

C45 We assessed the estimated capital costs by:

C45.1 reviewing the information mentioned above, provided by Transpower; and

C45.2 seeking further clarification and explanation from Transpower.

C46 We also met several times with Transpower to discuss various aspects of the RDF MCP including the MCP costing and cost estimating methodology.

Clause C3(a) - how Transpower used the MCP outputs to determine the MCA

C47 Transpower derived the MCA according to the components shown in Table C1, using the following general approach:

C47.1 determine the base estimate and uncertainties;

C47.2 use the Monte Carlo simulation to provide the risk adjustment and to determine the P50 estimate value;[113]

C47.3 forecast exchange rates, and forecast inflation from 2025 to 2028; and

C47.4 forecast financing costs.

C48 Transpower's base estimate is the summation of the cost to deliver the three MCP outputs of this project, plus the support and preparedness projects (investigation costs). Transpower states that:[114]

> In addition, project investigation cost of $0.743m have already been incurred (by May 2025).

[112] *Transpower NZ Ltd*, RDF MCP Attachment 4 – costing, available here.
[113] *Transpower NZ Ltd*, RDF MCP Attachment 4 – costing, section 2.1, p.3, available here.
[114] *Transpower NZ Ltd*, RDF MCP Attachment 4 – costing, section 4.1, p. 5, available here.

C49 To reach its project cost estimates, Transpower has used its Transpower Enterprise Estimation System (TEES) pricing model, and indicative prices provided by potential suppliers, to estimate the cost of each works package. There is a clear link between the cost estimate and each MCP output.

C50 With regard to TEES, Transpower states:[115]

> We use TEES (Transpower's Enterprise Estimating System) to estimate the cost of all capital projects.
>
> TEES produces cost estimates for a project based on the historical rates from past projects or known current rates, as well as information from consultants and/or potential vendors (e.g. RFPs, concept design and solution study exercises).
>
> It also factors in changes in foreign exchange rates and costs of key commodities such as external labour, copper, steel and aluminium.

C51 We are satisfied with the Monte Carlo simulation used by Transpower to derive the P50 cost estimate. We are also satisfied that the lower and upper bound cost estimates were derived based on the estimate of material and labour unit quantities that Transpower commonly use in other similar substation projects. The variation between these and the base quantities are in the range expected of such estimates at this phase of a project's life cycle.

C52 We are satisfied that the above methodology provides an MCA based on a P50 estimate for project costs as required by the Capex IM.[116]

Clause C3(b) - evaluation of the base estimate using the capital costing methodology, including unit rate sources, the method used to test the efficiency of unit rates, and the level of contingencies included in the estimate

C53 We evaluated the base estimate of the RDF MCP proposal cost using the technique of the capital costing methodology, and formulation as outlined under clause C3(b) of Schedule C.[117]

C54 We assessed how Transpower prepared the base estimate and whether the underlying assumptions appear reasonable.

C55 TEES includes a database of assembly costs which is the source of the unit costs, Transpower uses in its costing methodology. We assessed how Transpower derives and updates its unit rates as follows:

C55.1 we evaluated TEES and assessed how Transpower ensures unit costs in TEES are current. We are satisfied that Transpower has a sound process to ensure the unit costs are current. For example, Transpower updates external labour and material

[115] *Transpower NZ Ltd*, RDF MCP Attachment 4 – Costing, section 2, p. 2, available here.
[116] Capex IM, clause G5(2)(c).
[117] The base estimate is the cost of each element (for example labour cost, and list of material) used to provide the overall MCP proposal estimate.

rates based on actual costs from completed projects and through internal panel review; and

C55.2 as part of evaluating Transpower's unit costs and assembly costs that have been factored into the TEES unit costs, we asked Transpower to verify the values of previous similar projects, as well as the multipliers used to update the TEES estimates to 2024 prices. Based on our random sampling of certain material items and evaluating its estimate, we are satisfied that:

C55.2.1 the current unit costs in TEES are reflected in Transpower's cost estimation; and

C55.2.2 the assemblies are sufficiently granular for the purpose of estimating the cost of the RDF MCP.

The level of contingencies included in the base estimate

C56 The two types of risks contributing to uncertainties are:

C56.1 scope risk, which arises from uncertainties at this early stage, in estimating the quantities for the work packages; and

C56.2 project risks, which arise from variations in prices, stakeholder liaison, environmental considerations, project commencement timing, and project duration due to external events such as weather.

C57 Allowing for the above uncertainties recognises that not all works can be identified at this early phase, because contractor prices can vary, project delivery can be affected due to availability of equipment outages, and project delays due to equipment delivery.

C58 We consider these risks have a reasonable possibility of materialising and have therefore accepted them in the MCA. This allows Transpower to recover these costs should they materialise.

C59 We are satisfied that the uncertainties discussed and proposed by Transpower, are reasonable and consistent with clause G5(2)(c) of Schedule G of the Capex IM, which requires the proposed MCA, including uncertainties, be a P50 estimate of the capital cost, and the estimated probability distribution of the P50.

C60 The P50 value of contingency proposed by Transpower ($3.9 million in 2025 prices) is included in the base cost estimate. This amount is 8.9% of the base estimate. We consider this contingency is appropriate for the type of projects in the RDF MCP, given Transpower has full knowledge of, access to, and ownership of the RDF site. Additionally, there are unlikely to be significant consenting issues.

C61 This contingency assumption is at the lower end of the scale when compared to a recent MCP (Waikato Upper North Island voltage management), and Bombay Otahuhu reinforcement listed project, which we have reviewed and approved.[118]

C62 We requested that Transpower confirm what was included in its 'additional risk adjustment'. Transpower in its response to RFI001 confirmed that it included all the uncertainties associated with the MCP.

C63 Transpower responded that:[119]

> All project contingency is included in the line item "Additional risk adjustment".
>
> The risk adjustment amount is determined by risk analysis and is the amount required to adjust the base estimate amount to the P50 estimate confidence level.

Exchange rate and inflation assumptions

C64 The exchange rate and inflation assumptions of the MCA are subject to the wash-up mechanism, which means these assumptions do not impact the incentive calculation or the final revenue amount Transpower can recover.[120]

C65 Transpower's exchange rates and inflation assumptions are shown in Tables C2 and C3 below.

Table C2 Exchange rates used to calculate the MCA[121]

Currency	Exchange rate
AUD	0.9148
EUR	0.5259
SEK	6.0129
USD	0.5736

Table C3 Forecast inflation rate used to calculate the MCA[122]

Year	2025	2026	2027	2028
Rate	2.5%	2.2%	2.0%	2.0%

[118] In the case of the Waikato Upper North Island Voltage Management Stage 1 MCP, the contingency was 25.9% of the base estimate, while for Bombay Otahuhu reinforcement MCP the contingency was 11.4%.
[119] *Transpower NZ Ltd*, RDF MCP, RFI001, issued on 19 June 2025 and responded on 7 July 2025.
[120] Capex IM, clause B3(1).
[121] Transpower information was provided to us in spreadsheet labelled 'TEES Report Redclyffe – Currency Exchange rate table' (16 July 2025).
[122] This Transpower information was provided to us in spreadsheet labelled 'MCA Calculation' (9 July 2025. The annual values are those of the December quarter of each year.

Financing cost assumptions

C66 Transpower has estimated its financing costs based on the assumption that:

C66.1 the financing rate is set at Transpower's current weighted average cost of capital (WACC);[123]

C66.2 expenditure occurs at the end of each month: and

C66.3 the same principles used in its RCP4 base capex proposal still apply.[124]

C67 The capital expenditure profile of the RDF MCP is the 'S' curve typical of such projects.[125] Most expenditure associated with transmission line works will occur throughout the project's duration, with an increase in expenditure at the start of the project, allowing for project mobilisation and start-up.

C68 Site preparation works, that are carried out in the early stages of the construction phase, are where variations in scope or delays may lead to an increase in costs. Since the proposed works are to be carried out at the existing RDF site, the cost impact of variations is not likely to be high.

Clause C4 – evaluation of the proposed approval expiry date

C69 Transpower proposes an approval expiry date of 31 December 2032 for the RDF MCP.

C70 The effect of an approval expiry date is that Transpower cannot recover the costs of any assets commissioned after this date. This incentivises Transpower to deliver the RDF MCP proposal within the approval expiry date or apply for an amendment to that date under clause 3.3.6(1)(d) of the Capex IM.

C71 In evaluating Transpower's proposed approval expiry date under clause C4 of Schedule C, we must have regard to at least one of the six factors listed in that provision.

C72 We tested Transpower's proposed approval expiry date against the factors set out in clause C4(c): the effect of the proposed approval expiry date, and the commissioning date assumption in the RDF MCP.

[123] We set the WACC in our cost of capital determination: *Commerce Commission*, Cost of capital determination for electricity distribution businesses' 2020-2025 default price-quality paths and Transpower New Zealand Limited's 2020-2025 individual price-quality path (2019) NZCC 12 (25 September 2019), available here.

[124] Under clause 1.1.5(2) of the Capex IM, the 'base capex proposal' is the information Transpower submits to enable us to determine the components of the IPP under clause 2.2.2 of the Capex IM.

[125] Project S curve is a graphical representation of the cumulative expenditure of a project, and this normally takes the shape of "S".

C73 In its draft decision submission Unison/Centralines expressed concern that the proposed expiry date could result in project delays and the ongoing site vulnerability in the interim.[126] In its cross-submission Transpower explained that the difference between the proposed commissioning and expiry dates was primarily to ensure it captures any late costs in its regulatory accounting process, and that it intended to complete the project by December 2027.[127]

C74 We have evaluated the approval expiry date proposed by Transpower. Following our review of the proposed investments, we consider Transpower can deliver the projects in the proposal by the commissioning date and that the approval expiry date is to allow it to account for late project costs in its regulatory accounts. Our decision is to accept the proposed approval expiry date of 31 December 2032, and that the clause C4 requirements have been met.

Clause C5 – evaluation of the MCP outputs

C75 We evaluated Transpower's proposed MCP outputs against the factors set out in clause C5(a): the extent to which the MCP outputs reflect the nature, quantum, and functional capability of the transmission investment assets to be commissioned.

C76 The nature and functional capability of the proposed transmission investments are to enhance RDF substation resilience from a 1-in-100-year ARI flood event to a 1-in-450-year ARI flood event, thus improving the transmission reliability and security of supply in the Hawke's Bay region.

C77 We are satisfied the RDF MCP outputs reflect the nature, quantum, and functional capability of the transmission investment assets to be commissioned. Our decision is that the requirements of clause C5(a) have been met.

Clause C6 – evaluation of the major capex incentive rate and exempt major capex

C78 The major capex incentive rate we set under clause 3.3.5(7)(b) of the Capex IM determines the reward (or penalty) that Transpower receives (or bears), depending on how the actual cost of delivering a MCP compares to the project's MCA.[128] Exempt major capex is that portion of the MCA amount to which the major capex incentive rate does not apply.[129]

C79 Transpower has proposed:[130]

C79.1 a major capex incentive rate of 15%;

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[126] *Unison/Centralines*, RDF MCP draft decision submission, p.2, available here.
[127] *Transpower NZ Ltd*, RDF MCP draft decision cross-submission, p.1, available here.
[128] Capex IM, clause B3(1), determines how the major capex incentive rate applies to an approved major capex project.
[129] Capex IM, clause 1.1.5(2).
[130] *Transpower NZ Ltd*, RDF MCP Application, p. 5, available here.

C79.2 the P50 risk allowance of $3.9 million as exempt major capex.

C80 We discuss Transpower incentive rate and exempt major capex proposals below and our decisions.

Major capex incentive rate

C81 Under clause 1.1.5(2) of the Capex IM, the major capex incentive rate is 15%, the default rate, or an alternative rate we specify after considering a request from Transpower. In its RDF MCP proposal, Transpower proposes that the default MCP incentive rate of 15% apply.

C82 We are satisfied the incentive rate of 15%, which is the default rate under the Capex IM, will incentivise Transpower to seek efficiencies in delivering the outputs of RDF MCP.

C83 We would only typically consider moving from the default incentive rate for projects where the forecast capital cost is high, the forecast capital cost is uncertain, or the potential for efficiency gains is high. We do not consider these circumstances apply to this MCP.

Exempt major capex

C84 Our decision is to set exempt major capex at zero while implementing the cost estimate deadband between the P30 and P70 cost estimates (that includes the risk component).[131] This is consistent with the changes we made in the 2023 IM Review and our recent amendment to the Capex IM to give effect to those changes.[132]

C85 The 2023 Capex IM Review introduced a project cost deadband mechanism where Transpower MCP delivered project costs would not be subject to reward or penalty incentives.

C86 This deadband was change was introduced as a means to accelerate MCP proposal development and deal with early project uncertainties. We considered this change would reduce the risk of early MCP project cost estimation inaccuracies and help manage cost uncertainties more efficiently.[133]

C87 In the Capex IM amendment decision and determination. that accompanies this decision, we have introduced a mechanism that allows us to extend the incentive deadband range below the P30 estimate. We made this change to ensure that MCA contingent amounts (which in previous MCP decisions we set as the exempt major capex) are not rewarded if they are unspent, and where the MCA minus the contingent amount is less than the P30 estimate.

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[131] P30 refers to the 30th percentile of Transpower's cost estimate simulation. It means that for a P30 cost estimate, there is a 70% chance the cost estimate will be exceeded once the project is completed.

[132] *Commerce Commission*, Part 4 IM Review 2023 – Final decision – Transpower investment topic paper – 13 December 2023, pages 41 to 50, available here.

[133] *Commerce Commission*, Transpower investment topic paper, Part 4 Input Methodologies Review 2023 - Final decision, 13 December 2023, Section 3, p.41.

C88 In the RDF MCP we have not applied this deadband range extension because the MCA minus the contingent amount is greater than the P30 estimate and is within the P30/P70 deadband range.

C89 In the RDF MCP supporting material Transpower specified the P30 estimate amount as $39.9m ($ 2025) and the P70 estimate amount as $48.0m ($ 2025).[134]

C90 Our decision is to set the project cost deadband between these values, meaning Transpower will not receive a reward or incur a penalty as long as the actual cost of the project remains within this range.

Incentive rate application

C91 In setting the major capex incentive rate, any exempt major capex and the project cost deadband, the incentive scheme will work as follows. If the actual cost of delivering the RDF MCP is: [135]

C91.1 less than the P30 estimate of $39.9m ($ 2025), then applying the major capex incentive rate, Transpower will be entitled to a reward;

C91.2 between the P30 and P70 estimates, then there is no incentive reward or penalty; and

C91.3 more than the P70 estimates of $48.0m ($ 2025), then applying the major capex incentive rate, Transpower will be penalised.

[134] Transpower's response to RFI001, spreadsheet 'MCA CalculationV2.0'.
[135] Capex IM, Schedule B.

Attachment D Evaluation of the investment test

Purpose of this attachment

D1 In this attachment we set out our review of Transpower's application of the investment test to the Redclyffe (RDF) major capex project (MCP).

D2 We discuss our evaluation of:

- D2.1 the parameters Transpower used for the investment test;
- D2.2 the expected net electricity market benefits Transpower calculated;
- D2.3 Transpower's selection of the proposed investment;
- D2.4 our assessment of Transpower's investment test application; and
- D2.5 the results of Transpower's sensitivity analysis.

Criteria for satisfying the investment test

D3 The investment test set out in Schedule D of the Capex IM requires Transpower to use a cost benefit analysis, using discounting of relevant costs and benefits in the electricity market over a defined calculation period, to identify the most economic investment option as the proposed investment.[136]

D4 Under clause D1(1) of Schedule D, a proposed investment satisfies the investment test if it has the highest expected net electricity market benefit and is robust to sensitivity analysis, compared with other investment options.

D5 The net expected electricity market benefit:[137]

- D5.1 does not need to be positive for the proposed investment to meet the N-1 criterion of the Grid Reliability Standards (GRS); but
- D5.2 needs to be positive for any other proposed investment.

D6 When selecting the proposed investment, Transpower may consider unquantified electricity market benefits or cost elements, if the difference in expected net electricity market benefits between two or more investment options, is within 10% of the aggregate project costs.[138]

We are satisfied with Transpower's application of the investment test

D7 Under clause C1(1) of Schedule C of the Capex IM, we are satisfied:

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[136] 2012 Capex IM Reasons paper at para 7.2.1. We note that in our 2017/18 Capex IM review, we decided to retain the investment test criteria and approach in the 2012 Capex IM. See 2017/18 Capex IM review reasons paper at para 194.

[137] Capex IM, clause D1(1)(b).

[138] Capex IM, clauses D1(1)(c)(ii) and D1(2).

D7.1 with the parameters Transpower used in applying the investment test;

D7.2 that Transpower's proposed investment satisfies the investment test; and

D7.3 that Transpower's proposed investment is robust to sensitivity analysis.

How the investment test is performed

D8 In carrying out the investment test, Transpower must:[139]

D8.1 estimate the electricity market benefits, or cost elements and project costs, for each investment option under each relevant generation and demand scenario;[140]

D8.2 calculate the net electricity market benefits for each investment option under each relevant generation and demand scenario. The net electricity market benefit is the sum of the electricity market benefits, less the sum of the electricity market costs, including the project cost; and

D8.3 calculate the expected net electricity market benefit, which is the weighted average of the net electricity market benefit, under each relevant demand and generation scenario.

D9 As part of carrying out the investment test, Transpower must also test whether its proposed investment is sufficiently robust under sensitivity analysis, which verifies whether the proposed investment is robust to changes in some of the key assumptions.[141]

How we evaluated Transpower's application of the investment test

D10 In this MCP the proposed investment is driven by resilience risk and exposure to a flood driven HILP event. Following a major power interruption in Hawke's Bay region, when RDF substation was inundated with flood waters during Cyclone Gabrielle, Transpower embarked on increasing the RDF substation site resilience and to improve the reliability of power supply into the region.

D11 After restoring the substation to its pre-cyclone standard to withstand a 1-in-100-year ARI flood event, Transpower proposes to increase the resilience of RDF GXP to a design standard to withstand a 1-in-450-year ARI flood event.

D12 Under the Capex IM, we reviewed Transpower's application of the investment test by considering whether:

D12.1 the proposed investment is to meet the economic criterion of the GRS and provides a positive net market benefit;

D12.2 the investment need date is reasonable;

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[139] Capex IM, clause D2.

[140] The terms 'electricity market benefit or cost element', 'project cost', and 'relevant generation and demand scenarios' are defined in clause D4(1), (2), and clause D3(4) of Schedule D.

[141] Capex IM, clause D1(1)(a).

D12.3 the parameters of the investment test are appropriate and whether Transpower consulted on the parameters it applied;

D12.4 Transpower reasonably estimated the expected net electricity market benefit of each investment option;

D12.5 the proposed investment is the investment option with the highest net electricity market benefit; and

D12.6 the proposed investment is robust to sensitivity analysis.

D13 We present a summary of our evaluation of Transpower's investment test application in the rest of this attachment.

The proposed investment needs to meet the economic criterion of the GRS

D14 Transpower has submitted the MCP to meet clause D1(1)(b) of Schedule D (the economic criterion) of the Capex IM.

D15 Following our review of the proposal, we agree that Transpower's proposed investment and the alternative investment options it considered, are consistent with investments required to meet the economic criterion of the GRS.

D16 Transpower states in its proposal that the proposed investment provides improved resilience to flooding and is not to meet the deterministic limb of the grid reliability standards (GRS). The proposed investment has the highest positive expected net electricity market benefit.[142]

D17 Following our review, we are satisfied Transpower has demonstrated that its proposed investment provides the highest positive expected net electricity market benefit relative to investment Option 1.

Our evaluation of the parameters of the investment test

D18 The Capex IM allows Transpower some discretion to select the analysis parameters of the inputs into the investment test. Transpower is required to consult on the values of the parameters it uses.[143] The key parameters in this proposal are the:

D18.1 calculation period;[144]

D18.2 demand and generation scenarios (comprising demand forecasts and generation scenarios);[145]

[142] *Transpower NZ Ltd*, RDF MCP Attachment 1 – Compliance with the Capex IM, section 3 p. 16, available here.
[143] Capex IM, clause I4.
[144] Capex IM, clause G4(5)(b).
[145] Capex IM, clause G3(1).

D18.3 discount rate;[146]

D18.4 value of expected unserved energy, including any involuntary demand curtailment costs;[147] and

D18.5 investment options Transpower considered and consulted on.[148]

D19 For the reasons we outline below, we are satisfied that Transpower has reasonably selected the investment test parameters.

Calculation period

D20 The Capex IM calculation period "means the 20-year period commencing on the commissioning date of the last asset of the proposed investment".[149] If Transpower proposes a different calculation period, it needs to provide the reason for the change.

D21 Transpower has used a calculation period that extends to 2090. Transpower has explained the reasons to extend the calculation period as:[150]

D21.1 it aligns with the switchyard's economic life and allows more resilience benefits to be captured;

D21.2 the benefits from reduced flood risk will be captured over a longer period than 20 years (the default calculation period under Capex IM), since the investment in resilience is based on 1-in-450-year ARI flood event; and

D21.3 modelling of rainfall, river flow and flood level and associated probabilities inform NIWA climate change modelling. The long-term scenarios provided by Representative Concentration Pathways covers periods to 2081 – 2100. Year 2090 is midpoint of this interval.[151]

D22 In its short-list consultation, Transpower proposed using the extended calculation period starting from 2027 when the last asset of the RDF MCP is commissioned, through to 2090. Transpower notes that, based on short-list consultation feedback, it adopted the calculation period from 2027 to 2090.[152]

D23 Since the proposed investment is to enhance resilience to 1-in-450-year ARI flood event, by extending the calculation period through to 2090 allows the full resilience benefits to be capture in the investment test analysis.

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[146] Capex IM, clause G4(5).
[147] Capex IM, clause G4(5)(c) and clause I4.
[148] Capex IM, clause 7.4.1(2).
[149] Capex IM, clause 1.1.5(2).
[150] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 3.1, p. 4, available here.
[151] https://niwa.co.nz/climate-and-weather/climate-change-scenarios-new-zealand
[152] *Transpower NZ Ltd*, RDF 220kV Switchyard Resilience Project, Summary of short-list consultation submissions and responses, available here.

D24 We are satisfied the calculation period Transpower has selected is reasonable, and the timeframe over which it has calculated the costs and benefits in the application of the investment test.

D25 We agree that the benefits of resilience proposals occur over long timeframes due to the nature of the exposure risks, and it is reasonable that Transpower is able to capture resilience benefits in this proposal over a period longer than 20 years.

Demand and generation scenarios

D26 The Capex IM requires Transpower to use the relevant demand and generation scenarios when it calculates the expected net electricity market costs and benefits in the investment test.[153]

D27 The relevant scenarios that Transpower use must be either the demand and generation forecasts published by the Ministry of Business, Innovation and Employment (MBIE), or Transpower's development of a reasonable variation of those scenarios (scenario variations), having had regard to the views of interested persons on the variation.[154]

D28 The most recent scenarios were published by MBIE are the 2024 Electricity Demand and Generation Scenarios (EDGS), published in July 2024.[155]

D29 However, in its proposal, Transpower states it has based its RDF MCP analysis on the 2019 EDGS to reflect consultation it undertook "as part of the Net Zero Grid Pathways 1 (NZGP1) workstream in 2021"[156], including focussed updates on RDF regional demand.[157]

D30 In the following sections we assess whether the demand and generation scenario assumptions Transpower has made, are reasonable and consistent with the Capex IM.

The demand and generation scenario variations must be feasible and reasonable

D31 Clause D3(3) of the Capex IM sets out a non-exhaustive list of the factors that Transpower must have regard to for a scenario variation to be a "feasible and reasonable" variation of EDGS. Those factors include existing and forecast demand, the GRS, the value of expected unserved energy, and transfer capacities and capabilities of the grid.

D32 Some of these requirements are more relevant to the demand scenarios and some are more relevant to the generation scenarios.

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[153] Capex IM, clause D2(1).
[154] Capex IM, clauses D3(1) and D3(2). Under clause I1(1)(b), Transpower must consult on each demand and generation scenario variation.
[155] https://www.mbie.govt.nz/building-and-energy/energy-and-natural-resources/energy-statistics-and-modelling/energy-modelling/electricity-demand-and-generation-scenarios
[156] *Transpower NZ Ltd*, NZGP Phase One, available here.
[157] *Transpower NZ Ltd*, RDF MCP, Attachment 5 – Application of the Investment Test, footnote 2, available here.

D33 The RDF MCP is to enhance the resilience of RDF GXP, primarily driven by avoidance of potential flooding causing large scale power outages in Hawke's Bay region. As such, modelling nationwide demand growth and generation developments is not as important as it might be for a generation scenario and an energy demand driven project, such as NZGP1.

D34 In the next sections we evaluate the demand and generation scenario variations Transpower has used, and if these are feasible and reasonable variations of EDGS.

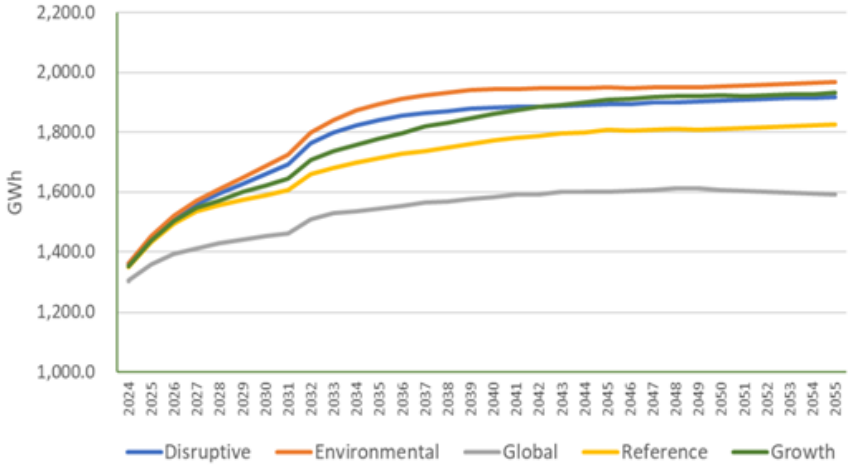
Transpower has weighted the demand scenarios

D35 Transpower notes in its proposal that the default setting for scenario use in the investment test analysis, is that each scenario has equal weighting.[158]

D36 However, as Transpower developed its proposal it considered different scenario weightings. Due to the low demand forecast under the Global scenario, Transpower has retained the remaining four scenarios and given them equal weightings.

D37 Transpower forecast demand for its four Hawke's Bay GXPs, namely Redclyffe, Fernhill, Tuai and Whakatu, by using the 2019 EDGS scenarios. Figure D1 shows the range of forecast growth to 2055.

Figure D1 Demand scenarios for Hawke's Bay region[159]



D38 Transpower mentioned that it updated the EDGS demand scenarios by factoring in the local line company's view on forecast demand for the region. In its proposal Transpower states:[160]

[158] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 2.2 p. 3, available here.
[159] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Figure 2, p. 3, available here.
[160] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, footnote 2, p. 2, available here.

> The scenarios used are based on EDGS 2019 but include necessary variations that were detailed in Transpower's NZGP1 major capital proposal (NZGP Latest updates | Transpower) along with updates to reflect updated lines company views of demand growth.

D39 Transpower also consulted on its proposed scenario weightings and respondents did not express any views on this.[161]

D40 In its sensitivity analysis, Transpower also considered the effect of equally weighting all five scenarios, and found Option 2, as the preferred investment option, was robust to this assumption.

D41 Following our review, and after considering Transpower's argument and consultation feedback, we consider Transpower has applied reasonable scenario weightings. In choosing the scenario weightings, it has attempted to match the scenario demand variations to the known regional demand growth which is reasonable.

Generation scenarios

D42 When considering likely variations to EDGS generation scenarios, Transpower mentions that regional generation developments do not materially change the characteristics of the difference EDGS scenarios at a regional level. Transpower states that:[162]

> The short-list options, while offering varying levels of flood resilience, are largely electrically equivalent. Consequently, when comparing the options there is no need to model market pricing impacts, nor do we need to consider the differences in the generation supply mix and the location supplying power to the region.

D43 We are satisfied with Transpower's approach when considering generation scenarios as these were unlikely to economically differentiate between the proposed investment or options considered in the investment test.

Consultation on value of expected unserved energy

D44 Transpower selected and consulted on a non-standard value of expected unserved energy equal to $33,000/MWh in 2025.[163] In its proposal, Transpower argues that it used this value after inflating the default value of $20,000/MWh, which was set in 2004.[164]

D45 Under the definition of 'value of expected unserved energy' in clause 1.1.5(2) of the Capex IM, this value is non-standard because it is higher than the $20,000/MWh specified in 2004 under clause 4(a) of Schedule 12.2 of the Code.

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[161] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, section 2.2 p. 3, available here.

[162] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, section 2.3, p. 3, available here.

[163] Capex IM clauses I2(2)(c) and I3(3)(d)(iii) require Transpower to consult in its long-list and short-list consultations on a non-standard value of expected unserved energy Transpower proposes to use. In the short-list consultation, Transpower must also explain why the non-standard value is appropriate.

[164] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 5, p. 8, available here.

D46 Transpower has also carried out its sensitivity analysis with values of expected unserved energy of $10,000/MWh, $20,000/MWh and $50,000/MWh.

D47 We accept Transpower's approach and use of the non-standard value of expected unserved energy, the amended sensitivity range, and agree that inflating the default value of unserved energy, set in 2004, is reasonable and consistent with previous MCPs.[165]

Discount rate

D48 In its application of the investment test, Transpower has used a discount rate of 5% and sensitivities of 3% and 7%. Transpower consulted on its proposed use of the amended discount rate and is consistent with changes we made to the Capex IM, which took effect from 1 April 2025.[166]

D49 The effect of a lower discount rate is that the long-term benefits of transmission investment will be higher on a net present value (NPV) basis, in a cost benefit analysis. In this MCP a lower discount rate will also weight the longer-term costs associated with flood events that the RDF MCP is designed to avoid.

D50 We agree that using the Capex IM discount rate of 5% and sensitivities of 7% and 3% is reasonable and was supported by short-list consultation feedback.

Investment options Transpower considered and consulted on

D51 The Capex IM requires that:

D51.1 the number of investment options must be appropriate given the magnitude of the estimated expenditure, and the complexity of the investment need associated with the proposed investment;167 and

D51.2 with respect to each investment option, the specificity of information and rigour and comprehensiveness of the analysis, must be commensurate with the estimated expenditure and complexity of the option.[168]

D52 Transpower considered and consulted on 3 short-list options.[169] These options can be classified into the following broad categories:

D52.1 repair – RDF GXP is repaired to the pre-Cyclone Gabrielle resilience level;

D52.2 rebuild – RDF 220kV switchyard is rebuilt to an improved resilience standard; and

D52.3 relocate – RDF substation relocates to a new site.

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[165] In our recent Transpower RCP4 final decision, we used a Value of Lost Load (**VoLL**) of $35, 374/MWh for the Transpower RCP4 quality settings incentive rate calculations. The RCP4 Quality Standards discussion is set out in paras 4.236 to 4.240, available here.

[166] Capex IM, clause D6(3).

[167] Capex IM, clause 7.4.1(2).

[168] Capex IM, clause 7.4.1(3).

[169] *Transpower NZ Ltd*, RDF 220kV switchyard resilience project, February 2025, available here.

D53 Transpower refined its long-list into a short-list of three investment options using the following criteria:[170]

D53.1 timeframes;

D53.2 costs;

D53.3 practicalities;

D53.4 future growth; and

D53.5 long-term resilience.

D54 We consider the screening criteria for the short-list options are reasonable.[171]

Whether the number of investment options is appropriate given the magnitude of the estimated expenditure and the complexity of the investment need

D55 The Capex IM defines an investment option as a technically feasible solution designed to facilitate or meet a specific investment need.[172]

D56 The three short-list options are set out in Table D1.

[170] *Transpower NZ Ltd*, RDF MCP Attachment 2 – Need for Investment and Options, section 4, p. 5 available here.
[171] Capex IM, clause C2.
[172] Capex IM, clause 1.1.5(2).

Table D1 Short-list investment options[173]

	Project cost ($ million in 2025 prices)[174]	Net benefit ($ million in 2025 prices)[175]	Investment option description[176]
Option 1 - Repair existing site	15.4	0.0	• RDF repaired to pre-cyclone levels of resilience. • No significant future investment in resilience for the region.
Option 2 - Rebuild RDF 220kV switchyard	39.9	12.2	• Rebuild the parts of the 220kV system impacted by flooding. • Use modern designs and meet current engineering and resilience standards. • Provide "wet feet" protection for all critical equipment. • Raise critical high voltage plant using equipment stands and access platforms. • Installation of new 220kV electrical equipment. • Build a digital substation control building.
Option 3 - Relocate RDF 220kV switchyard	216.2	-173.8	• Build a new substation north of Redclyffe connected to the 220kV Redclyffe-Whirinaki (RDF-WHI) circuit. • Relocate and rebuild the 220kV system, 110kV system, 2 x control rooms. • Build either an overhead line or underground cable connecting to Onekawa substation (approximately 8 kilometers away). • Re-route, rebuild and upgrade existing Transpower and Unison lines.

D57 We sought additional information from Transpower using an RFI about the feasibility and economics of a deferral option. We wanted to test whether Transpower had considered an alternative to Option 2 where existing assets would be replaced with resilience mitigations when those assets reached end-of-life.

D58 We asked Transpower to provide us with an NPV analysis of this deferral option that included:

[173] *Transpower NZ Ltd*, RDF MCP Attachment 2 – Need for Investment and options, Table 1, p. 6, available here.
[174] *Transpower NZ Ltd*, RDF MCP Proposal Attachment 5 – Application of the Investment Test, Table 4, p. 8, available here.
[175] *Transpower NZ Ltd*, RDF MCP Proposal Attachment 5 – Application of the Investment Test, Table 4, p. 8, available here. The quantified net electricity market benefits for the options are relative to Option 1 (base case).
[176] *Transpower NZ Ltd*, RDF MCP Proposal Attachment 5 – Application of the Investment Test, Table 4, p. 8, available here.

D58.1 the RDF site asset replacements timed to occur as they reach their expected end-of-life;

D58.2 the resilience mitigations included for each asset as it is replaced; and

D58.3 the resilience benefits that accrue following the replacement of the final investment that ensures the site is resilient to the level set out in Option 2 of your proposal.

D59 Transpower responded to our RFI stating that:[177]

D59.1 a staged approach would still require the majority of the switchyard to be built upfront—seven of the nine circuit breaker bays—leaving only two bays that could be deferred;

D59.2 delaying the rebuild of these two bays until the circuit-breakers reach their end-of-life in 20 years allows the deferral of $1.5 million (of the major capital allowance of $47.0 million);

D59.3 additional costs will be required for the project reactivation, redesign and remobilisation works in 20-years' time when these two circuit-breakers are expected to reach their end-of-life;

D59.4 with these deferral and cost assumptions, we find a NPV benefit of this staged build of only $50,000;

D59.5 this alternative option would leave the site exposed to the 1-in-100 ARI flood event for an additional 20 years; and

D59.6 the deferral benefit calculation is sensitive to assumptions around future cost escalation, project reactivation, redesign and remobilisation costs, as well as evolving resilience standards.

D60 Transpower explained that the deferral option is not favoured "due to issues with clearances from the low-level 220 kV bus"[178] that need to be resolved now to maintain site security standards. Additionally, the substation control room, which was damaged in the flood, is presently a temporary arrangement and needs to be replaced as soon as possible, locking Transpower into an early substation replacement strategy.

D61 We are satisfied with Transpower's explanation of the deferral option not being favoured. The damage to the site has necessitated early replacement of site primary and secondary assets, and there appears to be limited economic benefit while leaving the site exposed to a 1-in-100 ARI flood event for another 20 years.

[177] Transpower RDF MCP RFI001 response – Staging the Redclyffe 220kV Switchyard Resilience project – feasibility and economic assessment.

[178] Transpower RDF MCP RFI001 response – Staging the Redclyffe 220kV Switchyard Resilience project – feasibility and economic assessment.

D62 Following our review of the proposal we are satisfied that the shorted-listed investment options set out in Transpower's proposal, provide a reasonable number of investment options for analysis and application of the investment test. This is because:

D62.1 they cover a range of potential solutions to at least return RDF GXP to pre-cyclone resilience standards;

D62.2 other than investment Option 1, Options 2 and 3 will improve the resilience of RDF GXP; and

D62.3 Options 2 and 3 meet the investment need through enhanced resilience levels to 2090.

Whether, for each investment option, the specificity of information and rigour and comprehensiveness of the analysis are adequate

D63 Following our review of the proposal and supporting material, we consider Transpower has provided sufficient information and supporting analysis as part of the RDF MCP, including in response to our RFI.

D64 Key to this proposal is the post-Cyclone Gabrielle review of RDF substation's vulnerability to a similar flood event, since Hawke's Bay region's power supply is linked to the transmission grid via 220kV at RDF.

D65 Following our review, we consider the specificity of information, and rigour and comprehensiveness of the analysis in the RDF MCP, is adequate and consistent with the Capex IM.

Our evaluation of the investment test application

D66 Transpower has modelled its market benefits solely on quantifying the relative resilience benefit between the three short-list options.

D67 In its proposal Transpower states that:[179]

> The nature of the investment need and short-list options in this case is such that we consider most of the electricity market costs and benefits specified in the Capex IM do not vary materially between the options. For example, and unlike many other proposed major capex projects, whatever resiliency investment we make at Redclyffe will not have an impact on losses or power flows. Accordingly, for this analysis, the only electricity market cost or benefit we have accounted for in the investment test are the differences in resilience benefits between the options.

D68 Based on Transpower's reasoning that market costs and benefits in the investment test will only be those related to resilience investment, which we agree with, we have evaluated the investment test accordingly.

D69 We have analysed how Transpower calculated the net market costs, and net electricity market benefits in its investment test application, and the sensitivity analysis it has carried out.

[179] *Transpower NZ Ltd*, RDF MCP, Attachment 3 – Benefits Modelling, section 2, p. 2, available here.

Expected electricity market cost and benefit elements in the Capex IM investment test

D70 In applying the investment test, Transpower must calculate the following for each investment option included in the MCP:[180]

D70.1 the electricity market benefits under the relevant demand and generation scenario;

D70.2 the electricity market costs under the relevant demand and generation scenario;

D70.3 the net electricity market benefit for the relevant demand and generation scenario; and

D70.4 the expected net electricity market benefit.

D71 Under Schedule D of the Capex IM:

D71.1 'electricity market benefit or cost element' means any of the market benefits received, or market costs incurred by consumers, during the calculation period under the relevant demand and generation scenario, that will affect net electricity market benefits;[181]

D71.2 the 'net electricity market benefit' is, in respect of an investment option, applied to a demand and generation scenario, its aggregated quantum of each electricity market benefit or cost element, less its aggregated quantum of each project cost; and

D71.3 the 'expected net electricity market benefit', in respect of an investment option, is the weighted average of the net electricity market benefit under each relevant demand and generation scenario.[182]

D72 In evaluating Transpower's application of the investment test, we assessed whether Transpower reasonably estimated, for each investment option in the proposal:

D72.1 the electricity market benefits;

D72.2 the electricity market costs; and

D72.3 the expected net electricity market benefit.

Expected electricity market cost and benefit elements in the RDF MCP proposal

D73 Clause D4 of the Capex IM sets out the electricity market cost or benefit elements that Transpower can consider in the investment test. Accordingly, Transpower calculated the following categories of electricity market costs and benefits for the investment options it considered:[183]

D73.1 fuel costs, eg, the cost of dispatching electricity;

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[180] Capex IM, Clause D4(1).
[181] Capex IM, clause D4(1).
[182] Capex IM, clause D2(1).
[183] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Options analysis, Section 4, p. 5, available here.

D73.2 cost of involuntary demand curtailment;

D73.3 capital costs of transmission and distribution network investments required to meet the investment need, including connection asset capital costs, and capital costs of modelled projects;[184]

D73.4 operation and maintenance costs;

D73.5 losses costs; and

D73.6 reliability costs.

D74 Clause D4(l) allows Transpower to include in its application of the investment test, any other benefit or cost occurring in the electricity market proposed by Transpower, prior to its consultation on the short-list of investment options, and agreed to by the Commission.

D75 In the RDF MCP, Transpower has only considered resilience benefits in its investment test application. Transpower reasons this is because:[185]

> the only electricity market cost or benefit we have accounted for in the Investment Test are the difference in resilience benefits between the short-list options. We do not consider the other electricity market costs or benefits specified in the Capex IM vary materially between the options.

D76 We agree with Transpower that it only needs to consider resilience benefits in its application of the investment test. No other identifiable market benefits are likely to discriminate between the investment options considered.

Transpower's calculation of electricity market costs and electricity market benefits.

MCP capital costs

D77 Transpower has used its Transpower's Enterprise Estimating System (TEES) cost estimation framework to estimate the RDF MCP capital costs. A description of the Transpower capital cost estimation process is set out in the RDF MCP Costs attachment.[186]

D78 We have discussed Transpower's approach to project capital cost estimation in Attachment C of this decision and are satisfied that the process is robust and fit for purpose.

D79 Table D2 sets out Transpower's TEES cost estimates for the proposed investment.[187]

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[184] Modelled projects are projects modelled by Transpower in its analysis to ensure the transmission network capacity is able to meet the investment need over the analysis timeframe. Modelled projects do not form part of the MCP application.

[185] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 4.5, p. 7, available here.

[186] *Transpower NZ Ltd*, RDF MCP Attachment 4 – Costing, available here.

[187] Transpower NZ Ltd, RDF MCP, Attachment 4 – Costings, Table 2, p. 5, available here.

Table D2 TEES cost estimates for the proposed investment components[188]

MCA component	Amount ($'000 2025 unless otherwise stated)
Transmission lines construction works	3,317
Civil works	5,038
Primary plant works	11,775
Protection works	5,167
Miscellaneous works	111
Communications	810
Switching costs	85
Freight	527
Design	2,700
Transpower overhead	2,405
Contractor overhead	6,852
Environmental costs	365
Property	202
Additional risk adjustment	3,863
Total Project Cost (excluding investigation costs)	**43,116**

D80 Investigation costs of $0.734 million have already been incurred.[189]

Resilience benefits

D81 Resilience benefits will accrue when an investment option is more resilient to a HILP event than another investment option.

D82 In its proposal Transpower notes that "resilience benefits relate to being able to supply electricity following a HILP event that would otherwise result in an interruption of power."[190]

[188] *Transpower NZ Ltd*, RDF MCP Attachment 4 – Costing, Table 2, p. 5, available here.
[189] *Transpower NZ Ltd*, RDF MCP Attachment 4 – Costing, section 4.1, p. 5, available here.
[190] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, section 4.5, p. 7, available here.

D83 Table D3 below shows the future flood costs for the three short-list options under the EDGS scenarios. The weighted costs of these individual costs inform the resilience benefits when these benefits are calculated relative to Option 1 and used in calculating the net benefits.

Table D3 Future flood costs that reflect the resilience benefits in 2025 present value at 5% discount rate ($m)[191]

Scenario	Option 1 Repair (do minimum)	Option 2 Rebuild RDF 220kV switchyard	Option 3 Relocate new GXP
Disruptive	-52.2	-15.4	-25.2
Environmental	-53.4	-15.7	-25.7
Growth	-52.4	-15.4	-25.0
Reference	-50.4	-15.0	-24.4
Weighted risk cost	-52.1	-15.4	-25.1
Weighted risk benefit (relative to Option 1)	**0.0**	**36.7**	**27.0**

D84 In its resilience benefit calculations, Transpower has used the unserved energy cost estimate of the Cyclone Gabrielle event, to establish the cost of lost load during a future flood event.

D85 We reviewed the Transpower methodology and HILP event resilience analysis. We are satisfied that the analysis approach taken, and that the resilience benefits calculated, are reasonable. In the application of the investment test Transpower has weighted the resilience benefits for each option by scenario.[192]

Our observations of Transpower's investment test results

D86 In reviewing Transpower's investment test application, we carried out our own analysis on whether the proposal passed the investment test.

D87 We consider Transpower has taken a robust approach in applying the investment test, and that the costs and benefits have been reasonably calculated.

D88 Table D4 sets out the quantified cost and benefit investment test NPV results for the three investment options Transpower considered in its proposal.

[191] *Transpower NZ Ltd,* RDF MCP spreadsheet OptionsBenefitModelv1.1, sheet 'cycloneGabrielleunservedEnergy'.
[192] *Transpower NZ Ltd*, RDF MCP Attachment 8 – Benefits modelling, Table 10, p. 23, available here.

Table D4 Quantified costs and benefits, present values at 5% discount rate ($ million in 2025 prices)[193]

Benefits	Option 1	Option 2	Option 3
Capital costs	15.4	39.9	216.2
Future flood costs[194]	52.1	15.4	25.1
Total quantified costs	67.5	55.3	241.3
Resilience benefits (relative to Option 1)	0.0	36.7	27.0
Relative net benefit	**0.0**	**12.2**	**-173.8**

D89 Table D4 illustrates that the quantified relative net electricity market benefit is positive by $12.2 million for proposed investment Option 2.

Summary of our assessment of the proposed investment benefit

D90 We are satisfied Transpower has correctly applied the investment test and related Capex IM requirements in selecting Option 2 as the proposed investment for the MCP.

The proposed investment is robust to sensitivity analysis

D91 The Capex IM requires Transpower to perform a sensitivity analysis to test whether the proposed investment is robust to some key assumptions.[195] The Capex IM also lists the parameters that must be varied to assess whether the results of the investment test are robust to variations.[196] These parameters reflect the key assumptions that can have a significant impact on the investment test results.

D92 There are two reasons sensitivity analysis is carried out. The first is to ensure that the proposed investment is robust to some of the key assumptions and passes the investment test. The second is whether the results of the investment test are robust to the selection of the proposed investment when compared to the investment options considered.

D93 Transpower considered several parameters in its core sensitivity analysis, including:[197]

D93.1 forecast demand variations by scenario and net benefits calculated for each of the four EDGS variations;

D93.2 discount rates of 3% and 7%;

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[193] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Table 4, available here.
[194] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 4.5, p. 8, available here.
[195] Capex IM, clause D7.
[196] Capex IM, clause D7(1).
[197] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Section 5, p. 8, available here.

D93.3 value of unserved energy sensitivities of $10,000/MWh, $20,000/MWh and $50,000/MWh;

D93.4 capital cost sensitivities of +30% and -30% around the central estimate; and

D93.5 outage interruption durations of +25% and -25%.

D94 The sensitivity analysis results are presented in Table D5.

Table D5 Sensitivity analysis results ($ million, 2025 present value) [198]

Scenario	Option 1	Option 2	Option 3
Standard assumptions - Disruptive	0.0	11.1	-174.7
Standard assumptions - Environmental	0.0	13.2	-173.1
Standard assumptions – Growth	0.0	12.4	-173.5
Standard assumptions – Reference	0.0	10.9	-173.8
Standard assumptions – Equal weighting	0.0	12.2	-173.8
Discount rate 3%	0.0	36.0	-172.7
Discount rate 7%	0.0	0.8	-165.8
Lower VoLL of $10,000/MWh	0.0	-12.5	-192.0
Low VoLL of $20,000/MWh	0.0	-1.8	-184.1
High VoLL of $50,000/MWh	0.0	30.5	-160.3
High Capital cost +30%	0.0	4.9	-234.1
Low Capital cost -30%	0.0	19.6	-113.5
Longer interruption +25%	0.0	21.1	-167.3
Shorter interruption -25%	0.0	3.4	-180.3

D95 We are satisfied the parameters Transpower used in its sensitivity analysis are reasonable. The results of Transpower's sensitivity analysis show that Option 2 retains the highest expected net electricity market benefits for all but two sensitivity analysis parameters.

D96 We are satisfied Transpower's sensitivity analysis confirms that the proposed investment (Option 2) is generally robust to the sensitivities tested.

[198] *Transpower NZ Ltd*, RDF MCP Attachment 5 – Application of the Investment Test, Table 6, p. 10, available here.