ROBINSON BOWMAKER PAUL

TRANSPOWER

BBC Assumptions Book Reasonableness Assurance

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Executive Summary

Transpower has engaged Robinson Bowmaker Paul to provide assurance on changes made to version 3.0 of the Assumptions Book that documents the assumptions Transpower would apply when conducting market modelling to determine Benefit Based Charges (BBC).

Assurance Scope

Modelling assumptions are specified in Chapter 2 of the Assumptions Book. Our assurance activities have therefore focused on the changes made to Chapter 2.

Approach

Methodology

RBP has undertaken a review of the documentation and justification of changes to chapter 2 of the assumptions book, including:

- Reviewing what changes from the previous version of the assumption book are proposed
- Where there is a change:
  - vouch the origin of the data has been adequately documented and check it aligns with the assumptions book update accounting for any processing of the data that has been undertaken.
  - provide an opinion on the reasonableness of the new assumption including the reasonableness of the source or the reasonableness of the justification if no source is available.

Caveats

Our assurance opinion is subject to the following caveats:

- The following assumptions need to be updated for each BBC determination:
  - Demand forecasts – as specified in section 2.3.1, the assumption book does not include demand assumptions for each market scenario as these will be developed and consulted on for each BBI

- LNG availability in the scenario definitions (assumption book section 2.3.1) – This is an evolving situation, so will need to be reassessed until a definitive decision is made
- Commissioning dates for committed projects – as specified in assumptions book section 2.3.8.2, these are based in Transpower's internal operations and should be updated based on the most recent information.

ASSURANCE PROVIDED

This review was conducted in accordance with the SAE 3000 standard (*Standard on Assurance Engagements*) and provides reasonable assurance.

Limitations

Our review is subject to the following limitations:

- The specific changes that were reviewed were selected based on materiality, which is a judgement based on our professional modelling knowledge and experience and the materiality criteria listed below.
- We have reviewed the appropriateness of source documents in that they were produced by appropriate and reliable organisations but have not reviewed the assumptions and methodologies used by those organisations in producing those source documents.

Materiality

In selecting the scope of changes to provide assurance on, we have taken the following factors into account:

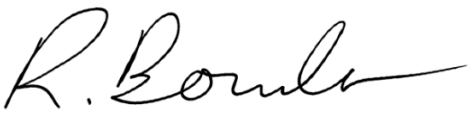
- Purpose and objectives of this review
- Potential impact on modelling outcomes
- Editorial nature of some changes

ASSURANCE OPINION

This opinion pertains to version 3.0 of the Benefit Based Charges Assumptions Book, as provided to RBP on the 22 April 2026.

In our opinion, based on the assurance procedures we have conducted, subject to the caveats and limitations noted above, we conclude:

- Transpower's changes to version 3.0 of the Benefit Based Charges Assumptions Book are reasonable for the purpose of allocating and adjusting Benefit Based Charges.
- The data sources used to implement the changes are appropriate and correctly documented.
- The changes made to the Assumptions Book, which are in scope for this review, have been made correctly and are consistent with the relevant data sources.



Richard Bowmaker

Principal

Limitation of Liability

This opinion has been prepared by Robinson Bowmaker Paul Limited for Transpower based on information supplied by Transpower. To the maximum extent permitted in law, Robinson Bowmaker Paul excludes all liability to any other persons for any loss or damage, whether direct or indirect and however caused (including through negligence) that may be suffered as a result of reliance on this opinion by that third party.

Contents

1 INTRODUCTION

Under the Transmission Pricing Methodology (TPM), Transpower must calculate Benefits-Based Charges (BBC) to be applied to certain transmission investments. Transpower must consult on and publish a BBC Assumptions Book, which sets out the methodologies and assumptions used by Transpower to allocate and adjust BBCs.

To facilitate the consultation on version 3 of the assumptions book, Transpower have retained Robinson Bowmaker Paul Limited (RBP) to review the changes made to the modelling assumptions (chapter 2) in version 3 of the assumptions book. Specifically, RBP has undertaken a review of the documentation and justification of changes to chapter 2 of the assumptions book, including:

- reviewing what changes from the previous version of the assumption book are proposed
- where there is a change:
  - vouch the origin of the data has been adequately documented and check it aligns with the assumptions book update accounting for any processing of the data that has been undertaken.
  - provide an opinion on the reasonableness of the new assumption including the reasonableness of the source or the reasonableness of the justification if no source is available.

This report is the result of this review.

1.1 METHODOLOGY

The assumptions book, as supplied to RBP for this review, consists of:

1. A document (in Microsoft Word format) containing the main body of the assumptions book. The modelling assumptions that are the subject of this review are described in chapter 2 of this document.
2. A workbook (in Microsoft Excel format) containing tables of assumptions data, referred to as "Appendix F" in the main document.

In undertaking this review, RBP has:

1. Identified a list of material changes between version 2 and version 3 of the main document

2. For each change identified in step 1:
    a. Where the changed assumption is based on a source document, we have retrieved the source document, reviewed the appropriateness of the source, and checked that the relevant data from the source is consistent with the assumption specified in the document.
    b. For any changes not based on a source document, we have reviewed the reasonableness of the change based on our professional market modelling experience.
3. Conducted checks, where a changed assumption referenced data in the Appendix F, that the data in the Appendix F workbook is consistent with the specified source.
4. Communicated a list of questions and issues to Transpower. These resulted in several updates to the assumptions book.
5. Received an updated version of the assumptions book from Transpower and checked that it adequately resolved the issues that were raised.

The specific assumptions that we reviewed, questions and issues that we raised, responses from Transpower, and final conclusions are documented in section 2 of this report.

1.2 LIMITATIONS

Our assurance review is subject to the following limitations:

- The specific changes that were reviewed were selected based on materiality and judgement based on our professional modelling knowledge and experience. Materiality criteria are specified in the Executive Summary.
- We have reviewed the appropriateness of source documents in that they were produced by appropriate and reliable organisations but have not reviewed the assumptions and methodologies used by those organisations in producing those source documents.

2 ASSUMPTION CHANGES

In this section, we document:

- The specific assumptions that we reviewed, referred to be section numbers in the assumptions book document (as provided to RBP on the 22 April 2026).
- Identified data sources
- Questions and issues that we raised with Transpower
- Responses received from Transpower
- Our final conclusions on each assumption

These are documented in the following Table 1:

Table 1. Reviewed assumption changes

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
1	2.2.2.2	Currency conversion factors, now based on 2025 dollars using June quarter CPI (all groups)	Stats NZ Sept 2025 release			OK - Correct change
2	2.3.1	Updated set of market scenarios, variations on MBIE EDGS 2024	EDGS 2024			OK - Reasonable to use established set of scenarios
3	2.3.1	New factors in scenario definitions: Domestic gas supply forecast LNG availability non-power generation gas consumption Thermal plant retirements Biomass at Huntly	No specific source – knowledge of market context	Given recent news, it should be questioned why all scenarios have LNG availability, now that the government terminal project looks less certain.	We now only include LNG in our Growth and Reference scenarios. Also, to address uncertainty around LNG we have added the following paragraph to Section 2.3.5 "The cost and availability of LNG is uncertain. Our LNG assumptions will be updated for a BBI should new information	OK with assumption book clarifications. Reasonable list of current unknown factors.

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
		Demand response availability			arise indicating that significant adjustments to our approach are necessary	
4	2.3.2	Gas turbines converting to biofuel when economic is no longer a scenario factor. Biofuel as an alternative fuel for OCGTs is now in all scenarios.	MBIE Generation Stack 2020			OK (with assumption book clarifications - See change #9).
5	2.3.1	Use of MBIE's 2024 EDGS demand forecast instead of Transpower 2023 forecast. Result is a wider range of demand forecasts across the scenarios. However, this forecast is only for information, and a specific forecast will be prepared for each BBI.	EDGS 2024			All EDGS scenarios have demand increasing rapidly, despite demand declining in last 15 years. However, values in assumption book are indicative only.
6	2.3.2.2	Update of source for HVDC capacities to Transpower HVDC link Upgrade Programme Major Capex Proposal but assumed capacities and dates remain the same.	Transpower TPM consultation paper: NZGP1.1 – Updated CNI & HVDC Reactive Support proposed starting BBI customer allocations	HVDC MCP document specifies date of upgrade of HVDC north capacity to 1200 MW as "before 2029", but assumed date in BBI assumptions remains at May 2027. Is there a basis for this earlier date?	This upgrade is now June 2028. This aligns with the BBC starting allocations for the HVDC Reactive Support BBI - NZGP1.1 – Updated CNI & HVDC Reactive Support proposed starting BBI customer allocations, Consultation paper | Transpower (Feb 2026).	Ok - best available source
7	2.3.3.1	Additional large embedded generators, and deletion of Kinleith	Various distribution company asset management plans (listed in assumptions book)			OK - sources confirm presence of these embedded generators. The capacity and type of generation is defined in Section 2.3.4
8	2.3.4.2	Change in source of generation capacities data to 2025 SOSA and em6 data plus 2 supplementary sources (previously 2020 SOSA)	Security of Supply Assessment (SOSA) 2025 em6 website	We have checked Appendix F data against sources and found some anomalies to check.	Some revisions made to assumptions book - Waikato hydro station capacities set to capacities from Mercury website. Removed Bream Bay Peaker from Appendix F.	Valid source - Appendix F data consistent with source after assumption book revisions

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
9	2.3.4.3	New alternative fuel options. Includes biofuel as an alternative fuel for OCGTs.	MBIE Generation Stack 2020 Energy News	Alternative fuels for existing thermal generators: Are there references to confirm which plants have which alternative fuels?	Basis for alternative fuels supplied. Assumptions book edited to clarify that Whirinaki is diesel only, and that Huntly Rankine units have been demonstrated to run on biofuel pellets.	OK with assumption book clarifications.
10	2.3.4.3	Deletion of Kinleith and Te Rapa from descriptions of outage rates and cogen dispatch patterns	No specific source – knowledge of market context			OK - Te Rapa retired in 2023. Kinleith retired in 2025.
	2.3.4.3	Variable O&M and auxiliary use rates not specified	n/a	Are variable O&M costs and Auxiliary Use rates assumed for thermal plant? Should these be specified?	We can provide variable O&M costs for thermal plant. Auxiliary use for thermal plant is ignored in SDDP.	OK with assumption book clarifications.
11	2.3.4.4	Using 50 (backward) and 15 (forward) synthetic inflow sequences instead of 40 for policy step of hydro modelling. For simulation step, "typically" use 50 sequences instead of "all available".	No specific source – reasonable assumption			OK - Reasonable methodology for realistic compute times.
12	2.3.4.5	Modelling of 1st stage of replacement at Wairakei - generation is reduced by half	Contact Energy website.			OK - valid source
13	2.3.4.6	Updated wind repowering timelines and total increase	Meridian Energy website.			OK - Te Rere Hau consistent with Meridian source. For others the existing 30-year assumption is applied.
14	2.3.4.6	Updated wind capacity factors. Change of source to Time Series Lab from PSR Energy	TSL software			OK - valid source
15	2.3.4.6	Assume Siemens SWT-4.0-130 turbine model, with 90m hub height	No specific source – reasonable assumption	Existing wind generators: Is there a reason that the Siemens SWT-4.0-130 was specifically chosen as the turbine model? Is there a	In TSL each turbine is defined with a production profile which relates wind speed to generation output. For simplicity we assume that turbine types across existing farms are consistent and base them on an industry standard 4 MW turbine from a	OK – Accepted with response.

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
				reference to back up this choice?	leading manufacturer. This turbine model is very similar to that used at the Harapaki wind farm. The specific production profile used in our model is not significant as all wind farm outputs are scaled to a regional target capacity factor. The output of the wind farm is scaled based on the wind farm's capacity and the region's target capacity factor.	
16	2.3.4.7	Now 18 solar regions, instead of 182 solar profiles.	No specific source – reasonable assumption			OK - reasonable simplification
17	2.3.4.7	Using TSL for solar profiles	TSL software			OK - valid source
18	2.3.4.7	Updated parameters assumed for solar modelling, including 1-axis tracking, resulting in increased capacity factors	No specific source – reasonable assumption			OK - Confirmed that 1-axis tracking is used by all existing solar farms
19	2.3.4.9	Updated thermal decommissioning timelines. New scenario-specific decommissioning timelines	EDGS 2024 (Huntly unit 5 and Stratford) MBIE Generation Stack 2020 (Whirinaki, McKee, Junction Road) Energy News (TCC) Company announcements (Hawera, Edgecumbe, Huntly 1-4) 2020 Generation Stack (Kapuni)			OK - Hawera, Edgecumbe, TCC announcements consistent. Whirinaki, McKee, Junction Road consistent with Gen Stack 2020. Stratford, Huntly 5 consistent with EDGS 2024. Huntly units as per scenario definitions.
20	2.3.5	All new fuel supply assumptions - Coal	IEA 2025 AEO STEPS (diesel, coal, LNG)	1. In the formula for the modelled coal price, should the price be divided by 18.07, not multiplied? 2. Coal price used is Newcastle 6000 kcal/kg; coal used at Huntly is 4320 kcal/kg. Price is scaled by ratio of calorific values (0.72) - Coal prices do not necessarily scale	1. That is correct - formula has been corrected in the assumptions book. 2. Our approach is consistent with Genesis Energy as noted in their Huntly Firming Options document. The fixed price component will to some extent correct for any mismatch in lower grade coal price ratios. We have converted the Newcastle 6000kcal/kg price using the AB v3 formula	OK with assumption book correction and clarifications.

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
				with calorific value - please justify	and compared this with Genesis Energy's published Weighted Average Coal Burn Cost. The two prices are comparable for CY 2025, as expected, given that the fixed price component was calibrated using Genesis Energy's Q1FY2026 coal price data.	
21	2.3.5	All new fuel supply assumptions - Diesel	IEA 2025 AEO STEPS Weekly fuel price monitoring reported by the Ministry of Business, Innovation & Employment	What is the source of the landed diesel costs used to determine the historical correlation with crude oil?	This is from the Weekly fuel price monitoring reported by the Ministry of Business, Innovation & Employment. We use the Weekly table up to 2025 week 48. We interpret the Diesel Importer Cost values and the landed diesel costs. Assumptions book edited to include this source.	OK (with assumption book clarifications).
22	2.3.5	All new fuel supply assumptions - LNG	IEA 2025 AEO STEPS (diesel, coal, LNG) Enerlytica LNG Import document for MBIE	Inconsistent NZD/USD fx rate used between Coal and LNG price calculations. Please specify basis for this assumption.	The coal and diesel forecasts use a 5-Year Average NZD/USD Exchange Rate of 0.63. We will use this for the LNG price equation. Assumptions book updated.	OK (with assumption book correction and clarifications).
23	2.3.5	All new fuel supply assumptions - Biofuel	NZ Battery Project - Biofuel and LNG Cost Report, Hale and Twomey (biodiesel) EECA - Biogas and Biomethane in New Zealand (biogas)	Biogas availability and price is given as 288 TJ/week at $35/GJ. The cited source is the EECA/Beca report "Biogas and Biomethane in New Zealand". This report gives potential volumes as 1.6 PJ (presumably per year) at $20/GJ and 7.2 PJ at $35-40/GJ, so a total of 8.8 PJ. 8.8PJ/52 weeks = 169 TJ/week. So where did 288 TJ/week come from?	Based on the linked document (Biogas and Biomethane in NZ - Unlocking New Zealand's Renewable Natural Gas Potential), we assume 15 PJ/year, which corresponds to the midpoint of the reported "total" range (excluding landfill) shown in the third summary chart near the start of the report. This equates to approximately 288 TJ/week (15 PJ / 52 weeks). This estimate is likely derived from 2050 projections. Nevertheless, for the purposes of the environmental scenario, we consider it appropriate to combine high availability with low cost, consistent with a "green-incentivised" world in which low-cost alternatives to fossil fuels are actively developed. This assumption is also broadly consistent with external estimates. For example, Energy News (Plan eyes 25 PJ of biomethane production by 2050 | Energy News) reports that GasNZ estimates up to 25 PJ/year of	Biodiesel source consistent with assumptions. Biogas source consistent with assumptions (noting that this is an 'indicative price')

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
					biomethane production could be achievable by 2050.	
24	2.3.5	All new fuel supply assumptions - Biomass pellets	2025 Genesis Investor Day presentation 2022 Genesis Insights on Biofuels pres.	Two Genesis presentations are referenced- 2025 Investor Day Biomass Update and 2022 Insights on Biofuels. The two give different indicative generation price ranges for biomass generation, but it looks like the low end of the 2022 range has been used. Is there a reason for this?	No, we should base the biomass pellets cost on the latest market information (the 2025 presentation). Assumptions book updated.	OK (with assumption book correction and clarifications).
25	2.3.5	All new fuel supply assumptions - Domestic gas modelled within SDDP	No specific source – methodology only			OK - Valid methodology
26	2.3.6.1	Updated fuel emission factors. Diesel drops slightly, biomass pellets and biodiesel assumed to be zero.	MfE 2024 guide "Measuring Emissions" (Diesel, Coal, NG)	Fuel emission factors are specified per GJ for all fuels, but the source document (MfE Measuring Emissions) provides figures for Coal and Diesel per kg and per litre respectively. To convert, calorific values for these fuels need to be assumed. Please specify the value and source. Also specify which grade of coal has been assumed.	The calorific values are as stated in Appendix A5 of the MfE Measuring Emissions document. We used the following “industry” values: Diesel: 38.49 MJ/litre Coal: 21.64 MJ/kg The grade of coal is sub-bituminous, as used at Huntly. The assumptions book has been modified to include as used diesel and coal calorific values and the sources for this information.	OK (with assumption book correction and clarifications).
27	2.3.6.1	New geothermal reinjection scenarios	No specific source – reasonable assumption			OK - as per scenario definitions
28	2.3.6.1	Candidate geothermal plant emission rates based on project classification in the 2020 Geothermal Generation stack report	MBIE Generation Stack 2020 NZGA Pre-Seminar Presentation: New Zealand’s Geothermal Carbon Emissions: Mitigations and Emerging Opportunities Contact Nov 2024 Announcement	Having trouble reconciling some of the geothermal emissions rates in Table 8b in Appendix F with the description: • 100% reinjection is assumed for Ngawha, Kauerau2 and TeHuka. This results in 0 emissions for Ngawha, but non-zero for the other two? • Te Mihi 2 and 3 Should have same rate as existing	Kawerau2 and Te Huka Kawerau2 should be zero as per the Assumptions Book. Te Huka has been updated to 4 gCO2eq/kWh in line with slide 5 from 2025 NZGA pre-seminar geothermal carbon capture and reinjection_29July2025.pptx. So an update to the Assumptions Book text is required. TeMihi2 and TeMihi3 We set TeMihi2 and TeMihi3 emissions in line with Contact’s Nov 2024 announcement	Valid source - Appendix F data consistent with sources after assumption book revisions

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
				Wairakei, but they are different • Also noting that the new Ngatamariki2 has a different rate to the existing Ngatamariki – should the same rate have been assumed? • Capital costs for Kawerau2 are multiplied by 1.2, but it is not listed in 2.3.8.5 as a plant receiving the low enthalpy multiplier.	(PowerPoint Presentation), which gives TeMihi2 emissions as 2.2gCO2e/kWh. Ngatamariki2 The emissions rate for Ngatamariki2 should be the same as Ngatamariki. AB additions required: • Kawerau2 should be zero in Appendix F. • We do not assume 100% reinjection at Te Huka (and Te Huka should be removed from the list of 100% reinjection plant in Section 2.3.6.1 of the Assumptions Book. • Ngatamariki2 should be the same as Ngatamariki in Appendix F. • Kawerau2 costs should not be multiplied by 1.2. This will be corrected.	
29	2.3.6.1	Acknowledgement of uncertainty re permanence of CO2 sequestration for reinjected NCGs. Solution is to monitor for developments in this space.	No specific source – methodology only			OK - Best approach given uncertainty on this data point.
30	2.3.6.2	Updated ETS carbon price projections, based on ASX futures (2026-27) and Treasury projections (2030-) with transition in between	ASX Futures Treasury Projections	Please specify the trading date(s) on which the ASX NZU carbon price future prices were obtained.	Assumptions Book edited to include trading date	OK (with assumption book clarifications).
31	2.3.7	Updated deficit costs. Based on LRMC of diesel peaker and Sense Partners report on industrial demand response capability.	Sense Partners DR Report EA demand side flexibility survey	The first two tranches of deficit, representing demand response, have quantities based on report on potential DR capability. How much DR capability can the SO call on currently? (zero?) Are these two quantities aligned? Also, what is the basis for the increased quantities for the Innovation scenario?	Potential DR capability The SO currently has limited means to "call on" or dispatch DR resources. Dispatchable Demand is one such mechanism and this has, to date, had limited uptake among consumers. The Authority have a work programme in place to further encourage the uptake of DR. This includes the Emergency Reserve Scheme, which is planned to be in place this year. Perhaps the more relevant question is how many consumers proactively respond to wholesale prices. There is some evidence to suggest that retailers are building contractual relationships with customers to	Reasonable assumption given lack of data to inform DR uptake.

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
					manage their load, and that these relationships fall outside of the spot market, as administered by the SO. Unfortunately, so far as we are aware, there are no publicly available estimates of this capacity. As spot price volatility is likely to materially increase with increased wind and solar build, we assume that there will be strong incentives for the development of demand response whether this is through direct contractual relationships between parties or through new spot market mechanisms. It is likely that these developments will be further encouraged through technological innovation and recent moves by Transpower to develop Non Transmission Solution for grid investment. Our current test modelling suggests that deficit will be more frequent in the mid to late 2030s consistent with the retirement of thermal generation and limited access to comparatively lower cost firming fuels (such as domestic natural gas). For these reasons, our view is that using potential demand response capability is a reasonable assumption. Basis for Innovation scenario We have assumed that the innovation scenario will have a moderately higher quantity of demand response because of technological innovation. Estimates of DR potential is by its nature uncertain so it seems reasonable to assume that this potential could be higher in market scenarios where technology innovation is high.	

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
32	2.3.8.1	New methodology for location of new generation, using generation expansion modelling considering transmission constraints and HVDC losses	No specific source – methodology only			OK - Valid methodology
33	2.3.8.2	Updated timeline for committed project commissioning dates	"Transpower's internal operations, supplemented by publicly available market information"			To be revised for each BBC determination.
34	2.3.8.2	Updated OptGen build time restriction assumptions	No specific source – reasonable assumption			Reasonable assumptions
35	2.3.8.2	Info on other future projects from Beca/Concept 2025 Generation Stack report	2025 Generation Stack			OK – valid source
36	2.3.8.2	1 year delay added to construction time for FID	No specific source – reasonable assumption			Reasonable assumptions
37	2.3.8.2	3-year construction period assumed for geothermal (was previously 4) based on Te Mihi Stage 2	No specific source – reasonable assumption			Reasonable assumptions
38	2.3.8.3	Alternative fuels assumed for thermal plants (see change #9 for existing thermal plant)	No specific source – reasonable assumption			OK (with assumption book clarifications - See change #9).
39	2.3.8.3	Specific thermal technologies and locations listed for generation stack	Consents, Energy News			OK - valid sources
40	2.3.8.3	Thermal plant locations based on "market indications" (consents and Energy News)	Consents Energy News			OK - valid sources
41	2.3.8.3	Thermal project costs and heat rates based on 2025 Generation Stack Report	2025 Generation Stack			Valid source - Appendix F data consistent with source
42	2.3.8.3	Composite Outage Rate fixed at 3% to align with EA's SSAD	Security of Supply Assumption Document (SSAD)			Valid source

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
43	2.3.8.4	Hydro cost parameters from 2025 Generation Stack Report	2025 Generation Stack			Valid source - Appendix F data consistent with source
44	2.3.8.5	Geothermal costs	2025 Generation Stack			Valid source - Appendix F data consistent with source
45	2.3.8.5	Binary/flash assumption based on size, based on existing developments	No specific source – methodology only	Geothermal binary or flash assumption based on project size: This assumption is based on "existing geothermal developments". Is there a reference that shows this? Table 2 in the 2020 Geothermal Stack report appears to contradict this.	We note that recently completed and planned geothermal project developments are of binary technology types despite the field classification as medium enthalpy. Examples are Ngatamariki 2 (Mercury), Kawerau 2 (Eastland generation), Te Mihi Stage 2 and Te Mihi Stage 3 (Contact redevelopment of Wairakei). However, further development at the Tauhara steam field (which is also classified as a medium resource in the 2020 stack report) is likely to be more conventional condensing steam turbines. Therefore, by using the enthalpy classification in the 2020 stack (table 6) we cannot directly predict the generation technology type. However, applying the indicative capacity of plants appears to be a better predictor of the generation technology type as further development at Tauhara would be assigned to a condensing steam turbine using the >50 MW rule.	OK - In reality, the choice of binary or flash technologies will depend on many factors, many of which are unknown at this stage. This assumption is reasonable given lack of knowledge of other factors.
46	2.3.8.5	Low enthalpy capital cost multiplier applied to specified plants, based on MBIE 2020 geothermal generation stack	MBIE Generation Stack 2020	Horohoro and AtiamuiGeo are listed as receiving low enthalpy multiplier, but they are not in any of the Appendix F data tables.	Horohoro and AtiamuiGeo are less than 10 MW (as confirmed in the MBIE geothermal generation stack) and therefore should be excluded from the stack. AB additions required • Remove references to Horohoro and AtiamuiGeo from the Assumptions Book Section 2.3.8.5.	Valid source - Appendix F data consistent with source after assumption book revisions
47	2.3.8.6	Wind generation stack based on Beca/Concept 2025 Generation Stack	2025 Generation Stack			Valid source - Appendix F data consistent with source

#	Section	Brief Description	Sources	Questions to Transpower	Transpower response (summary)	Conclusion
48	2.3.8.6	Technology level cost assumptions used rather than project specific for additional new wind generation in Transpower's generation connection pipeline	No specific source – methodology only			Reasonable assumptions
49	2.3.8.7	Solar generation stack based on Beca/Concept 2025 Generation Stack	2025 Generation Stack			Valid source - Appendix F data consistent with source
50	2.3.8.8	Candidate BESS are all 2- or 10- hour duration	No specific source – reasonable assumption	Candidate BESS projects are either 2- or 10-hour durations. 2-hour is well supported by current projects, but the 10-hour assumption will need some explanation, as it is a large jump from 2-hours. Why specifically 10 hours?	Our approach to BESS has been updated and we are no longer considering 10-hour BESS. Assumptions book updated.	OK (with assumption book correction and clarifications).
51	2.3.8.8	BESS projects in each Transpower Grid Zone	No specific source – methodology only			Reasonable assumptions
52	2.3.8.8	Parameter x: Ratio of minimum new BESS capacity to new wind and solar capacity	EDGS 2024			Assumption used to counter tendency of model to under-build BESS capacity. Valid response to typical modelling issue.
53	2.3.8.9	Transpower's generation connection pipeline cost assumptions from 2025 Generation Stack report	2025 Generation Stack			Valid source
54	2.3.8.10	Capital, VOM and FOM cost decline over time scenarios from 2025 Generation Stack Report	2025 Generation Stack			Valid source - Appendix F data consistent with source