TRANSPOWER

Listed Project Application

Ōtāhuhu – Whakamaru A&B lines reconductoring – Auckland wider region section

Overview

December 2025

Contents

Executive Summary

This document is our project application to the Commerce Commission (**Commission**) for the listed project 'Ōtāhuhu-Whakamaru A and B reconductoring'.[1]

We are seeking approval to increase our base capital expenditure (**capex**) allowance to replace the existing Goat conductor on the wider Auckland region section of the Ōtāhuhu–Whakamaru A and B lines (**OTA–WKM A&B lines**), being the section from Flatbush to Hūnua shown as "Stage 2" in Figure 1. The OTA–WKM A&B lines each carry a single 220 kV circuit.

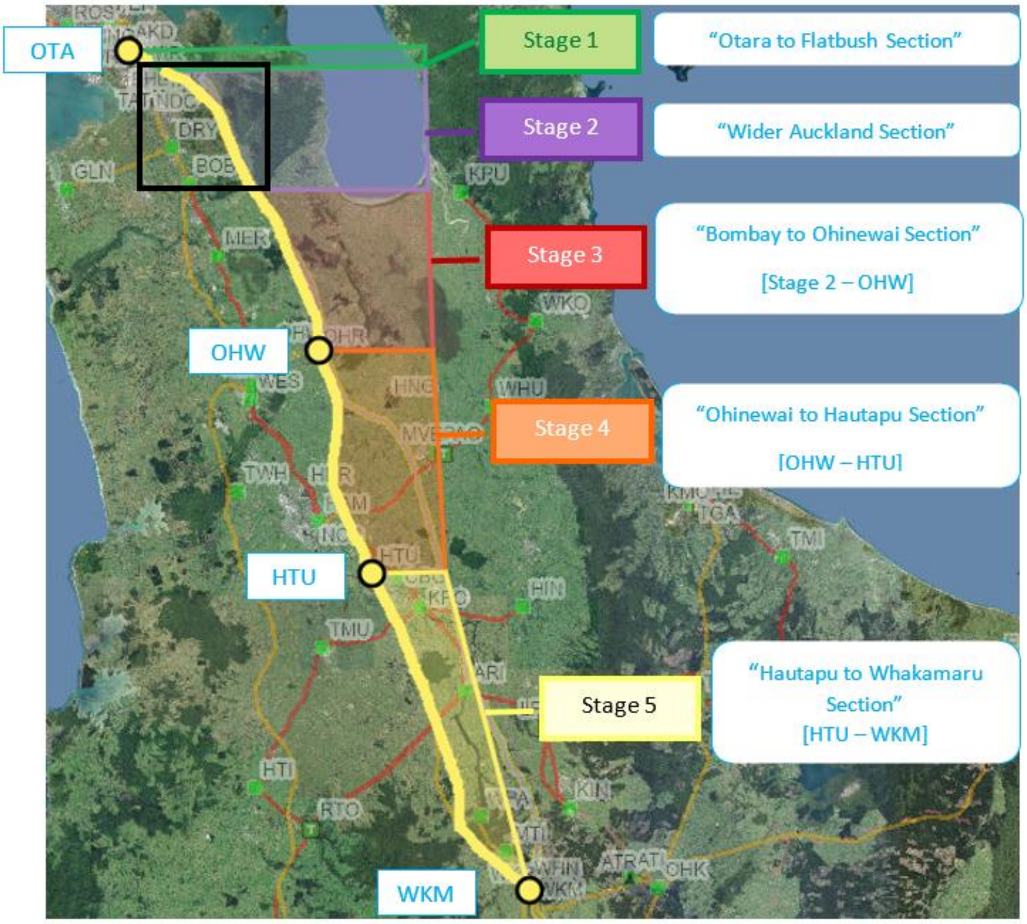

Figure 1: OTA-WKM section to which this application relates

The details of this project are summarised below.

1 Transpower Individual Price-Quality Path Determination 2025, Schedule I.

Grid outputs	
What:	• Procuring, installing and commissioning Curlew conductor on the 31 km section of the Ōtāhuhu–Whakamaru A and B lines (from Flatbush to Hūnua), rated to operate at a temperature of 65°C. • Works on the foundations and towers for the spans on which Transpower proposes to install the Curlew conductor. • Removing and disposing of the existing conductor.
When:	Commence work as soon as practicable after funding is approved, and complete project by 2028. All of the costs of this project are towards assets forecast to be commissioned during RCP4.
How much:	Transpower is seeking approval to add $50.5 million to our base capex allowance for RCP4.

Need for This Project

The OTA–WKM A&B lines are an important part of the upper North Island transmission network, connecting Auckland's network to generation from the south. We have identified that 31 km of each circuit, from Flatbush to Hūnua, needs replacing due to conductor corrosion. Our condition assessment report concluded that the conductor on this section is at end of life (see Attachment 1).

A conductor failure may cause it to fall, risking property damage and safety. This would lead to an unplanned outage of the circuit on one or both OTA–WKM A&B lines, restricting power flow between the upper North Island and the rest of the country, potentially threatening supply security during periods of peak demand.

The circuits carried by the OTA–WKM A&B lines are also part of the core grid under the Electricity Industry Participation Code 2010 (**Code**) (Schedule 12.3). Decommissioning one or both of these circuits (the alternative to replacing the conductor) would breach the grid reliability standards (**GRS**) in Schedule 12.2 of the Code, as N-1 transmission security to the upper North Island would be compromised.

Option Assessment

We have selected Curlew as the replacement option after considering a variety of options to address the condition of the existing Goat conductor. A key consideration with conductor selection is noise. As a responsible operator and in keeping with good electricity industry practice, we endeavour to mitigate the environmental impacts of our projects, including any adverse noise. While much of this line is located in rural areas, noise is a potential concern in residential areas such as Redoubt Rd and Hūnua township. A new Goat conductor on a simplex circuit, such as the OTA–WKM A&B project, can produce audible noise levels higher than those of an existing aged conductor. The mitigation measures required to address this increased noise would involve significant cost and project delays. As a result, a like-for-like replacement with Goat was ruled out.

Curlew conductor mitigates the identified noise issue because it provides better noise attenuation than the Zebra or Goat conductor.[2] The project also considered using Zebra (a cheaper conductor than Curlew) in areas where noise is less of an issue, in combination with Curlew. However, using Curlew conductor throughout the Stage 2 section is more cost-effective than mixing it with Zebra, as the mixed option increases costs due to additional strain conversions and stringing sites.

2 We investigated this for the Bunnythorpe-Haywards Lines A&B upgrade MCP in 2019. See paragraph 1.18 in its decision and reasons paper.

The capacity ratings differ between Goat and Curlew conductors. The Stage 2 section of OTA–WKM A&B lines is strung with the original 1952 Goat conductor rated at 75°C, whereas the equivalent Curlew conductor is rated at 54°C. [3]

In our consultation[4], our preferred solution was to reconductor with Curlew conductor rated at 54°C. In this application, our preferred option has changed to Curlew conductor rated at 65°C as summarised in Table 1 below. This change in preferred option is due to both a significant narrowing of the cost difference between the 54°C and 65°C options, and an increased likelihood of realising in future the potential increase in capacity that 65°C provides, as discussed further below.

Realising Potential Benefits from the Option to Increase Capacity with Curlew 65°C

Keeping the option open (at low incremental cost) to increase capacity into the Auckland region is valuable, as the Auckland regional peak demand is forecast to grow by an average 3.2 per cent per annum over the next 15 years, from 2,087 MW in 2025 to 3,342 MW by 2040. This is higher than the national forecast average growth rate of 2.6 per cent per annum.

The Curlew 65°C option has a similar expected net electricity market benefit to the Curlew 54°C option, but it also has the unquantified benefit of 50 MVA higher potential capacity rating if the remaining sections of OTA–WKM A&B lines are reconducted to the same capacity.

Since the consultation, our investigations have identified that most of the southern section of the OTA–WKM A&B lines (between Stage 2 and the Whakamaru substation) will need to be reconductored in RCP5 or RCP6. The requirement to replace the southern section conductors within the next 10 years provides a clearer opportunity to reconductor those sections with higher capacity conductors (potentially matching Curlew 65°C, or duplexing as part of the Waikato and Upper North Island Stage 2 (**WUNI2**) project, discussed further in Section 3), increasing the likelihood of realising the benefits from an increase in capacity in the Stage 2 section.

The northernmost section (5km) of the lines was reconductored with Curlew 54°C in 2023. This section would also need to be upgraded to 65°C to take advantage of additional capacity in the lines to the south, at an estimated cost of approximately $250k.

The investigation for replacement of the southern section of the lines has not yet commenced. Therefore, we cannot easily quantify the costs associated with uprating the southern section to 65°C. Therefore, we have included the potential (net) benefits realised if the remaining OTA–WKM A&B lines are uprated to 65°C as unquantified benefits.

Smaller cost gap between Curlew 54°C and 65°C

The estimated cost difference between the Curlew 54°C and 65°C options is now less than 2%. The 65°C option costs $45.4 million, approximately $0.6 million higher than the 54°C option at $44.8 million.

These are both lower than the estimated capex for the Curlew 54°C option in our consultation.

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3 The MVA rating for the Goat conductor at 75°C is 323/309/293 (winter/shoulder/summer), whereas the Curlew conductor at 54°C is rated at 352/326/297 (winter/shoulder/summer).

4 Ōtāhuhu–Whakamaru A and B Lines reconductoring project consultation

Options Assessment Summary

Table 1: Option assessment summary

	Curlew 54°C	Curlew 65°C	Curlew 80°C	Curlew 65°C / Zebra 80°C	Curlew 80°C / Zebra 100°C
Net quantified benefit ($m, PV)	36.2	35.7	30.8	33.0	28.5
Cost ($m, PV)	40.0	40.6	45.5	43.3	47.7
Cost ($m, Real 2025)	44.8	45.4	50.9	48.5	53.4
Difference in net quantified benefit as a percentage of Curlew 54°C cost	-	-1%	-14%	-8%	-19%
Ranking based on quantified benefits	1	2	4	3	5
Ranking based on unquantified benefits	2	1	N/A*	1	N/A*
Overall ranking	**2**	**1**	**4**	**3**	**5**

* Unquantified benefits rankings are not shown for the Curlew 80°C and Curlew 80°C / Zebra 100°C options as they do not have 'similar' expected net electricity market benefit as defined in clause D1(2)(a) of the Transpower Capital Expenditure Input Methodology 2012 (as amended) (**Capex IM**). Although this aspect of the investment test in the Capex IM is not a requirement for listed projects, it is a useful reference point when considering options.

1 Need for Investment

The OTA–WKM A&B lines are an important part of the transmission network, connecting the upper North Island's network to generation from the south. Most of the existing OTA–WKM conductors have been in service since 1952 (A line) and 1954 (B line).

We have identified that the following conductor, from Flatbush to Hūnua, needs to be replaced:

- OTA–WKM A Line: Total of 84 structures (OTA–WKM A0407-A0490), about 31 km in length.
- OTA–WKM B Line: Total of 80 structures (OTA–WKM B0391-B0470), about 31 km in length.

The need to replace the conductor is driven by three factors:

- Asset condition
- Safety
- Criticality

1.1 Asset Condition

The OTA–WKM A&B lines are strung predominantly with ungreased Goat ACSR/GZ conductor. This conductor has aluminium outer strands and steel centre strands. Predicting the end of life and degradation of this type of conductor is very difficult as it is prone to accelerated aluminium corrosion near end of life – particularly in corrosive environments such as those found between Flatbush and Hūnua. Galvanic cells (due to dissimilar metals – steel and aluminium) are formed where the zinc coating on the steel core wires has been depleted or perforated. Once the galvanising on the steel core has corroded or abraded, the aluminium strands 'sacrifice' themselves to protect the steel – increasing the rate of aluminium corrosion and loss of strength.

Inspection and testing to date has identified localised conductor defects approaching Transpower's replacement criteria and general conductor degradation. This indicates that accelerated corrosion is likely to be occurring on many spans of this line section.

At present, the likelihood of failure is low – no conductor samples tested, or defects identified, have reached Transpower's replacement criteria, which include a 15% loss of aluminium cross-section or a 20% loss of conductor strength. However, we have observed evidence of accelerating degradation; when compared to past testing the latest results suggest that some areas will be at or beyond replacement criteria by the time we are able to undertake reconductoring.

Ongoing inspections and maintenance will be required to ensure the likelihood of a conductor failure is appropriately managed until the Goat conductor is replaced.

The photographs in Figure 2 show corrosion of the OTA–WKM A&B conductor.

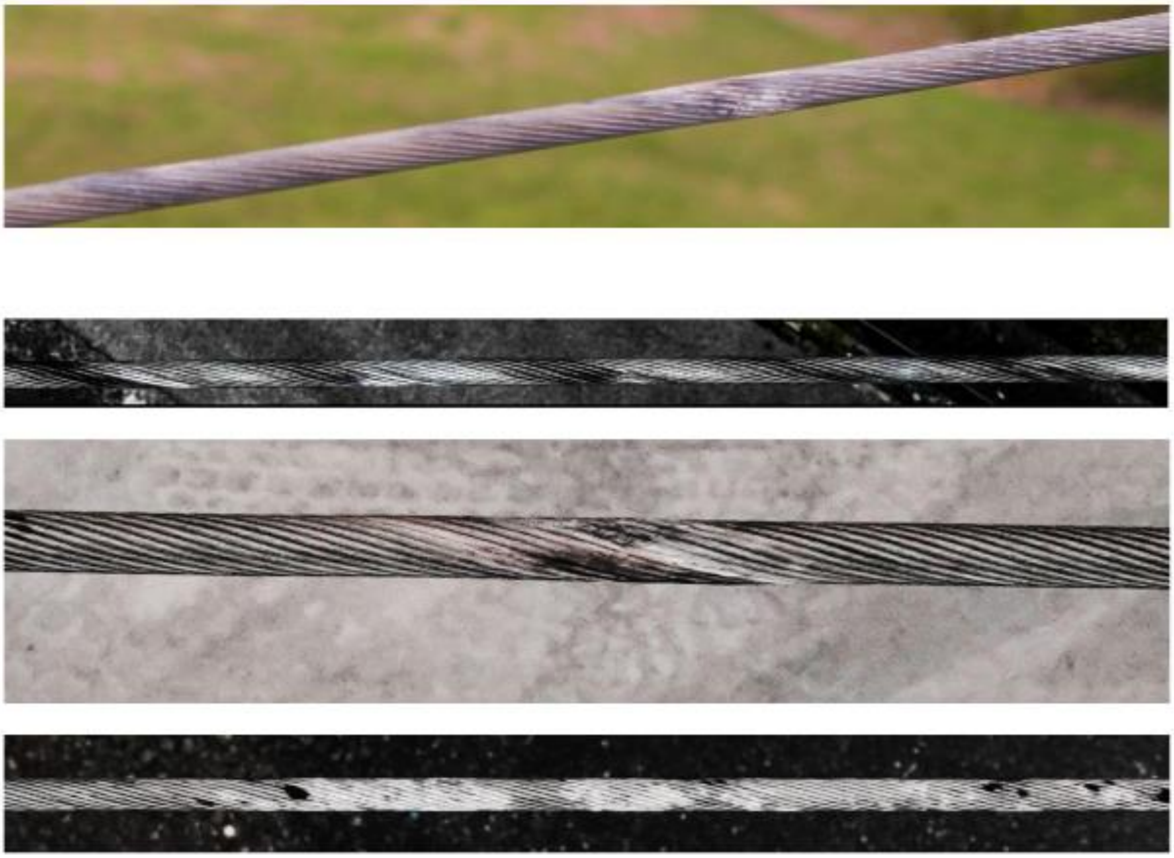

Figure 2: Examples of conductors with visible corrosion and bulging

1.2 Safety

As the conductor continues to deteriorate, our ability to effectively maintain it will reduce to a point where maintenance is no longer safe or cost effective. If no action is taken, ongoing deterioration will increase the risk of conductor failure.

If a conductor fails due to poor condition, it may fall onto the ground below. This could result in serious consequences such as vegetation and property fire, electrocution[5], or harm from the impact itself. Some of the line section also passes over Hūnua township and properties on Redoubt Road, presenting a notable safety risk in those areas. While the likelihood of failure is low at present, this will increase over time as the infrastructure continues to age.

1.3 Criticality

The OTA–WKM A&B lines connect the upper North Island's network to generation from the south. They provide several critical benefits to New Zealand, including:

- Reduced electricity generation costs in the upper North Island (including Auckland) by allowing greater utilisation of lower cost generation.

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5 Protection is designed to operate in this instance to mitigate the risks of fire and electrocution.

- Security of supply during peak periods, which allows more power to flow into Auckland and Northland regions.
- Greater competition in wholesale electricity markets.

A conductor failure would cause an unplanned outage to the circuit on one or both of the OTA–WKM A&B lines. This would restrict power flow between the upper North Island and the rest of the country which may threaten security of supply if it occurred during peak load periods.

The circuits carried by the OTA–WKM A&B lines are also part of the core grid under the Code. If one or both of these lines is decommissioned (the alternative to replacing the conductor), the grid will not satisfy the GRS as N-1 transmission security to the upper North Island cannot be maintained.

2 Identification of Options

In our options analysis, we have considered the future of the whole of both OTA–WKM A&B lines, rather than just the Flatbush–Hūnua line section. This broader approach ensures that any decisions regarding the Flatbush–Hūnua section are made within the context of the future direction for the rest of the lines.

During the identify options phase of our investigation, we identified the options (that may contribute to meeting, but not solely meet, the need for investment) set out in Table 2. We then assessed each of these options against the following screening criteria:

A. Fit for purpose

B. Technical feasibility

C. Practicability of implementing the option

D. Good electricity industry practice (**GEIP**)

E. System security (to meet the N-1 reliability standard)

F. Indicative cost.

Table 2: Option assessment against screening criteria

Description of long-list options considered	Short-listed	Comments
Do nothing		
Removal of both A&B lines or one (A or B) line completely. The sub-options include: • Removal of A&B lines completely • Removal of A line, retain B line (reconductor 31 km of B line)	×	Fails criterion E. With one (or both) line(s) removed, N-1 transmission security to the upper North Island cannot be maintained.
Removal of northern section of both A&B lines or one (A or B) line. The northern section includes the 31 km section of line between Flatbush and Hūnua. Create new connection/interconnection at Ōhinewai substation (**OHW**). The sub-options include: • Bus A&B lines into OHW, dismantle northern section of A&B lines • Bus A line into OHW, dismantle northern section of A line, reconductor 31 km of B line • Bus A&B lines into OHW, dismantle northern section of A line and reconductor 31 km of B line	×	Fails criterion E. With one (or both) northern section of line(s) removed, N-1 transmission security to upper North Island cannot be maintained.
Non-transmission solutions		
Special Protection Schemes Load-shedding Load shifting Demand response New generation New distributed generation	×	Fails criterion A. Does not address the condition-based need and does not exist on a scale large enough to eliminate the need for the A&B lines.
Transmission options		

Description of long-list options considered	Short-listed	Comments
Reconductor the 31 km section of the A&B lines between Flatbush and Hūnua fully with Goat (like for like), Zebra or Pheasant.	×	Fails criterion D. These conductors can produce noise levels higher than an existing aged conductor. This introduces financial risk due to potential noise mitigation costs and potentially impacts our social licence. To ensure good electricity industry practice concerning lines near dwellings, these options are excluded from our short-list.
Reconductor the 31 km section of the A&B lines between Flatbush and Hūnua with one of the following: • Curlew 54°C • Curlew 65°C • Curlew 80°C • Curlew 65°C & Zebra 80°C • Curlew 80°C & Zebra 100°C	✓	Short-listed components. These options retain N-1 transmission security to the upper North Island.
Replace 31 km section of A&B lines between Flatbush and Hūnua with duplex conductors.	×	Fails criterion F. This would likely result in injurious affection for more landholdings resulting in significantly higher cost to acquire transmission easements through the Hūnua and Redoubt Road residential areas.
Reconductor both A&B lines full length from OTA to WKM at the same time.	×	Fails criterion F. This would be prohibitively expensive and unnecessary for much of the conductor.

Transpower also considered conductors from the High Temperature Low Sag (HTLS) family e.g., Aluminium Conductor Steel Supported (ACSS). Based on the cost information we currently have, we expect an HTLS conductor (Drake ACSS) to cost about 2.5 times more than Curlew.

Reconductoring the 31 km section of the OTA–WKM A&B lines with Curlew (and, in some cases, Zebra) conductor is the only credible option from the option components set out in Table 2. We have considered five different conductor choices within this option.

3 Assess Options

This project is the listed project 'Ōtāhuhu-Whakamaru A and B reconductoring'.[6] This project is a listed project of the type contemplated in clause 2.2.2(8)(b)(ii) of the Capex IM, as it is work that:

- is primarily driven by Transpower's policies for replacing conductors on transmission lines;
- improves the original service potential of the transmission lines; and
- is required due to the condition of the conductors.

In our consultation, we determined the counterfactual/base case to be the immediate decommissioning of the OTA–WKM A&B lines without replacement. We also included the following 'modelled projects'. These were considered the most likely investments in our WUNI2 project.[7]

- Series compensation on the 220 kV Brownhill–Whakamaru circuits;
- Shunt capacitors and dynamic reactive plant as required; and
- ±150 MVAr STATCOM in Auckland.

Since undertaking consultation on this project, we have discovered that most of the southern section of the OTA–WKM A&B lines (between Stage 2 and the Whakamaru substation) will need to be reconductored in RCP5 or RCP6. This makes the option of duplexing the southern section of the OTA–WKM A&B lines and bussing into Ōhinewai substation another likely option for the WUNI2 project (as shown in Figure 3). We have used this duplexing option as the WUNI2 modelled project in the counterfactual and for the reconductor options in our analysis. The WUNI2 series compensation option has been included as a sensitivity (see Table 8).

6 Transpower Individual Price-Quality Path Determination 2025, Schedule I.

7 Waikato and Upper North Island (WUNI) Upgrade | Transpower. This investigation is ongoing. If the preferred option were to change as the investigation progresses, we will assess if our analysis of this project needs to be updated.

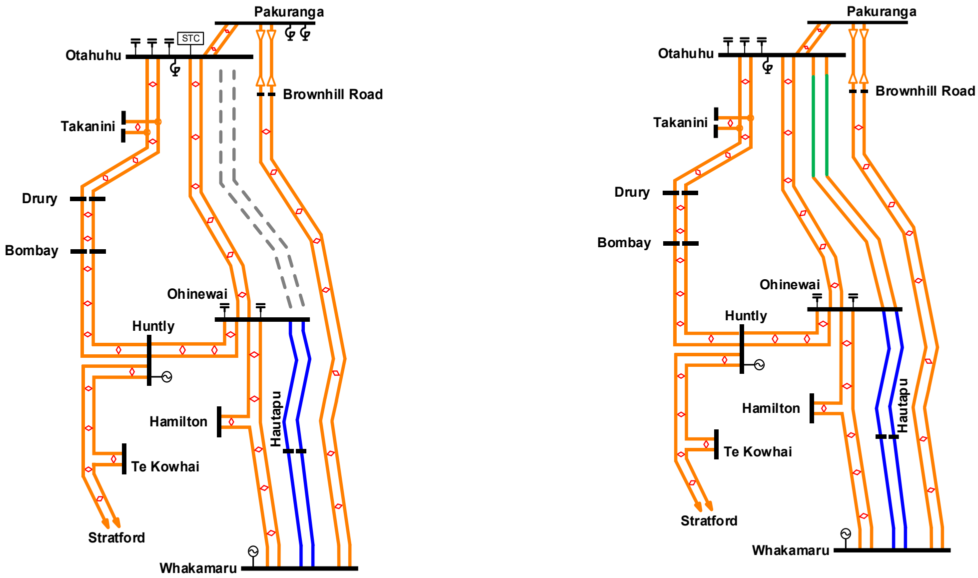

Figure 3: Counterfactual and reconductor grid configurations[8]

We also used the following inputs and assumptions in our analysis. More detailed inputs and assumptions are provided in Attachment 2.

- 5% pre-tax real discount rate (standard for the major capex project investment test under the Capex IM);
- Replacement of the conductor takes place in 2026-2028 (the new conductor will be commissioned in December 2028);
- 27-year analysis period (2029-2055); and
- Using three out of five electricity demand and generation scenarios (**EDGS**)[9] i.e., Growth (weighted at 60%), Reference (20%) and Environmental (20%).

3.1 Costs

In our analysis, we included project costs for the five reconductor options, and decommissioning costs of the OTA–WKM A&B lines (north of Ōhinewai) in the counterfactual case. The mixed Curlew/Zebra options use the quieter Curlew conductor near dwellings, and Zebra conductor for the remaining sections.

Our initial costs were derived from a high-level desk top study and limited design. These costs include:

- Design;
- Materials (conductors, insulators and hardware); and

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8 Note the OTA-WKM stage 2 section (in green) and the duplexed section between Ōhinewai and Whakamaru (in blue).

9 Electricity Demand and Generation Scenarios (EDGS) | Ministry of Business, Innovation & Employment. Our analysis uses the demand scenarios from Transpower's 2024 variant of the EDGS 2019. These incorporate customer forecasts from the 2024 EDB surveys.

- Construction (conductors, structures, foundations, access and property rights).

For this application, we have commissioned a Solution Study Report (**SSR**) for the preferred option (Curlew rated at 65°C). The new cost estimate of $45.4 million for the preferred option, based on the completed SSR, is approximately 8% lower than the consultation cost estimate.

We also updated costs for the Curlew 54°C option by leveraging similarities between the Curlew 65°C and 54°C designs, rather than create a separate bottom-up estimate. As design of the Curlew 65°C option progressed, the delta between the assumed scope of work for the two options has reduced. This resulted in an updated cost of $44.8m for the Curlew 54°C option.

We then adjusted the previous estimated costs for the other reconductor options considering their cost differences relative to the Curlew 54°C option[10]. The updated costs are shown in Table 3[11].

Table 3: Cost of options

Conductor option & temperature rating	P50 capital cost ($m, real 2025)	P50 capital cost ($m, 2025 PV at 5% discount rate)
Decommissioning north of Ōhinewai (counterfactual, see Figure 3)	51.2	44.2
Curlew 54°C	44.8	40.0
Curlew 65°C	45.4	40.6
Curlew 80°C	50.9	45.5
Curlew 65°C / Zebra 80°C	48.5	43.3
Curlew 80°C / Zebra 100°C	53.4	47.7

We have included the costs to reconductor the southern section of the OTA–WKM A&B lines (stages 3-5 in Figure 1)) as capital costs of modelled projects. In the counterfactual, stage 3 (north of Ōhinewai) is decommissioned resulting in 39 km less future reconductoring needed. This cost is treated as benefit in the counterfactual (see Table 4), which offsets the project cost in Table 3.

Table 4: Avoided cost of future reconductoring of southern section

Scenario	Section needing future reconductoring	Avoided cost of future reconductoring ($m, 2025 PV at 5% discount rate)
Counterfactual (Decommissioning north of Ōhinewai)	OHW–WKM (113 km)	27.7
Reconductoring options	Stage 2 – WKM (152 km)	-

Table 5 provides a breakdown, by category, of the cost estimates for the Curlew 54°C and Curlew 65°C options.

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10 New cost option x = New cost Curlew 54°C * (Old cost option x / Old cost Curlew 54°C). The "old cost" of each reconductor option is in Section 4.1 of our consultation paper.

11 The risk allowances for the Curlew 54°C and Curlew 65°C options are shown in Table 5. The risk allowances for the Curlew 80°C, Curlew 65°C / Zebra 80°C and Curlew 80°C / Zebra 100°C options are $3.8m, $3.6m and $4.0m respectively.

Table 5: Cost breakdown ($m, real 2025)

Category	Curlew 54°C	Curlew 65°C
Clearance rectifications	2.2	2.3
Foundation strengthening & tower foundations	3.0	3.2
Stringing (excluding conductor supply)	8.7	8.7
Non-line activities (crossings, Earth Potential Rise, access tracks)	6.8	6.9
Materials - supply only	6.7	6.7
Miscellaneous	0.9	0.9
Freight	0.3	0.3
Protection works	0.1	0.1
Design allowance	2.0	2.0
Transpower overhead	2.4	2.5
Contractor's overhead	7.1	7.2
Environmental (including biodiversity cost)	0.5	0.5
Property and/or easements acquisition	0.5	0.5
Community Care Fund	0.1	0.1
Mana whenua	0.3	0.3
Risk allowance	3.3	3.4
Total	**44.8**	**45.4**

3.2 Benefits

Our analysis quantifies electricity market benefits by comparing the electricity market costs associated with the reconductoring scenario to those in the counterfactual grid configuration. We derive the electricity market benefits from our models covering power system analysis, generation expansion planning, and generation dispatch simulations for the two configurations. This is further discussed in Attachment 3 – Benefits Modelling.

Please note that our proposal involves reconductoring only the 31 km section of the OTA–WKM A&B lines, which is less than 20% of the lines’ total length. Therefore, we have assumed that there is no material difference in electricity market costs between the five reconductoring options.

Table 6 shows the present value of electricity market benefits across our three selected EDGS scenarios i.e., the difference in electricity market costs between the reconductoring and counterfactual grid configurations (as shown in Figure 3).

Table 6: Quantified electricity market benefits (2025 present value at 5% discount rate)

EDGS scenario	Electricity market benefit ($m)
Environmental (20% weighting)	60.1
Growth (60% weighting)	64.3
Reference (20% weighting)	45.5
Weighted average	59.7

3.3 Net Electricity Market Benefit

Table 7 shows the resulting expected net electricity market benefits for each reconductor option and the counterfactual.

Table 7: Costs, benefits and net benefits (2025 present value at 5% discount rate)

Conductor option & Temp (°C)	Total costs ($m)	Total benefits ($m)	Net benefits ($m)	Net benefit vs counterfactual ($m)	Rank
Decommissioning (counterfactual)	44.2	27.7	-16.5	-	6
Curlew 54°C	40.0	59.7	19.7	36.2	1
Curlew 65°C	40.6	59.7	19.2	35.7	2
Curlew 80°C	45.5	59.7	14.3	30.8	4
Curlew 65°C / Zebra 80°C	43.3	59.7	16.4	33.0	3
Curlew 80°C / Zebra 100°C	47.7	59.7	12.0	28.5	5

This shows that Curlew 54°C option has the highest expected net electricity market benefit.

In the major capex project investment test under the Capex IM, options that have a difference in quantum of expected net electricity market benefit within 10% of the cost of the option with the highest net expected electricity market benefit are considered "similar".[12] For these options, unquantified benefits can be considered in determining the best option. In this case, the options that are similar to the Curlew 54°C option are Curlew 65°C and Curlew 65°C / Zebra 80°C (see Table 1). Although this aspect of the investment test in the Capex IM is not a requirement for listed projects, it is a useful reference point when considering options.

An unquantified benefit in this case is the potential to future proof the entire circuit for upgrades. This would favour both the Curlew 65°C and Curlew 65°C / Zebra 80°C options. Higher temperature conductors have higher capacity ratings (as shown in Figure 4), enabling larger transmission capacity into the upper North Island. This benefit could be realised if the remaining sections of the OTA–WKM A&B lines are uprated/reconductored to at least the same rating. As noted at the beginning of this Section 3, the southern section of the OTA–WKM A&B lines (between Stage 2 and the Whakamaru substation) will need to be reconductored in RCP5 or RCP6, presenting the opportunity to upgrade that section to a higher temperature rating. The 5km northernmost section would also need to be uprated to take advantage of additional capacity.

[12] Clause D1(2)(a) of the Capex IM.

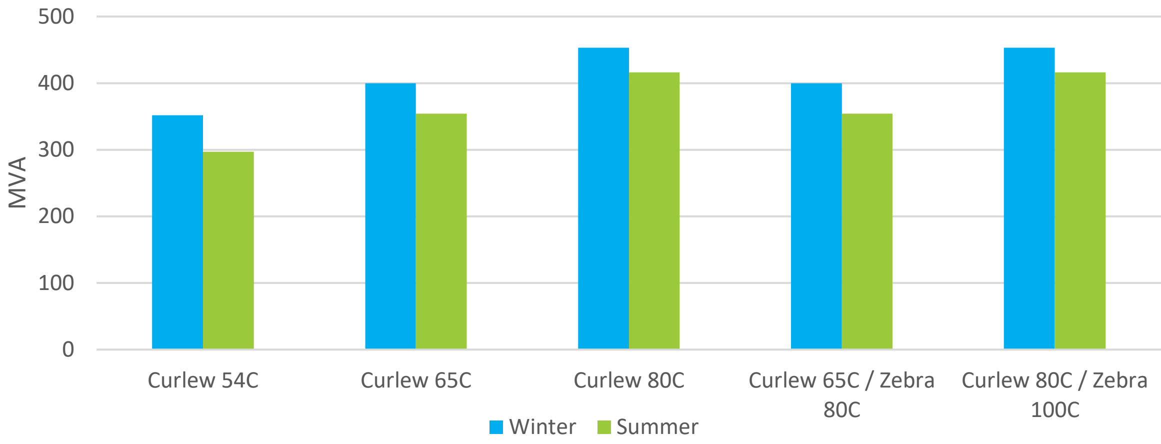

Figure 4: Ratings of reconductor options

3.4 Sensitivity Analysis

We have undertaken sensitivity analysis to determine the robustness of our quantified option assessment. Table 8 shows the expected net electricity market benefit of each option relative to the counterfactual case. It shows the difference in the present values of each option under low and high sensitivities:

- Costs -20% / +30% (which we consider reasonable bounds for potential costs);
- Discount rate at 3% and 7% (which is consistent with the discount rate sensitivity range for the major capex investment test under the Capex IM);
- 100% weighting for each of the three selected EDGS scenarios (to isolate results under each selected EDGS scenario); and
- Change in selected WUNI2 modelled project from duplexing to series compensation (being an alternative WUNI2 modelled project).

Table 8: Sensitivity of expected net electricity market benefits ($m, 2025 present value at 5% discount rate)

	Curlew 54°C	Curlew 65°C	Curlew 80°C	Curlew 65°C / Zebra 80°C	Curlew 80°C / Zebra 100°C
Reference	22.0	21.5	16.6	18.7	14.3
Environmental	36.6	36.1	31.2	33.4	28.9
Growth	40.8	40.3	35.4	37.6	33.1
WUNI2 series compensation	454.9	454.4	449.5	451.7	447.2
Low discount rate (3%)	107.6	107.0	101.9	104.1	99.5
High discount rate (7%)	67.4	66.8	62.1	64.2	60.0
Capital increase (130% of base)	99.1	98.4	92.0	94.8	89.0
Capital decrease (80% of base)	73.3	72.9	68.9	70.7	67.1
Equal scenario weighting	33.2	32.6	27.7	29.9	25.5

The sensitivity analysis indicates that Curlew 54°C and Curlew 65°C consistently deliver the two highest net benefit across a wide range of assumptions.

4 Preferred Option

Table 9 summarises our quantitative and qualitative analysis.[13] The Curlew 65°C option has a similar expected net electricity market benefit to the Curlew 54°C option, and it has the unquantified benefit of a potential 50 MVA higher capacity rating. The Curlew 65°C / Zebra 80°C option has the same unquantified benefit but a lower quantified expected net electricity market benefit than the Curlew 65°C option (due to higher costs). For these reasons, we have identified Curlew 65°C as our preferred option.

Table 9: Quantitative and qualitative ranking of Curlew 54°C option and similar options

	Curlew 54°C	Curlew 65°C	Curlew 65°C / Zebra 80°C
Net quantified benefit ($m, PV)	36.2	35.7	33.0
Difference from Curlew 54C ($m, PV)	0.0	-0.5	-3.3
Difference as a percentage of Curlew 54C cost	-	-1%	-8%
Ranking based on quantified benefits	1	2	3
Ranking based on unquantified benefits	2	1	1
Overall ranking	3	1	2

[13] The table only considers the Curlew 54°C option (the option with the highest expected net electricity market benefit) and the two options that are 'similar' to the Curlew 54°C option (see Section 3.3).

5 Stakeholder Engagement

In June 2025, we published our consultation document[14] for this project.

We received two submissions from Vector and Meridian. Both were supportive of the need for the reconductoring work to be carried out. However, they asked that indicative starting benefit-based investment (**BBI**) customer allocations be provided.[15] Meridian also sought clarification on the unquantified benefits used in our analysis, our counterfactual case, and the potential benefits of firming intermittent generation in the upper North Island.

Following their feedback, we:

- produced indicative starting BBI allocations and indicative increases in transmission charges resulting from the proposed expenditure (see Attachment 4), and
- clarified the unquantified benefits used in our analysis, the reasoning behind our counterfactual case, and how we incorporated the potential benefit of firming intermittent generation. The potential benefit of being able to firm intermittent generation is incorporated in our benefits modelling by running our market dispatch model at an hourly resolution.

Full details of the consultation submissions and our response are published in our summary of submissions.[16]

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14 Ōtāhuhu–Whakamaru A and B Lines reconductoring project consultation summary | Transpower

15 This project, when commissioned, will be a BBI under the Transmission Pricing Methodology (**TPM**). The costs of the BBI will be recovered from our customers who are expected to benefit from the BBI through benefit-based charges (**BBCs**) under the TPM. The BBCs will be allocated to customers in proportion to their expected positive net private benefits.

16 OTA WKM consultation - summary of submissions

6 Application to the Commission

This is an application to the Commission for approval of cost recovery for:

Grid outputs	
What:	Procuring, installing and commissioning Curlew conductor on the 31 km section, from Flatbush to Hūnua, of the Ōtāhuhu–Whakamaru A and B lines, rated to operate at a temperature of 65°C. Works on the foundations and towers for the spans on which Transpower proposes to install the Curlew conductor. Removing and disposing of the existing conductor.
When:	Commence work as soon as practicable after funding is approved, and complete project by 2028.
How much:	Transpower is seeking approval to add $50.5m to our base capex allowance for RCP4.

This project is a listed project in the Transpower IPP. If the Commission approves cost recovery for this project, an amount will be added to our RCP4 base capex allowance. We have called this the Listed Project Capex Allowance (**LPCA**). We have derived our proposed LPCA in a manner consistent with it being a standalone project, on the basis that our existing base capex allowance, though fungible, was approved for other base capex projects.

Our capital cost estimates are expressed in real 2025 NZ dollars. To calculate the (nominal) listed project capital allowance, we apply:

- inflation (CPI) adjustments to reflect expected cost increases over time; and
- interest during construction (IDC) to account for financing costs.

We calculated an escalation adjustment over and above CPI based on forecast commodity cost indices. However, as it is a negligible amount in this instance it has not been included (<0.01% of the current LPCA)[17].

A summary of our LPCA calculation, including financing costs, and inflation, is shown in Table 10. The LPCA we are applying for is $50.5 million. This amount is our P50 estimate of the capital cost of this project – there is an equal chance that the project could be delivered for more or less than this amount.

Table 10: Listed project capex allowance annual allocation ($m)

Cost by disclosure year	2025/26	2026/27	2027/28	2028/29	Total
Capex (real 2025)	2.3	9.1	25.0	9.1	45.4
Inflation	0.0	0.3	1.4	0.6	2.4
IDC	0.0	0.3	1.3	1.1	2.8
Total LPCA (nominal)	2.3	9.7	27.6	10.8	50.5

17 We calculated the escalation amount using a method consistent with the approach applied to base Capex escalation in the RCP4 submission.

If the Commission approves cost recovery for this project, Transpower will calculate expected net private benefits and proposed starting BBI allocations using a standard method[18] under the TPM – in particular, the price-quantity method – and consult on them.

18 TPM Information Sheet - BBC Standard Methods v3.pdf

Appendix A: Capex IM Requirements

In the below table we outline how this application meets the requirements of the Capex IM for listed project applications.

Capex IM clause	Capex IM requirement	Compliance and application cross reference
3.2.1	In respect of a base capex project or base capex programme involving forecast capital expenditure that exceeds the base capex threshold, Transpower must, prior to undertaking the project or programme, undertake-	
3.2.1(a)	(a) a cost-benefit analysis consistent with determining expected net electricity market benefit; and	Compliant Section 3 Attachment 2 – Demand and Generation Scenarios Attachment 3 – Benefits Modelling
3.2.1(b)	(b) consultation with interested persons in accordance with clause 8.1.2.	Compliant Section 5
3.2.3(1)	Transpower may submit, no later than the last working day in the June twenty-two months before the end of a regulatory period, a listed project application for approval of additional base capex, where expenditure is to be incurred after the date of application on assets or components of assets that are forecast to be commissioned within that regulatory period in respect of a listed project.	Compliant Application submission in December 2025 All assets forecast to be commissioned during RCP4
3.2.3(2)	A listed project application must include:	
3.2.3(2)(a)	(a) a description of the reasons for carrying out the listed project, supported by relevant technical information, including evidence of the current and future need for the applicable assets or components of assets by reference to the relevant demand and generation scenarios;	Compliant Section 1 Attachment 1 – Condition Assessment Report
3.2.3(2)(b)	(b) consideration of alternative options for carrying out the listed project, including non-replacement and demolition, enhancement or development of alternative assets, and transmission alternatives;	Compliant Section 2
3.2.3(2)(c)	(c) intended scope of the listed project, including specification of the grid outputs or other outputs that apply in respect of the listed project;	Compliant Section 6
3.2.3(2)(d)	(d) all relevant technical and costing information used to estimate both the cost of the listed project and alternative options, including details on risk allowances and contingencies;	Compliant Section 3

3.2.3(2)(e)	(e) estimated cost of the listed project broken down into year by year figures in expected disclosure year of expenditure, and the assumptions used to derive the estimated cost;	Compliant Sections 3.1 and 6
3.2.3(2)(f)	(f) a cost-benefit analysis in accordance with clause 3.2.1(a), including a sensitivity analysis and reasons for selecting the variables of the sensitivity analysis;	Compliant Section 3.4
3.2.3(2)(g)	(g) if Transpower requests the base capex low incentive rate to apply to the additional base capex, information demonstrating that the listed project is still expected to require capital expenditure greater than the base capex threshold and information on the extent to which the factors set out in clause A4 are applicable;	N/A Transpower has not requested the base capex low incentive rate to apply.
3.2.3(2)(h)	(h) evidence of consultation with interested persons in accordance with clause 3.2.1(b);	Compliant Section 5
3.2.3(2)(i)	(i) evidence that its Board of Directors has approved the listed project as a project or programme and details of the quality assurance processes followed in respect of the Board's approval of the listed project; and	Compliant Attachment 5 – Board Approval & CEO Certification
3.2.3(2)(j)	(j) certification of the application in accordance with clause 9.1.2.	Compliant Attachment 5 – Board approval & CEO certification
7.5.1	All major capex proposals and listed project applications must include-	
7.5.1(a)	(a) a description of the benefits the proposed expenditure is expected to deliver to Transpower's customers;	Compliant Section 3.2 Attachment 3 – Benefits Modelling
7.5.1(b)	(b) to the extent reasonably possible, a quantitative estimate of the benefits the proposed expenditure is expected to deliver to Transpower's customers; and	Compliant Section 3.2 Attachment 3 – Benefits Modelling
7.5.1(c)	(c) an estimate of the expected increase in Transpower's transmission charges due to the proposed expenditure, including estimated increases in transmission charges- (i) per kilowatt hours of energy supplied; and (ii) for each affected grid exit point and grid injection point.	Compliant Attachment 4 – Indicative Pricing Impacts
8.1.2	For the purpose of clause 3.2.1(b), consultation by Transpower with interested persons must be-	
8.1.2(a)	(a) of a scope commensurate with the proposed project's or programme's nature, complexity, impact and significance; and	Compliant Section 5
8.1.2(b)	(b) undertaken by Transpower acting in accordance with the policies and processes specified in its base capex proposal.	Compliant Section 5, Attachment 1 – Condition

		Assessment Report (which refers to TP.FL 03.01)
9.1.2	In relation to all information provided with a listed project application, the chief executive officer of Transpower must certify in writing that, having made all reasonable enquiries, it is his or her belief that: (a) the information provided in the application was derived from and accurately represents, in all material respects, the relevant operations of Transpower; and (b) the base capex in respect of the listed project was approved by Transpower in accordance with the applicable requirements of Transpower's capital expenditure approval policies.	Compliant Attachment 5 – Board Approval & CEO Certification

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