

Horizon Networks response to Opotiki reopener initial request for information – 31 October 2025

Summary	Question	Horizon Networks response
Question 1: Dates in the application	The application references “FY” – we assume these are regulatory years (ending 31 March 20XX)? Please clarify.	FY refers to financial years, which are the year ending 31 March 20XX. For example, FY26 is the financial year ending 31 March 2026. Horizon Networks' financial years align with the Commerce Commission's regulatory years.
Question 2a: Proposed costs (commissioned assets forecast)	With reference to Table 4 Cost Breakdown in your application: <ul style="list-style-type: none"> We'd like to understand for the total cost, and activity (or cost element) subtotals, how much has been incurred/spent and what is still to be spent and when. For costs that are not yet incurred/spent, where is Horizon at in the process of establishing/developing those costs? Can you please outline whether the proposed costs include contingencies and if so, how much (as a %)? It would also be useful to understand what those contingencies are for (for eg, to reflect uncertainty or to allow for overruns, etc) 	As of 31 October 2025, the invoiced expenditure for the Opotiki project is \$5.3M. We envisage an additional \$8.9M of spend to occur from now through to FY27. A detailed breakdown by activity and year can be found in the Appendix below. Costs that have not been invoiced include activities which have been started but not yet completed. Of the \$8.9M not yet invoiced, approximately \$2.65M is in the planning stage. We included a contingency of \$0.7M, i.e. circa 5% of the total project budget of \$14.3M. The contingency is to cater for the variation due to changes in material and labour costs over the project period.
Question 2b: Proposed costs (commissioned assets forecast)	With reference to Table 5 in your application: <ul style="list-style-type: none"> Can you please clarify if the values listed are in nominal or constant dollars? 	These values are in nominal dollars.

assets forecast)	Please specify the cost inflators used.	
Question 3: Exclusion of Opotiki project expenditure	<p>Our read is that Paragraph 4 in Section 4.1.1. appears to somewhat contradict Paragraph 2 in Section 4.1.2:</p> <ul style="list-style-type: none"> • Paragraph 4 states that the Opotiki project was not provided for in DPP4 allowances despite the project being included in the 2024 AMP forecasts used by us when setting DPP4 allowances. • Paragraph 2 states that the capex for the Opotiki project in FY24 and FY25 was not included in Horizon’s 2024 AMP forecasts for DPP4. <p>Can you please clarify this for us? Do you mean the 2024 AMP forecasts for DPP4 included FY26 and FY27 expenditure, but not FY24 and FY25 expenditure?</p>	<p>Expenditure in FY24 and FY25 was flagged as forecast to be ‘commissioned’ in FY24 and FY25 in the AMP, even though they would not be commissioned until FY26/27.</p> <p>As a result, the AMP24 used for price setting was reporting the assets commissioned in FY26 \$3.5M lower than actual. The forecast capital expenditure remained the same.</p> <p>Further clarification can be found in the Appendix below.</p>
Question 4: Other solutions considered	Can you please outline whether the assessment process of the solution for the Opotiki project from the range of options considered as outlined in Table 3 was subjected to internal review and approval within Horizon? Please provide supporting evidence by leveraging existing information you may already have, for example, a copy of the minutes from a board/leadership	<p>Horizon Network’s assessment of the Opotiki project has been subject to internal review and governance oversight throughout its development.</p> <p>The initial network development investigation was undertaken in 2010 in response to anticipated regional growth and security of supply concerns. This investigation led to the establishment of an 11kV switching station in Opotiki in 2017 (Stage 1), with provision for future conversion to a 33/11kV substation (Stage 2) once it was clearer when future</p>

	<p>team/governance or steering group meeting documenting the decision reached or similar.</p>	<p>demand would start exceeding the capacity that the 11kV (Stage 1) solution provided.</p> <p>Since then, Horizon Networks has continued to monitor growth in Opotiki, as well as network performance and operational data to determine when network constraints might emerge and further investment would be required.</p> <p>In 2022, as the timing for Stage 2 became more certain, Horizon Networks undertook a formal options assessment to evaluate feasible development pathways. This process involved input from across the business, including planning, asset management, operations, engineering, and field services teams. The outcome of this assessment informed the preparation of a business case, which was reviewed internally and subsequently by the General Manager Network and Chief Executive. The finalised business case was then submitted to the Board for approval.</p> <p>While the Board minutes do not explicitly record the full details of the options assessment process, they do document key financial decisions made at various stages of the project, including providing funding at project milestones. These decisions reflect the evolving nature of the project and the internal governance that supported it.</p> <p>Key governance milestones include:</p> <ol style="list-style-type: none">1. 10 December 2015 – Approval of Stage 1: Opotiki substation development and 11kV board installation.
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This work was to address immediate issues present in 2015 and prepare the site for additional works, should the forecast natural load growth within Opotiki eventuate.

2. **13 December 2022** – Consideration of the three options outlined in Horizon Networks Opotiki reopen application. This included scenario analysis, as there were several proposed solar farms that would impact the proposed development.
3. **27 March 2024** – Progress update and approval for the switchgear at Waiotahi. Consideration of options to increase panel space for future needs.
4. **27 June 2024** – Progress update and funding request to cover transformer procurement and civil work.
5. **14 November 2024** – Progress update and funding request for electrical installation works, and housing for relays and communication equipment.
6. **27 June 2025** – Progress update and request for approval to fund civil and electrical works at Waiotahi zone substation, conversion of Te Kahha to 33kV, relocation and installation of 11kV voltage regulator.

The options assessment and supporting analysis are detailed in the 13 December 2022 Board paper. An excerpt from this paper, outlining the options considered, is included in the Appendix below.

Please note:

		<ol style="list-style-type: none"> 1. The 2022 Board paper contains the best available information and forecasts at the time. These have since been updated and superseded by the dates, budget and information presented in the 2025 Opotiki reopener application. 2. In 2022, demand response was not as prevalent as it is in 2025 and subsequently and was not identified as a viable alternative solution for the Opotiki region. As a result, demand response was not presented as an option for Board consideration. We are aware that there is now an emerging market and suppliers for demand response and other non-network solutions. This emerging market was not present in 2022. Future Horizon Networks business cases will more clearly document the cost, benefits and consideration of non-network alternatives, such as demand response alongside traditional network solutions.
<p>Question 5: Level of engagement undertaken as part of business-as-usual engagement processes</p>	<p>Can you please advise whether your business-as-usual engagement processes with consumers and stakeholders included any focus or discussion on the Opotiki project and what the overall theme of feedback has been? Given the scale of this project for Horizon (and the impact on consumers) – consumer engagement is particularly important.</p>	<p>Horizon Networks stakeholder engagement on the Opotiki project began in 2011, where a presentation (attached separately) was delivered to the Opotiki District Council, which established a shared understanding of the region's future electricity needs, including the need to establish a new 33kV substation at Opotiki.</p> <p>Engagement with the community for the Opotiki substation was predominantly through the Opotiki District Council's approval and planning processes, complemented by informal discussions with local businesses, as well as:</p> <ul style="list-style-type: none"> • Trust Horizon's community updates

- [Horizon Networks asset management plans](#)
- [Horizon Networks 2015 annual report](#)
- [Opotiki District Council district plan review](#)

While targeted engagement specific to the Opotiki project was not undertaken as a standalone initiative, Horizon Network's broader customer engagement surveys consistently highlight continuity of supply as a top priority for consumers. The Opotiki project addresses this by mitigating the risk of supply interruptions in the region. This was reinforced by the divestment of the 50kV assets by Transpower to Horizon, as we were seen as the logical owners of the assets and one that was best placed to understand and manage the communities' expectations.

Horizon Networks recognises the value of community engagement and how proactive engagement can improve project outcomes for affected consumers and the communities they live in.

Horizon Networks will expand its engagement strategy to improve engagement and outcomes, with a focus on projects that significantly impact the communities we serve.

Appendix: Detailed response to questions

Question 2a: Proposed costs (commissioned assets forecast)

Category	Scope	Cost Estimate	Invoiced as of 31 October 2025	Forecast remaining expenditure FY26	Forecast remaining expenditure FY27	Total Cost
Design - Civil and Electrical Design for Opotiki and Waiotahi	Civil and Electrical Design at Opotiki	██████	██████	██████	██████	\$713,543
	Civil and Electrical Design at Waiotahi	██████	██████	██████	██████	
	Easement process for converting the lines to 33kV	██████	██████	██████	██████	
Procurement – Opotiki 33kV Switchgear, Opotiki 33/11kV T1 & T2 Transformer, Waiotahi 33/11kV Transformer, Waiotahi Portacom and 11kV switchgear	Procurement Cost (Opotiki T1, T2 and 33kV switchboard & Waiotahi T11)	██████	██████	██████	██████	\$5,043,846
	The procurement of Portacom at Waiotahi	██████	██████	██████	██████	
	Procurement of RMU at Waiotahi	██████	██████	██████	██████	
Delivery, Testing & Commissioning – All the required civil and electrical work associated with livening assets at Opotiki and Waiotahi, Ripple plant relocation, Relocate & install 11kV voltage regulator and 11kV network re-arrangement	Relocation of ripple plant	██████	██████	██████	██████	\$8,511,850
	Electrical works at the Opotiki zone substation	██████	██████	██████	██████	
	Opotiki 33kV Switchgear - Assembly	██████	██████	██████	██████	
	Civil Work at Opotiki	██████	██████	██████	██████	
	All sitework in Waiotahi	██████	██████	██████	██████	
	Conversion of Te Kaha 50kV line	██████	██████	██████	██████	
	Relocation & install Waimana voltage regulator	██████	██████	██████	██████	
	The conversion of Opotiki 11kV to Opotiki North 33kV Feeder	██████	██████	██████	██████	
	All site works for Opotiki T2	██████	██████	██████	██████	
	The 11kV network re-arrangement at Opotiki	██████	██████	██████	██████	
		██████	██████	██████	██████	\$14,269,239

Question 3 : Exclusion of Opotiki project expenditure

Paragraph 4.1.1, point#4: *The Opotiki sub-transmission project was not provided for in the Horizon Networks FNAR, despite the project being included in the 2024 AMP used by the Commerce Commission when setting DPP4*

The point that this was intended to convey, was that FY26 and FY27 forecast expenditure included the Opotiki project.

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast of the value of commissioned assets (i.e., the value of RAB additions) EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes). This information is not part of audited disclosure information.

	Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
11a(i): Expenditure on Assets Forecast						
\$000 (in nominal dollars)						
Consumer connection	208	312	281	260	265	270
System growth	576	2,869	7,522	8,883	6,802	6,448
Asset replacement and renewal	6,911	6,288	7,468	8,653	9,633	10,097
Asset relocations	-	31	32	32	33	34
Reliability, safety and environment:						
Quality of supply	738	73	243	108	935	146
Legislative and regulatory	417	1,421	422	431	132	135
Other reliability, safety and environment	459	1,016	1,251	1,101	1,254	973
Total reliability, safety and environment	1,614	2,510	1,917	1,640	2,321	1,254
Expenditure on network assets	9,308	12,009	17,220	19,468	19,055	18,102
Expenditure on non-network assets	466	129	738	1,280	902	108
Expenditure on assets	9,775	12,138	17,958	20,748	19,957	18,210
plus Cost of financing	121	156	224	253	248	235
less Value of capital contributions	452	544	685	652	665	678
plus Value of vested assets	-	-	-	-	-	-
Capital expenditure forecast	9,444	11,750	17,497	20,349	19,539	17,767
Assets commissioned	8,444	10,750	16,497	19,349	18,539	16,767
\$000 (in constant prices)						
Consumer connection	208	312	276	250	250	250
System growth	576	2,869	7,375	8,538	6,410	5,956
Asset replacement and renewal	6,911	6,288	7,322	8,317	9,077	9,328
Asset relocations	-	31	31	31	31	31
Reliability, safety and environment:						
Quality of supply	738	73	239	104	881	135
Legislative and regulatory	417	1,421	414	414	125	125
Other reliability, safety and environment	459	1,016	1,226	1,058	1,182	899
Total reliability, safety and environment	1,614	2,510	1,879	1,577	2,187	1,158
Expenditure on network assets	9,308	12,009	16,882	18,712	17,956	16,724
Expenditure on non-network assets	466	129	724	1,230	850	100
Expenditure on assets	9,775	12,138	17,606	19,942	18,806	16,824

Paragraph 4.1.2 point#2: Exclusion of historic Opotiki sub-transmission project expenditure - The capital expenditure for the Opotiki subtransmission project in FY24 and FY25 was not included in the forecast of commissioned assets for DPP4. This omission resulted in a further \$3.75 million under-forecast across the first two years of the regulatory period.

This was intended to convey that we incurred \$3.75M of costs across FY24 and FY25, related to the Opotiki project that will not be commissioned until FY26.

As a result, in the 2024 AMP, the total commissioned assets in FY26 should be \$3.75M higher than was forecast and used for price setting.

SCHEDULE 11a: REPORT ON FORECAST CAPITAL EXPENDITURE

This schedule requires a breakdown of forecast expenditure on assets for the current disclosure year and a 10 year planning period. The forecasts should be consistent with the supporting information set out in the AMP. The forecast of the value of commissioned assets (i.e., the value of RAB additions)
EDBs must provide explanatory comment on the difference between constant price and nominal dollar forecasts of expenditure on assets in Schedule 14a (Mandatory Explanatory Notes).
This information is not part of audited disclosure information.

sch ref		Current Year CY	CY+1	CY+2	CY+3	CY+4	CY+5
	for year ended	31 Mar 24	31 Mar 25	31 Mar 26	31 Mar 27	31 Mar 28	31 Mar 29
9	11a(i): Expenditure on Assets Forecast	5000 (in nominal dollars)					
10	Consumer connection	208	312	281	260	265	270
11	System growth	576	2,869	7,522	8,883	6,802	6,448
12	Asset replacement and renewal	6,911	6,288	7,468	8,653	9,633	10,097
13	Asset relocations	-	31	32	32	33	34
14	Reliability, safety and environment:						
15	Quality of supply	738	73	243	108	935	146
16	Legislative and regulatory	417	1,421	422	431	132	135
17	Other reliability, safety and environment	459	1,016	1,251	1,101	1,254	973
18	Total reliability, safety and environment	1,614	2,510	1,917	1,640	2,321	1,254
19	Expenditure on network assets	9,308	12,009	17,220	19,468	19,055	18,102
20	Expenditure on non-network assets	466	129	738	1,230	802	100
21	Expenditure on assets	9,775	12,138	17,958	20,748	19,957	18,210
22							
23	plus Cost of financing	121	156	224	253	248	235
24	less Value of capital contributions	452	544	685	652	665	678
25	plus Value of vested assets	-	-	-	-	-	-
26							
27	Capital expenditure forecast	9,444	11,750	17,497	20,349	19,539	17,767
28							
29	Assets commissioned	8,444	10,750	16,497	19,349	18,539	16,767
30							
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More accurately should be \$20,247 due to \$3.75M of CAPEX for Opotiki incurred in FY24 and FY25 being commissioned in FY26.

Question 4: Other solutions considered

BACKGROUND

Horizon owns and operates the 11kV network in the Opotiki District, serving approximately 4,200 customers in Opotiki and additional 1,100 customers in Te Kaha. These customers are supplied from Transpower Grid Exit Point (GXP).

Opotiki has limited capacity on the 11kV networks due to the long distance between Transpower's Waiotahi GXP and the load centre (Opotiki township). Over the past 10 years, Horizon has made significant investment to allow for growth in the region. This includes:

1. Deploying an 11kV Voltage Regulator to provide voltage support for Coast and Otarā Feeder
2. Reconfiguring the 11kV Network by commissioning the Opotiki 11kV Switching Station
3. Temporarily deploying 1.25MVA generator for 11kV voltage support and back-up supply
4. Undergrounding approximately 2km of Otarā 11kV Feeder to allow for future Sub-Transmission circuits
5. Building 2km of Sub-Transmission circuit on Otarā Road for future commissioning of the Sub-Transmission System

Recent investment announcements such as from the Provisional Growth Fund (PGF) and other private investments aims to enable economic activities in the region. The region also has one of the highest sunshine hours in New Zealand, making the region attractive for large scale solar farms.

As the sole electricity infrastructure distributor for the region, Horizon sees ourselves as an enabler for the growth. As a result of that, we have budgeted \$5.02M for the growth of the region across the 10-Year Planning Period in AMP2022. This business case outlines the need of the investment, risk and the recommended option.

Waiotahi Solar Farm Developments

There are currently two major solar farm developments at Waiotahi with proposed connections directly to Transpower's GXP. The proposed solar farms are

1. Lodestone Energy Limited (Lodestone), 45MW, proposed connection at 33kV
2. Far North Solar Farm (FNSF), circa 45MW, proposed connection at 110kV (Transpower is currently in discussion with FNSF for connecting at 33kV as an option)

We have been liaising with Transpower since around July 2022 for options to connect both Lodestone and Horizon that would achieve overall efficiency. At the time, FNSF's proposed connection was not disclosed by Transpower for confidentiality reasons.

Transpower provided a series of questions to Horizon in relation to the final configuration, sequence of work that Horizon envisages, and some technical information. Horizon has responded to the questions. Transpower did not provide any concept solutions.

Following the execution of the Transpower Works Agreement (TWA) between Transpower and Lodestone was signed for the proposed solar farm, Horizon requested a meeting with Transpower to discuss the plan forward. The meeting was held on 1st Dec 2022. During the meeting, Transpower informed that

- 1. Transformer replacements**
 - a. Transpower is planning to place the order for the transformer(s) before Christmas 2022.
 - b. Transpower has recently signed the TWA with FNSF for connecting a solar farm to 110kV at Waiotahi. However, Transpower is discussing with FNSF the option to connect at 33kV.
 - c. If FNSF agrees to connect at 33kV, then the existing Waiotahi T1&T2 that supply Horizon will be replaced by two 3-winding transformers. The 11kV winding to support Horizons changing over from 11kV to 33kV while maintaining acceptable security level. The funding of the transformer replacements will be from Lodestone, FNSF, and Transpower (as part of their R&R policy work).
- 2. 33kV indoor switchboard**
 - a. A 33kV indoor switchboard will be required and costs shared between Horizon, FNSF, and Lodestone.
 - b. As the developers have asked for outdoor breakers, and Horizon is not sharing the cost of the transformers, the likely cost sharing for the indoor switchboard for Horizon would be "Total cost – Cost of outdoor breakers (which will be funded by the developers)".

- c. The ballpark estimate cost from Transpower for the indoor switchboard is around \$2M-\$3M. This is provided that the work is carried out at the same time as the solar farm development works. If we are unable to align the timing, Horizon may need to fund the cost of the entire indoor switchboard plus the cost of cutting over the outdoor breakers to the indoor switchboard.
- d. Transpower has indicated there is an urgency to order the indoor switchboard board to meet with their agreed timeframe with Lodestone and FNSF.

Transpower indicated that the project is challenging due to multiple parties involved, uncertainties with the solar farm development commitments, different timing of projects, and commercial sensitivities.

RATIONIALE

System Constraint and Load Forecast

Since 2015, Horizon's 11kV Networks is configured as a close-mesh system to reduce the voltage drop across the 11kV feeders. The current system capacity is 11.2MW. The peak load for the Opotiki 11kV Networks is approximately 10.5MW, leaving 0.8MW spare capacity for the regional growth.

The current AMP forecasts for a fourth 11kV feeder in 2025 which defers the need for 33kV supply to 2029.

We have reviewed our growth forecast as part of AMP 2023, the Opotiki load is expected to continue growing at an increased organic rate of 2.8% per annum for the next 20 years (up to 2042). The fourth 11kV feeder option considered in AMP 2022 is no longer viable as it only defers the need for the 33kV supply by 1 year based on the latest forecast and the cost is substantial. We are forecasting that the Opotiki load may exceed the system capacity during peak time and anticipate managing the network via load control and additional diesel generation if required.

Table 1 shows the revised long-term load forecast for the Opotiki region.

Table 1: +50Y Load Forecast (in MVA)

System	System Capacity	2022 (Current Peak Load)	2023	2032	2042	2072
		+0Y	+1Y	+10Y	+20Y	+50Y
Opotiki 11kV Networks	11.2	10.5	12.2	15.3	18.5	22.0

The capacity shortfall is quantifiable as the volume of unmet load. Table 2 shows the cumulative unmet load and the expected regional economic impact of the unmet load. The regional economic impact is calculated by multiplying the cumulative unmet load with the weighted Value of Loss Load (VoLL) for the Opotiki region.

Table 2: Unmet Load

	10Y	20Y	50Y
Cumulative Unmet Load (GWH) ³	2.7	48.6	464.3
Economic Impact of Unmet Load ⁴	\$25.79M	\$471.76M	\$4,505.63M

We have considered the following 33kV supply options at Waitotahi to support the conversion.

Option 0: As per AMP2022 (with updated costing)

This option proposes acquiring Waitotahi 11/50kV step-up transformer at Waitotahi, and relocating this to Opotiki substation. This option enables a fourth 11kV feeder to supply Opotiki with an additional 1MW additional capacity to Opotiki thus deferring the investment required for 33kV conversion. Refer to Figure 2 for the temporary configuration. The 33kV conversion at Waitotahi will be triggered once the load at Opotiki reaches 12.2MW. Our updated load forecast shows that this option is no longer feasible as the option can only defer the 33kV investment by 1 year. The final configuration for the 33kV configuration is shown in Figure 3.

³ This is calculated based on the half-hourly demand forecast exceeding system capacity 11.2MVA

⁴ The weighted VoLL for Opotiki region is estimated at \$9,703/MWh. This is based on the ratio of Domestic to Non-Domestic customers in Opotiki, with Domestic VoLL of \$4,651/MWh, Non-Domestic VoLL of \$24,662/MWh

Option 1a: Separate 33kV supplies at Waiotahi GXP and Lodestone's solar farm site

This option proposes two separate 33kV connections, one directly from the Waiotahi GXP supplied by a new 25MVA transformer, and another supply connects to Lodestone's 33kV switchgear at their solar farm which is supplied by a new 45MVA transformer. The breaker at the Lodestone's site will need to be in a normally open state. Refer to Figure 4.

Option 1b: Shared 33kV bus with Lodestone at Waiotahi GXP

This option proposes an indoor 33kV bus to be constructed at Waiotahi GXP which will serve both Horizon and Lodestone. The supply transformers are the same as Option 1a which are 45MVA and 25MVA. This option assumes FNSF connects at 110kV. Refer to Figure 5.

Option 1c: Shared 33kV bus with Lodestone, FNSF at Waiotahi GXP

This option assumes FNSF connects at 33kV. The configuration at the Waiotahi GXP is similar to Option 1b with exception that FNSF will be also connected to the 33kV indoor bus and both supply transformers will be 45MVA. Refer to Figure 6Figure 5.

Option 2: Horizon's Dedicated 33kV Supplies from Waiotahi GXP

This option proposes establishing dedicated 33kV supplies from Waiotahi GXP for Horizon. The scope includes an indoor bus and two 25MVA supply transformers. Or- alternative two outdoor breakers at Waiotahi with a fiber link from Waiotahi GXP to Opotiki substation for protection purpose. For the purpose of the business case, we assume an indoor bus will be required at the Waiotahi GXP. This configuration is shown in Figure 7.

Non-Network Option

In addition to the above options, earlier this year, we investigated a non-network solution which involves purchasing an used 1 MW, 2 MWh Tesla battery for peak shaving and voltage support to defer the network investment, and participated in the tender for purchasing the batter from Mercury. However, our bid was unsuccessful and in any event this would have been a complementary solution to the above.

Economic Assessment

We have assessed the residual risk using the Value of Loss Load (VoLL) on the options where the output of the risk assessment and the Net Present Value (NPV) are presented in Table 3 and Table 4 respectively. Refer to

Appendix A for concept Single Line Diagrams (SLDs) for each option.

Table 3: Benefits of Each Option

	Option 0	Option 1a	Option 1b	Option 1c	Option 2
Option Description	As per AMP2022 (with updated costing)	Separate 33kV supplies at Waiotahi GXP and Lodestone's solar farm site	Shared 33kV bus with Lodestone at Waiotahi GXP	Shared 33kV bus with Lodestone, FNSF at Waiotahi GXP	Horizon's Dedicated 33kV Supplies from Waiotahi GXP
Waiotahi 33kV Bus Ownership	Transpower Bus	Lodestone Bus	Transpower Bus	Transpower Bus	No
Opotiki 33kV Bus	Yes	Yes	Yes	Yes	No
Installed Capacity (MVA)	44	23	44	44	41
Security of Supply Level	N-1	N-1 Switch	N-1	N-1	N-1
N-1 Capacity (MVA)	18	18	18	18	18
Unlocked Installed Capacity ⁵ (MVA)	32.8	11.8	32.8	32.8	29.8
Unlocked N-1 Capacity ⁶ (MVA)	8.8	8.8	8.8	8.8	8.8

From reliability and security perspectives, Option 1a has the cheapest solution, however the installed capacity of the 33kV system is limited due an operational constraint with a reduced 'N-1 Switched' security level. Furthermore there are risks associated with supplying our network via a private entity.

Table 4: PV Analysis

	Option 0	Option 1a	Option 1b	Option 1c	Option 2
Capital	\$10.90M	\$11.05M	\$10.14M	\$10.14M	\$9.91M
Maintenance	\$0.20M	\$0.20M	\$0.20M	\$0.20M	\$0.20M
Transpower Connection Charges (30Y Repayment)	\$18.69M	\$5.60M	\$13.10M	\$7.93M	\$16.79M
Total cost	\$29.79M	\$16.85M	\$23.44M	\$18.27M	\$26.90M
Cost PV (35Y)	\$16.95M	\$11.86M	\$14.12M	\$12.07M	\$15.37M
Cost PV / Unlocked Installed Capacity	\$0.52M/MW	\$1.01M/MW	\$0.43M/MW	\$0.37M/MW	\$0.52M/MW
Outcome	NOT RECOMMENDED	NOT RECOMMENDED	2 ND RECOMMENDATION	1 ST RECOMMENDATION	NOT RECOMMENDED

PROJECT SCOPE

The high-level scope for the preferred option (Option 1c) is outlined in Table 5.

This project is to enable 33kV supply engage Lodestone Energy and Transpower for a new 33kV supply at Waiotahi to supply Opotiki at 33kV. The high-level scope of this project is outlined sequentially.

⁵ Unlocked Installed Capacity (MVA) is calculated based on the Installed Capacity of the Option (MVA) less the Current System Capacity (11.2MVA)

⁶ Unlocked N-1 Capacity (MVA) is calculated based on the Installed N-1 Capacity of the Option (MVA) less the Current N-1 Capacity (9.2MVA)

Table 5: High-Level Scope

Item	Description	Additional Notes
1	Detailed Design	Engage external consultant
2	Engage Transpower for 33kV Solution at Waiotahi	An agreement would be required between Transpower, FNSF, Lodestone on cost sharing
3	Procurement of 33kV Switchboard at Opotiki	
4	Procurement of 2 x 25MVA 33/11kV Transformer for Opotiki	
5	Installation of 33kV Switchboard and 2x 33/11kV Transformers at Opotiki & cable routing	
6	Line-Realignment: Opotiki 11kV Feeder upgrade to 33kV	<p>Upgrade approximately 8.8km of overhead line from 11kV to 33kV. The work also involves approximate 1.6km of 33kV undergrounding on Woodlands Road and Waioeka Road.</p> <p>The realignment will trigger the replacement of 11kV overhead bus at Waiotahi with a ground mount RMU, and an installation of 11kV Voltage Regulator on Waimana Feeder.</p> <p>[We expect the above to be undertaken over 2025/2026 FY and the costs will need to be reflected in the 2024 AMP]</p>
7	Te Kaha transformer tap change and protection setting changes	
8	Protection, Secondary & SCADA systems integration	
9	Testing and Commissioning	
10	As Builts and Drawings update	

PROJECT RISK

Table 10 shows the high-level project risks and their control description to limit risk level to an acceptable level.

Table 10: High-Level Risk

Risk Category	Risk Type	Risk Description	Impact	Likelihood	Control Description	Controlled Risk Level
Safety	Public access	Public wandering into the construction site	High	Medium	Temporary security fence to be installed and controlled access to the site	Low
Reliability	System demand exceeds the capacity	The peak load exceeds the available capacity of the network	Medium	Medium	Manage the load through load control and temporary diesel generation	Low

Risk Category	Risk Type	Risk Description	Impact	Likelihood	Control Description	Controlled Risk Level
Cost	Resource constraints	Network faults, staff leave, Resignation	High	Medium	HSL staff levels to be assessed and maintained. Priority project to take preference over others if required. Project meeting minutes to be documented. Engage consultant and other contractors as required	Low
	Opportunity cost	Miss the opportunity for sharing cost with developers on Waitohi indoor switchboard	High	Medium	Seek board's approval for engaging Transpower for investigation and TWA of the 33kV indoor switchboard, procurement of long lead-time items, commence detailed design, and initiate easement process as requested under this business case	Low
	Cost estimate accuracy	Estimated overall cost is inaccurate	Medium	Medium	Staged business case approval, a second business case to be developed and approved at the completion of detailed design to ensure cost certainty	Low
	Easement	Landowners may request for compensation for granting easements for the line conversation work	High	Medium	Initiate the easement process and engage with the landowners early	Medium
	Management of Sub Contractors	Multiple sub-contractors on-site to get the best product	High	Low	Dedicated PM appointed to oversee the project. Regular coordination and update meetings with sub-contractors to be organized ensuring all work will be fulfilled. Clear demarcation of works is outlined	Low

RECOMMENDATION

Management recommends proceeding with **Option 1c: 33kV Bus Sharing with Lodestone and Far North at Waitohi GXP** as it provides the lowest Cost PV / Unlocked Installed Capacity Ratio (the cheapest per MW solution). However, this option is contingent on FNSF's connection at 33kV.

The next preferred option is Option 1b if FNSF does not connect at 33kV, however, the feasibility of this option will need to be confirmed with Transpower and Lodestone.

There is no additional opex or capex costs in FY23 required for Option 1c, however Management will be required to sign the Service Agreement Contract and Transpower Works Agreement and commit to costs before year end.

APPENDIX A: CONCEPT SINGLE LINE DIAGRAMS

Current Configuration

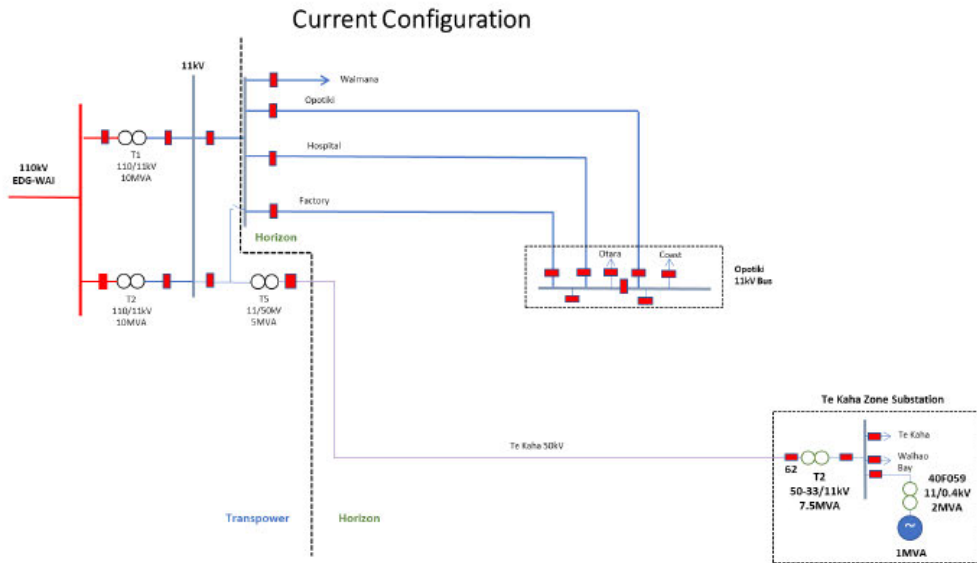


Figure 1: Current Configuration

Option 0 – As per AMP2022

Option 0 : As per AMP2022 – Stage 1

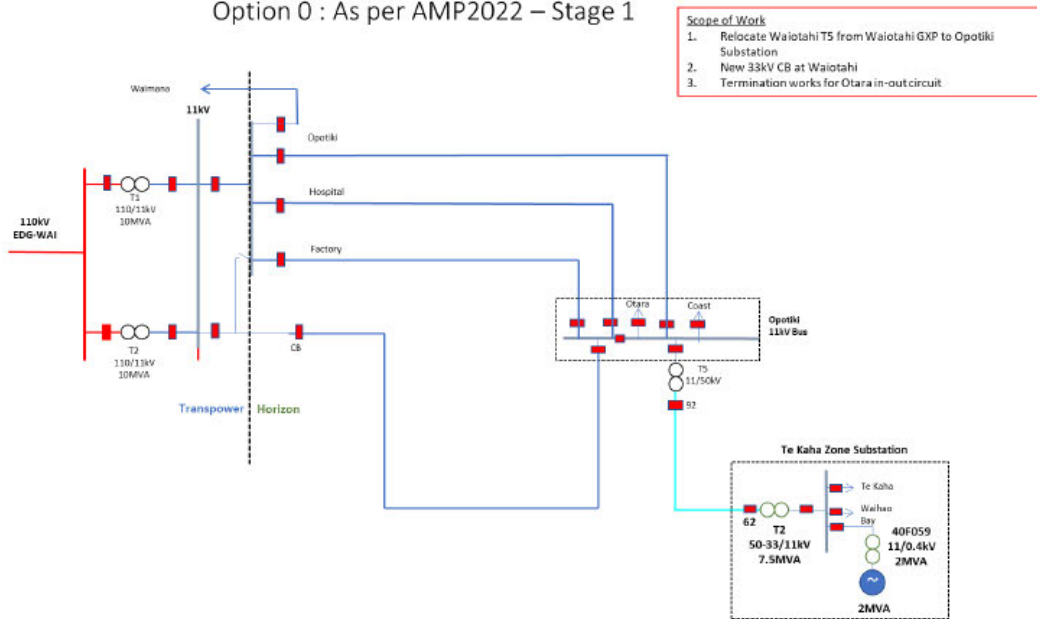
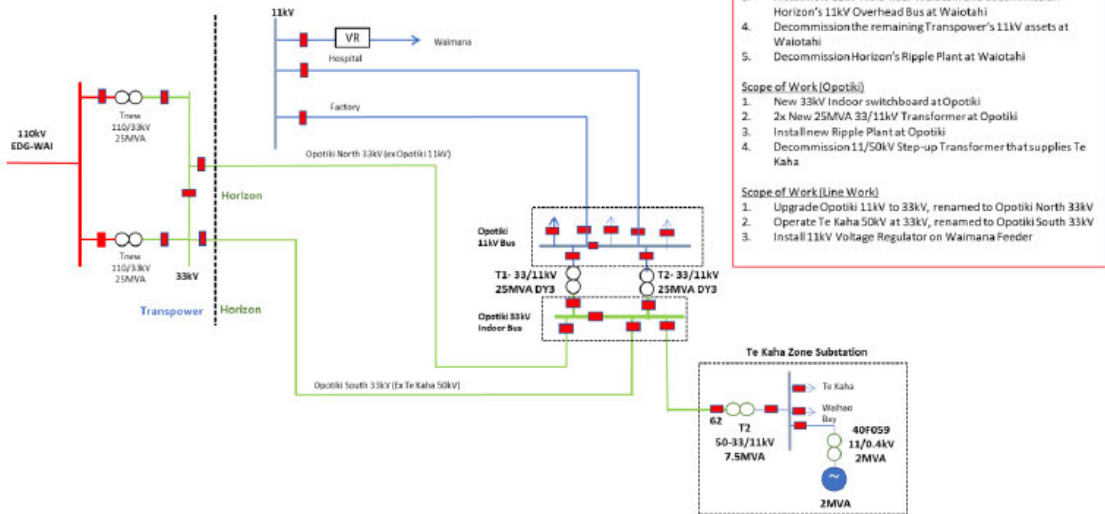


Figure 2: Concept SLD of Stage 1 of Option 0

Option 0: As Per AMP2022 – Stage 2

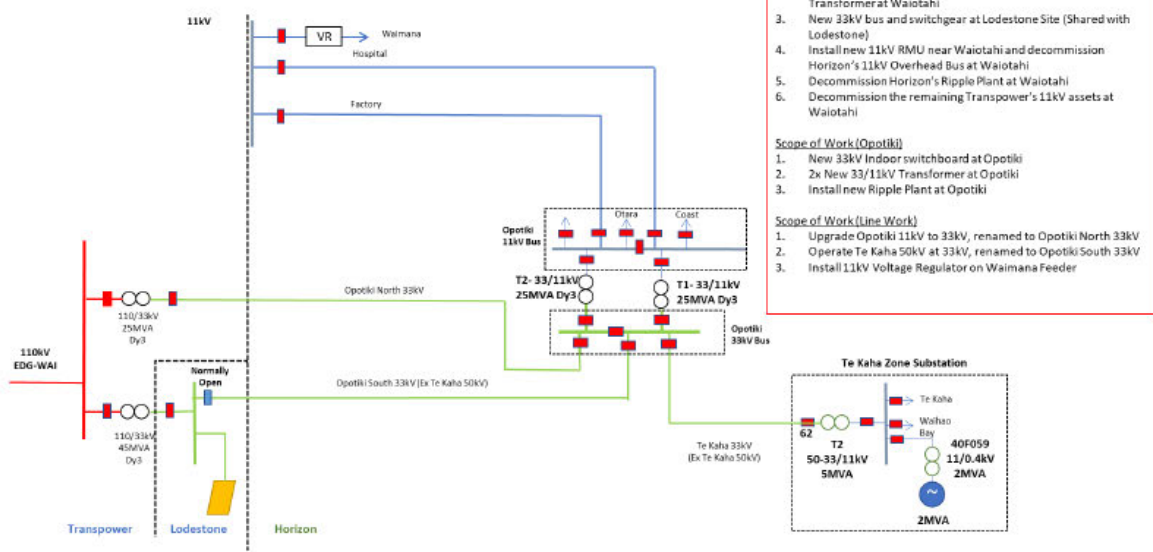


- Scope of Work (Waioatahi)**
1. Upgrade 2x 10MVA 110/11kV Transformer to 2x 25MVA 110/33kV Transformer at Waioatahi
 2. New 33kV indoor Switchboard at Waioatahi
 3. Install new 11kV RMU near Waioatahi and decommission Horizon's 11kV Overhead Bus at Waioatahi
 4. Decommission the remaining Transpower's 11kV assets at Waioatahi
 5. Decommission Horizon's Ripple Plant at Waioatahi
- Scope of Work (Opotiki)**
1. New 33kV Indoor switchboard at Opotiki
 2. 2x New 25MVA 33/11kV Transformer at Opotiki
 3. Install new Ripple Plant at Opotiki
 4. Decommission 11/50kV Step-up Transformer that supplies Te Kaha
- Scope of Work (Line Work)**
1. Upgrade Opotiki 11kV to 33kV, renamed to Opotiki North 33kV
 2. Operate Te Kaha 50kV at 33kV, renamed to Opotiki South 33kV
 3. Install 11kV Voltage Regulator on Waimana Feeder

Figure 3: Concept SLD of Stage 2 of Option 0

Option 1a - Separate 33kV supplies at Waioatahi GXP and Lodestone's solar farm site

Option 1a – Separate 33kV Supplies at Waioatahi GXP and Lodestone's Solar Farm Site



- Scope of Work (Waioatahi)**
1. Upgrade 1x 110/11kV Transformer to 1x 45MVA 110/33kV Transformer at Waioatahi (shared arrangement with Lodestone)
 2. Upgrade 1x 110/11kV Transformer to 1x 25MVA 110/33kV Transformer at Waioatahi
 3. New 33kV bus and switchgear at Lodestone Site (Shared with Lodestone)
 4. Install new 11kV RMU near Waioatahi and decommission Horizon's 11kV Overhead Bus at Waioatahi
 5. Decommission Horizon's Ripple Plant at Waioatahi
 6. Decommission the remaining Transpower's 11kV assets at Waioatahi
- Scope of Work (Opotiki)**
1. New 33kV Indoor switchboard at Opotiki
 2. 2x New 33/11kV Transformer at Opotiki
 3. Install new Ripple Plant at Opotiki
- Scope of Work (Line Work)**
1. Upgrade Opotiki 11kV to 33kV, renamed to Opotiki North 33kV
 2. Operate Te Kaha 50kV at 33kV, renamed to Opotiki South 33kV
 3. Install 11kV Voltage Regulator on Waimana Feeder

Figure 4: Concept SLD for Option 1a

Option 1b - Shared 33kV bus with Lodestone at Waitotahi GXP

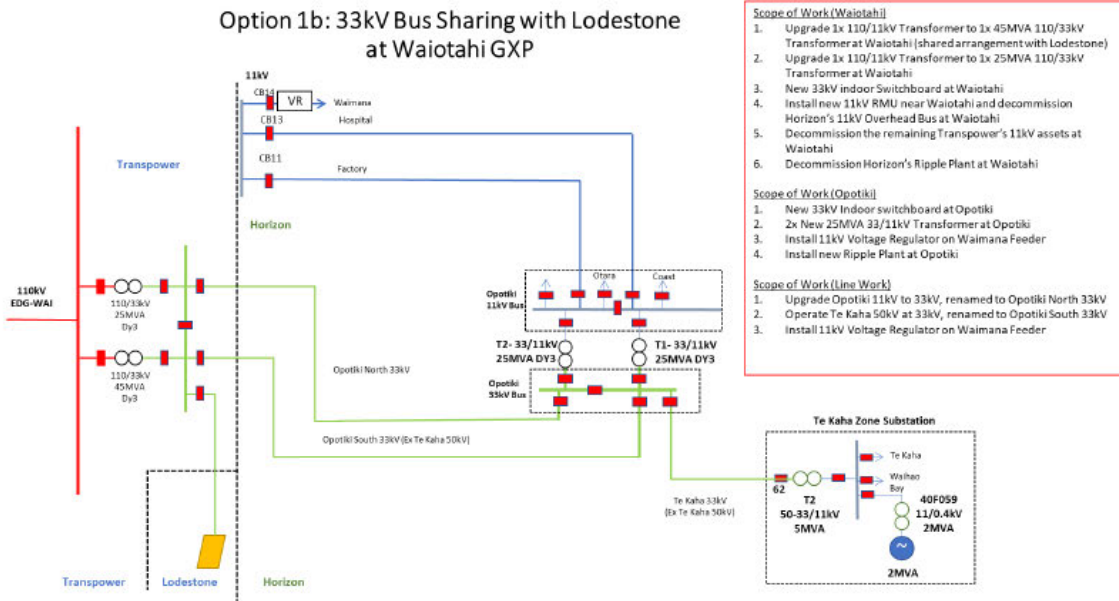


Figure 5: Concept SLD for Option 1b

Option 1c - Shared 33kV bus with Lodestone, FNSF at Waitotahi GXP

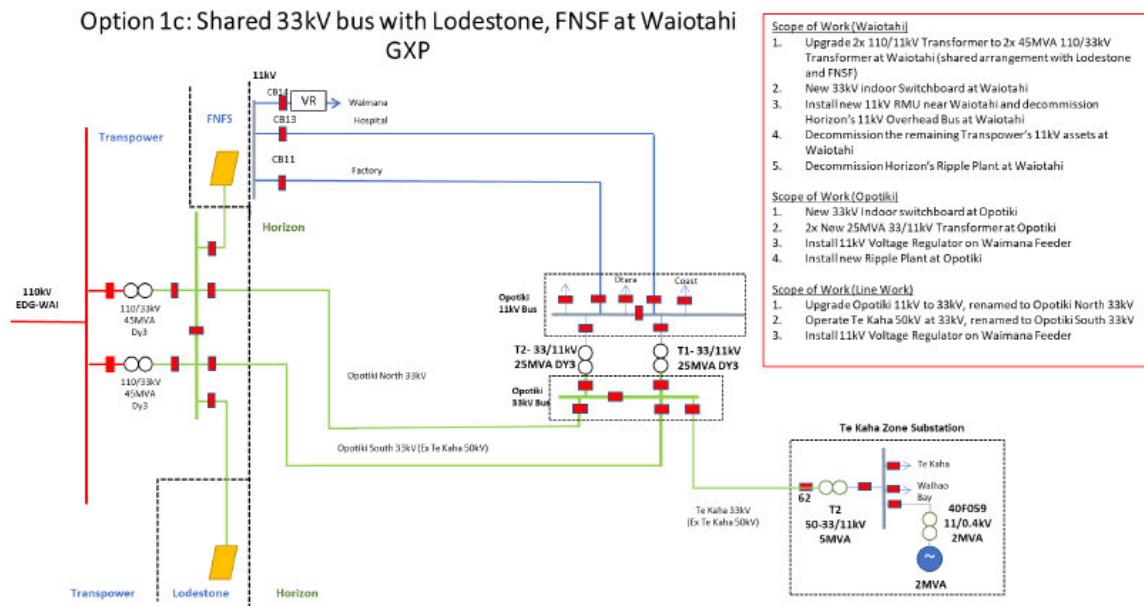


Figure 6: Concept SLD of Option 1c

Option 2 – Horizon’s Dedicated 33kV Supplies from Waiotahi GXP

Option 2: Horizon’s Dedicated 33kV Supplies from Waiotahi GXP

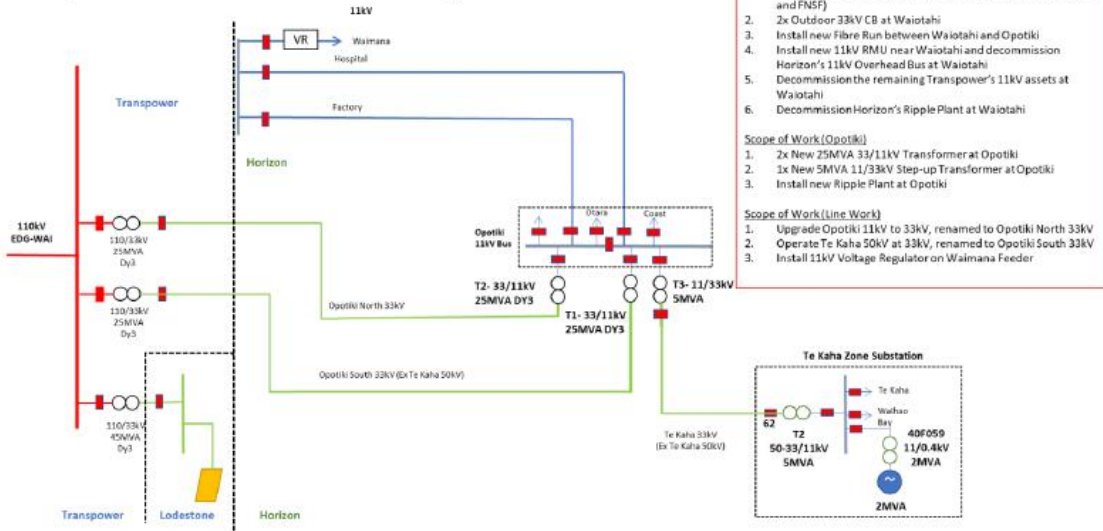


Figure 7: Concept SLD of Option 2

33kV Line Route

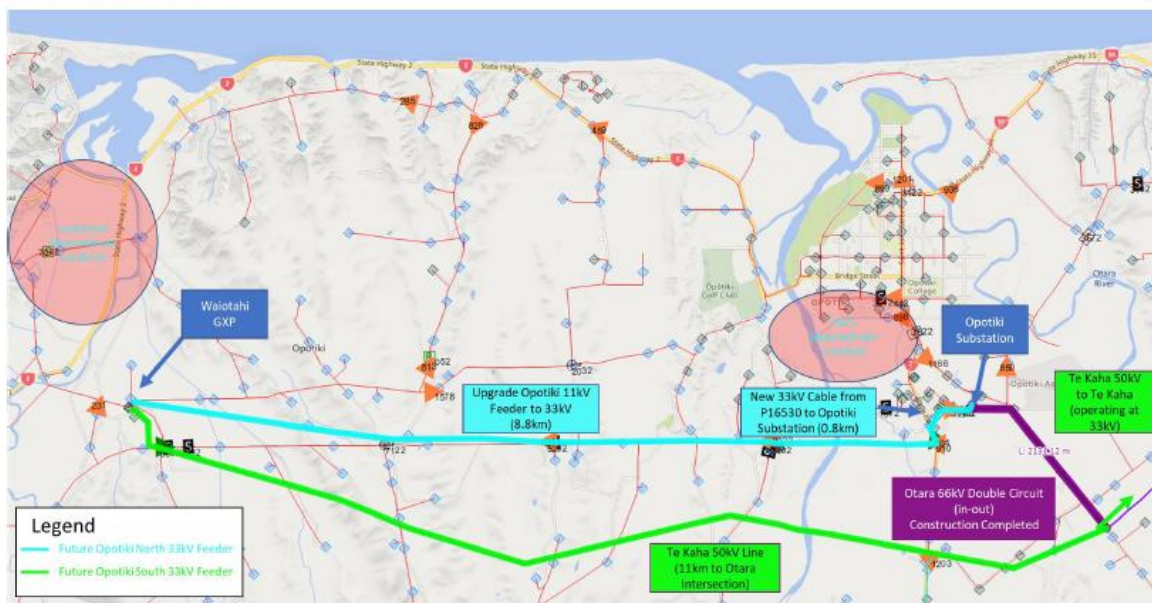


Figure 8: 33kV Line Route between Waiotahi GXP to Opotiki Substation

Horizon Networks response to Opotiki reopener further request for information – 18 December 2025

Q#	Details																
Question 6	<p><u>Project Context and Timeline</u></p> <p>Please provide a timeline that outlines key milestones in the development of this project from its initiation, including critical decision points and contractual commitments</p>																
HN	<table border="1"> <thead> <tr> <th data-bbox="416 555 528 593">Time</th> <th data-bbox="528 555 1524 593">Decision</th> </tr> </thead> <tbody> <tr> <td colspan="2" data-bbox="416 593 1524 631">Works Completed Prior to Opotiki Sub-Transmission Project</td> </tr> <tr> <td data-bbox="416 631 528 1070">2010</td> <td data-bbox="528 631 1524 1070"> <p>Horizon Networks initiated the East Coast long-term development study, setting out the requirements to address the following concerns:</p> <ul style="list-style-type: none"> • Voltage constraint on existing 11kV feeders from Waiotahi, exacerbated during high load conditions • Lack of spare capacity (Voltage-driven) within the network system for step change load growth in the Opotiki area • Loss of N-1 security of supply at Waiotahi Substation • Accommodate predicted load growth forecast for Waiotahi, Opotiki and Te Kaha substations • Improvement in the reliability of the East Coast supply <p>The development study outlines development options to resolve the abovementioned concerns in the East Coast region including Opotiki.</p> </td> </tr> <tr> <td data-bbox="416 1070 528 1167">2011</td> <td data-bbox="528 1070 1524 1167">Horizon Networks presented potential upcoming investments to the Opotiki District Council. The presentation includes Horizon Networks' plan to establish future 33kV sub-transmission supplies to Opotiki.</td> </tr> <tr> <td data-bbox="416 1167 528 1397">2015</td> <td data-bbox="528 1167 1524 1397"> <p>Horizon's Board approved the project to establish a new substation site at Opotiki approximately 10km away from Transpower's Waiotahi GXP, and bus the existing 3x 11kV feeders at the site, with provision for future 33kV upgrade.</p> <p>The new substation site and related 11kV bus work are a stop-gap measure and solved the immediate 11kV voltage performance concerns. This option also helps deferred the need for a sub-transmission 33kV supply to Opotiki.</p> </td> </tr> <tr> <td data-bbox="416 1397 528 1462">2017</td> <td data-bbox="528 1397 1524 1462">Horizon Networks completed the construction and commissioned the Opotiki substation site, building, and 11kV bus.</td> </tr> <tr> <td data-bbox="416 1462 528 1854">2018</td> <td data-bbox="528 1462 1524 1854"> <p>Horizon Networks acquired Transpower's East Coast assets, consisting of the single 66km 50kV line between Waiotahi GXP and Te Kaha, and all Transpower's assets at Te Kaha substation.</p> <p>The strategic acquisition of the East Coast assets enables Horizon to unlock network development options for supporting the future growth, including:</p> <ol style="list-style-type: none"> 1. Operating the newly acquired 50kV line as a fourth 11kV feeder from Waiotahi GXP to Opotiki. This would require further acquisition of Transpower assets at Waiotahi, in particular, Waiotahi T5 11/50kV Step-up Transformer and its associated secondary assets; or 2. Establish a 33kV supply at Waiotahi and operate the 50kV line at 33kV as a sub-transmission supply to Opotiki. </td> </tr> <tr> <td data-bbox="416 1854 528 2016">Jan 2021</td> <td data-bbox="528 1854 1524 2016"> <p>To progressively prepare the network for future 33kV networks, Horizon's Board approved the project to establish a 2.4km sub-transmission double circuit line linking the Te Kaha 50kV line to the Opotiki substation.</p> <p>The approval of this business case was based on the following assumptions:</p> </td> </tr> </tbody> </table>	Time	Decision	Works Completed Prior to Opotiki Sub-Transmission Project		2010	<p>Horizon Networks initiated the East Coast long-term development study, setting out the requirements to address the following concerns:</p> <ul style="list-style-type: none"> • Voltage constraint on existing 11kV feeders from Waiotahi, exacerbated during high load conditions • Lack of spare capacity (Voltage-driven) within the network system for step change load growth in the Opotiki area • Loss of N-1 security of supply at Waiotahi Substation • Accommodate predicted load growth forecast for Waiotahi, Opotiki and Te Kaha substations • Improvement in the reliability of the East Coast supply <p>The development study outlines development options to resolve the abovementioned concerns in the East Coast region including Opotiki.</p>	2011	Horizon Networks presented potential upcoming investments to the Opotiki District Council. 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Q#	Details	
		<ul style="list-style-type: none"> • Horizon would be able to acquire Transpower’s Waiotahi T5 11/50kV step-up transformer and relocate it to Opotiki at a cost that is economical to Horizon Networks. • The double-circuit will be operating at 11kV as a fourth 11kV feeder to Opotiki, and at the time forecasted to defer the need for a sub-transmission supply to FY27. • Minimal work is required to operate the line at 33kV once Horizon and Transpower are ready to migrate Waiotahi from 11kV to 33kV.
May-2022		<p>Horizon Networks made the decision not to proceed with acquiring and relocating Transpower’s Waiotahi T5 11/50kV Step-up Transformer to Opotiki as the solution is no longer economical due to:</p> <ul style="list-style-type: none"> • High cost for acquiring and relocating Transpower’s Waiotahi T5 11/50kV Step-up Transformer. • The solution would only provide a deferment of the Sub-Transmission 33kV supply by 1-year with the existing network expected to be voltage-constrained in FY25, based on the observed load and ICP growth at the time. <p>Horizon also investigated the option of acquiring a used Battery Energy Storage System (BESS) that became available on the market. However, Horizon Networks failed to secure the unit due to:</p> <ul style="list-style-type: none"> • The solution would only provide a deferment of the Sub-Transmission 33kV supply by 1-year with the network expected to be voltage-constrained in FY25, based on the observed load and ICP growth at the time, making the solution uneconomical. • The vendor’s preference to sell the BESS and their other assets at their site as a package. <p>Horizon Networks proceeded with developing a business case for the Opotiki Sub-Transmission Project.</p>
		<p>Opotiki Sub-Transmission Project - The Subject of Horizon Networks’ Reopener Application</p>
Dec-2022		<p>Horizon Networks’ Board approved the business case for the Opotiki Sub-Transmission Project (The subject of Horizon Networks’ Reopener Application). The decision was made based on key assumptions and observations made at the time:</p> <ul style="list-style-type: none"> • Load and ICP growths observed in the region were accelerating, and the 11kV networks were forecasted to be voltage constrained in FY24 if growth continued at the same rate • Concerns about long lead time items, in particular Switchgears and Transformers. • Delivery synergies were available through Transpower’s Waiotahi GXP works to connect two large-scale solar farms at 33 kV, in particular: <ul style="list-style-type: none"> ○ The solar farms are funding Transpower’s supply transformer upgrades, while Horizon Networks will be funding the 33kV bus /indoor switchboard at Waiotahi ○ The 33kV bus/indoor switchboard at Waiotahi will be commissioned at the same time as the commissioning of the supply transformers, as part of Transpower’s overall Waiotahi Redevelopment Project • The whole project was expected to be completed in FY27 <p>Given the complexity of the project and the cost uncertainty of equipment and construction (dependent on detailed design), Horizon Networks adopted a staged business case approach for seeking Board’s approval. Under this approach, the Board approved \$4.0M expenditure to progress the following enabling activities on the critical path:</p> <ol style="list-style-type: none"> 1. Detailed Design for Opotiki Substation 2. Easement review for the future Opotiki North 33kV circuit

Q#	Details	
		<ol style="list-style-type: none"> 3. Procurement of Opotiki 33kV Switchgear 4. Procurement of Opotiki 33/11kV Transformers 5. Commencing work with Transpower to enter a Transpower Works Agreement (TWA) for Waiotahi 33kV indoor switchgear
	Aug-2023	<p>Horizon Networks entered a contractual commitment valued at \$1.0M on the following:</p> <ol style="list-style-type: none"> 1. Detailed design at Opotiki awarded to an external consultant 2. Opotiki 33kV Switchgear procurement directly with the supplier
	Nov-2023	<p>Horizon Networks entered a Pre-Purchase Agreement (PPA) valued at \$1.4M with Transpower that allows Transpower to procure the 33kV indoor switchgear that is on the critical path.</p> <p>The signing of the PPA allows Transpower to expedite the delivery of the 33kV supplies at Waiotahi, while negotiation on the Transpower Works Agreement (TWA) is in progress.</p>
	Mar-2024	<p>Horizon Networks' Board approved the 2nd Business Case of \$0.95M to commence the following;</p> <ol style="list-style-type: none"> 1. Detailed design for Horizon's reconfiguration work at Waiotahi 2. Procurement of long-lead time 11kV switchgear at Waiotahi and a new Ripple Plant <p>Horizon Networks' Board also approved entering a TWA with Transpower at estimated value of \$7.8M.</p> <p>The decision was based on information available at the time:</p> <ul style="list-style-type: none"> • Confirmation of the 33kV supply arrangement at Waiotahi following investigative work by Transpower
	May-2024	<p>Horizon Networks entered a Transpower Works Agreement (TWA) for 33kV supply at Waiotahi valued at \$7.7M.</p> <p>Horizon Networks entered a contractual commitment valued at \$0.4M on the following:</p> <ol style="list-style-type: none"> 1. Civil and Electrical detailed design contracts for Waiotahi to an external engineering consultant 2. Procurement of 11kV switchgear at Waiotahi
	Jun-2024	<p>Horizon Networks' Board approved the 3rd Business Case of \$1.7M to commence the following;</p> <ol style="list-style-type: none"> 1. Procurement of Waiotahi 33/11kV Transformer 2. Award civil construction contract for Opotiki substation 3. Commence installation of Opotiki 33kV Switchgear 4. Commence relocation of Ripple Plant from Waiotahi to Opotiki <p>The decision was based on the information made available:</p> <ul style="list-style-type: none"> • Completion of civil design at Opotiki Substation • Delivery of Opotiki Switchgear expected in September 2024 • Confirmation on the feasibility of relocating the existing Waiotahi ripple plant to Opotiki and not proceeding with the procurement of a new Ripple Plant
	Jun & July-2024	<p>Horizon Networks awarded procurement contracts with a total value of \$1.7M on the equipment below, following a successful tender process:</p> <ol style="list-style-type: none"> 1. Opotiki 33/11kV Transformer T1 procurement 2. Waiotahi 33/11kV Transformer T11 procurement <p>Horizon Networks commenced the work to assemble the 33kV Switchgear at Opotiki with a total value of \$0.1M</p>
	Aug-2024	<p>Horizon Networks awarded civil construction contract for Opotiki substation site valued at \$0.5M after a successful tender process.</p>

Q#	Details										
	Nov-2024	<p>Horizon Networks' Board approved the 4th Business Case of \$1.4M to commence the following;</p> <ol style="list-style-type: none"> Commence electrical installation for Opotiki Award procurement contract for Portacom building at Waiotahi that houses protection relays and communication equipment <p>The decision was based on the information made available:</p> <ul style="list-style-type: none"> Completion of Electrical Design for Opotiki substation 									
	Dec-2024	<p>Horizon Networks awarded procurement contracts with a total value of \$0.2M on the following equipment:</p> <ol style="list-style-type: none"> Portacom building at Waiotahi <p>Following the completion of electrical design for the Opotiki substation, Horizon Networks commenced the 33kV electrical installation at Opotiki with a total value of \$1.1M. This work includes the installation works for the Opotiki 33/11kV T1 Transformer, cabling, secondary systems, and the relocation of the Ripple Plant from Waiotahi to Opotiki substation.</p>									
	Jun-2025	<p>Horizon Networks' Board approved the 5th Business Case of \$3.5M to commence the following;</p> <ol style="list-style-type: none"> Award civil construction contract for works at Waiotahi Commence electrical installation works at Waiotahi Commence conversion of Te Kaha 50kV line Commence relocation of Voltage Regulator from Otara 11kV feeder to Waimana <p>The decision was based on the information made available:</p> <ul style="list-style-type: none"> Completion of Civil & Electrical Design for Waiotahi 									
	Jun-2025	Horizon Networks awarded procurement contract to procure Opotiki 33/11kV Transformer T2 valued at \$1.3M with an expected delivery of October 2026.									
	July-2025	Horizon Networks awarded civil construction contract for Waiotahi substation site valued at \$0.4M, following a successful tender process.									
	Aug-2025	Following the completion of electrical design for Waiotahi, Horizon Networks commenced the Electrical Works at Waiotahi with a total value \$1.4M.									
	Nov-2025	Horizon Networks commenced the 11kV voltage regulator relocation works to Waimana with a total value of \$0.1M.									
Question 7	Please confirm when the business case was put together for the project, what were the assumptions made/context at that time and outline how these have changed since then?										
HN	<p>The business case to initiate the Opotiki sub-transmission project was developed in 2022 and approved at the December 2022 Board meeting for progressing with the identified key activities on the critical path.</p> <p>Further business cases and papers were submitted progressively as detailed design for each scope component was completed, and project staging and costs became more certain.</p> <table border="1" data-bbox="411 1861 1528 2029"> <thead> <tr> <th data-bbox="411 1861 592 1962">Area</th> <th data-bbox="592 1861 954 1962">Key Assumption in Business Case</th> <th data-bbox="954 1861 1086 1962">Change/ No Change</th> <th data-bbox="1086 1861 1528 1962">Commentary as at January 2026</th> </tr> </thead> <tbody> <tr> <td data-bbox="411 1962 592 2029">Network Assumptions</td> <td data-bbox="592 1962 954 2029">In December 2022, the forecast compound annual</td> <td data-bbox="954 1962 1086 2029" style="background-color: #ffffcc;">Change</td> <td data-bbox="1086 1962 1528 2029">Our demand forecast has now been adjusted with the expected annual</td> </tr> </tbody> </table>			Area	Key Assumption in Business Case	Change/ No Change	Commentary as at January 2026	Network Assumptions	In December 2022, the forecast compound annual	Change	Our demand forecast has now been adjusted with the expected annual
Area	Key Assumption in Business Case	Change/ No Change	Commentary as at January 2026								
Network Assumptions	In December 2022, the forecast compound annual	Change	Our demand forecast has now been adjusted with the expected annual								

Q#	Details		
		load growth was 2.8%. This growth was expected to result in voltage constraints materially impacting the system from FY24.	<p>load growth at 1.9%, taking into account future long-term development indicated in the Eastern Bay of Plenty Spatial Plan.</p> <p>While thermal capacity is not the primary driver, we are forecasting voltage constraints to materially impact the system from FY27, using the voltage requirement applied when the key contracts were committed, including the TWA, procurement of major equipment, design, and construction.</p>
		DG uptake does not materially alleviate the forecast voltage constraints, to support deferral of the sub-transmission investment	<p>The rate of DG growth in the constrained parts of the network is limited and has not kept pace with load growth.</p> <p>Horizon Networks has not seen a meaningful increase in the availability of DER. Given our immediate need, DER it is not expected to be able to materially defer this investment.</p>
		Voltage violation at Opotiki 11kV bus when load exceeds 11.2MVA	<p>We continue to expect voltage violations to occur when the load exceeds 11.2MVA.</p> <p>We note there are scenarios where voltage violations have occurred even if the load is below 11.2MVA.</p>
Scope		Dual Sub-Transmission Network Configuration supplying Opotiki Substation	<p>We continue to expect a dual sub-transmission network configuration to supply Opotiki substation.</p>
		Waimana 11kV feeder can be solely supplied from Opotiki zone substation.	<p>Further investigation after the business case determined a point of supply at Waitotahi must be retained to maintain voltage compliance on the Waimana 11kV feeder. This is a driver for project cost increase.</p>
Timing		Transpower commissions the 33kV bus in FY25	<p>Transpower is unable to meet the original timeline due to the long procurement lead-time and complexity of the overall Waitotahi substation redevelopment.</p> <p>The current forecast commissioning date is February 2026.</p>
		Opotiki Sub-Transmission Project fully completed in FY27	<p>The project is currently on track to meet the expected date.</p>
Cost		Transpower's 2x 110/33/11 Transformers at Waitotahi are funded by solar farms	<p>These transformers are in place and have been funded by the solar farm.</p>
		Horizon to fully fund Transpower's Waitotahi 33kV indoor switchboard through TWA	<p>Horizon has a TWA in place for the Waitotahi 33kV indoor switchboard with an expected commissioning date of February 2026.</p>

Q#	Details			
		<p>Total Capital Cost is \$10.99M (\$10.14M + \$0.85M Contingency)</p>	<p>Change</p>	<p>As the scope has been refined and detailed, and procurement contracts have been executed with suppliers, the total capital cost estimate has been updated to \$14.3M.</p> <p>The key drive for cost increase is from the scope change at Waiotahi to supply Waimana 11kV Feeder, referred to in the above, and other cost escalations.</p>
<p>Question 8</p>	<p><u>Demand Forecast</u> The 2025 AMP states Horizon is adopting the Organic scenario rather than the Moderate scenario for growth projections – is that still the case</p>			
<p>HN</p>	<p>Horizon Networks continues to use the Organic scenario for growth projections as outlined in the 2025 AMP.</p> <p>To reflect potential pathways for electrification, Horizon Networks has developed a range of decarbonisation scenarios (Moderate, Flexible, and Aggressive).</p> <p>The decision to adopt the Organic scenario as the basis of our 2025 AMP reflects:</p> <ul style="list-style-type: none"> • our experience with technology uptake across this part of the network, including both technologies that can reduce peak demand (such as DER) and those that can increase peak demand (such as decarbonisation technologies and EVs) • the current uncertainty in the timing and scale of uptake of decarbonisation technologies, particularly Electric Vehicles (EVs) adoption. 			
<p>Question 9</p>	<p>On page 5 of the application, Horizon stated that the mussel farm has a supply capacity of 1.5MW, which is currently not being utilised at full capacity. Please confirm whether the demand forecast in Figure 3 of the application includes the full 1.5MW capacity? And if so, what is the level of certainty for that capacity increase?</p>			
<p>HN</p>	<p>The load forecast on page 5 of the reopener application includes the full 1.5MW capacity for the mussel farm.</p> <p>The 1.5MW capacity was committed at the time of the connection in 2020 when the customer funded the connection and dedicated assets were installed to provide 1.5MW capacity. While the current utilisation is approximately 0.8MW, the remaining unused capacity of circa 0.7MW is a known, upcoming step change in consumption that can be utilised by the customer with little to no notice.</p> <p>On that basis, the certainty of the mussel farm utilising the full 1.5MW capacity is high.</p>			

Q#	Details																		
	<p>It is worth noting that this customer has also indicated a potential Stage 2 development requiring an additional 750kW capacity on top of 1.5MW capacity. However, this is not yet committed, and its timing remains uncertain. Therefore, the uncommitted 750kW load has not been included in the current forecasts.</p>																		
Question 10	<p>Has Horizon received any significant requests for increased load growth or new connections, and what is the level of certainty on these?</p>																		
HN	<p>Horizon Networks regularly receives load enquiries. Many of these are in the planning stages and are not yet committed, so have no confirmed scope or timeline.</p> <p>Until projects are committed, they are not included in our AMP forecasts.</p> <p>Notable enquiries are outlined in the table below. The residential and industrial capacity upgrade developments are committed and expected to be completed by mid-2026, but the impact of these connections have not been included in the demand forecast for the reopener application.</p> <table border="1" data-bbox="416 857 1517 1644"> <thead> <tr> <th data-bbox="416 857 647 891">Growth Type</th> <th data-bbox="647 857 1275 891">Details</th> <th data-bbox="1275 857 1517 891">Status/Certainty</th> </tr> </thead> <tbody> <tr> <td data-bbox="416 891 647 958">Residential Growth</td> <td data-bbox="647 891 1275 958">2x Infill developments in Opotiki for a total of 28 additional residential dwellings.</td> <td data-bbox="1275 891 1517 958">Committed / High Certainty</td> </tr> <tr> <td data-bbox="416 958 647 1055">Industrial Capacity Upgrade</td> <td data-bbox="647 958 1275 1055">Upgrading the supply capacity of a local Packhouse from 300kVA to 750kVA (450kVA capacity upgrade)</td> <td data-bbox="1275 958 1517 1055">Committed / High Certainty</td> </tr> <tr> <td data-bbox="416 1055 647 1384">Eastern Bay of Plenty Spatial Plan</td> <td data-bbox="647 1055 1275 1384"> <p>Eastern Bay of Plenty Spatial Plan approached Horizon Networks for a 2,000 residential unit at Hukutaia expected to be fully developed by 2055. Once fully developed, Horizon expects that circa 7MW additional load on the Opotiki system.</p> <p>The spatial plan also indicated that rezoning of land to commercial and industrial use may occur, however, no details of the location and timing have been announced.</p> </td> <td data-bbox="1275 1055 1517 1384">Not Committed / Medium Certainty</td> </tr> <tr> <td data-bbox="416 1384 647 1514">Council Infrastructure Upgrade</td> <td data-bbox="647 1384 1275 1514">Horizon Networks has been approached by a party acting on behalf of the local council for a wastewater treatment plant capacity upgrade. This would increase capacity by 100kVA.</td> <td data-bbox="1275 1384 1517 1514">Not Committed / Medium Certainty</td> </tr> <tr> <td data-bbox="416 1514 647 1644">Generation / Solar Farm</td> <td data-bbox="647 1514 1275 1644">Horizon Networks received an enquiry from a solar farm developer for a 50MW connection in the Opotiki area. There is no confirmed scope or delivery timeframe.</td> <td data-bbox="1275 1514 1517 1644">Not Committed / Low Certainty</td> </tr> </tbody> </table>	Growth Type	Details	Status/Certainty	Residential Growth	2x Infill developments in Opotiki for a total of 28 additional residential dwellings.	Committed / High Certainty	Industrial Capacity Upgrade	Upgrading the supply capacity of a local Packhouse from 300kVA to 750kVA (450kVA capacity upgrade)	Committed / High Certainty	Eastern Bay of Plenty Spatial Plan	<p>Eastern Bay of Plenty Spatial Plan approached Horizon Networks for a 2,000 residential unit at Hukutaia expected to be fully developed by 2055. Once fully developed, Horizon expects that circa 7MW additional load on the Opotiki system.</p> <p>The spatial plan also indicated that rezoning of land to commercial and industrial use may occur, however, no details of the location and timing have been announced.</p>	Not Committed / Medium Certainty	Council Infrastructure Upgrade	Horizon Networks has been approached by a party acting on behalf of the local council for a wastewater treatment plant capacity upgrade. This would increase capacity by 100kVA.	Not Committed / Medium Certainty	Generation / Solar Farm	Horizon Networks received an enquiry from a solar farm developer for a 50MW connection in the Opotiki area. There is no confirmed scope or delivery timeframe.	Not Committed / Low Certainty
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Question 11	<p>Please provide a revised version of Figure 4 from the application that shows historical energy demand overlayed with historical voltage measurement at Opotiki.</p>																		
HN	<p>Horizon Networks identifies and validates the need for the Opotiki Sub-Transmission Project based on the two analyses:</p> <ol style="list-style-type: none"> <li data-bbox="464 1921 1449 2033">1. Load flow analysis performed on Network analysis tools that shows simulated voltage performance across the 11kV networks, based on expected load, and key assumptions on network characteristics. 																		

Q# **Details**

2. Voltage measurement at different points of the networks.

Load Flow Analysis – Identifying the 11.2MW capacity threshold

Horizon Networks uses a network simulation tool to identify the 11.2MW capacity threshold for the Opotiki networks.

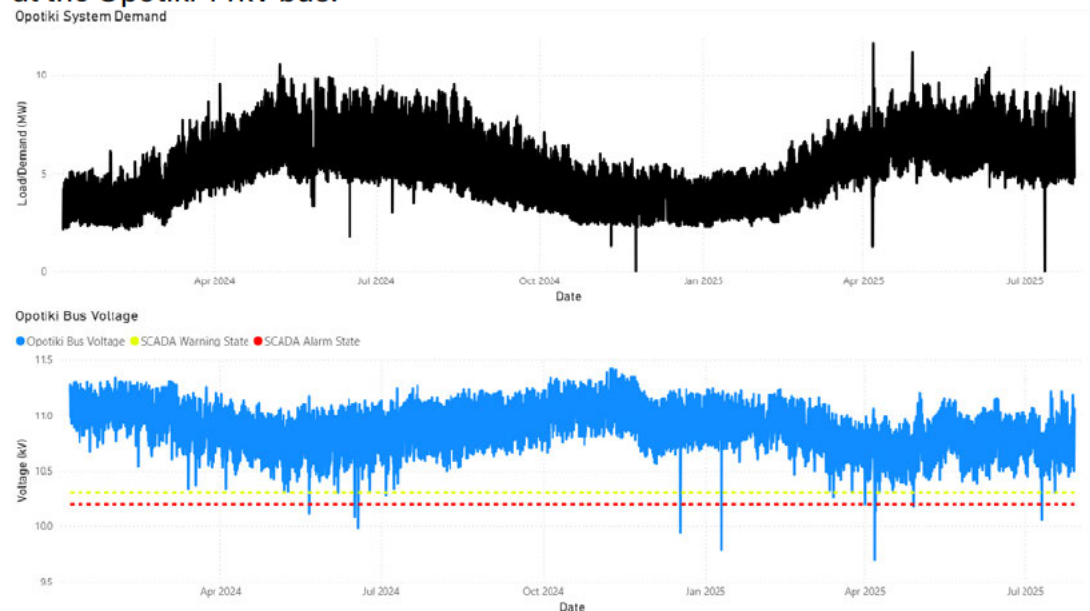
It is worth noting that the 11kV network voltage is sensitive to the location and size of the load, where a load further away from the point of supply would cause a larger voltage drop on the 11kV network voltage compared to a similar-sized load closer to the point of supply.

The simulation shows the expected consequence of the increase in demand near load centre at Opotiki, which is approximately 10km away from the Point of Supply, that exposes voltage non-compliance risk once demand exceeds 11.2MW.

Voltage Measurement – Actual Performance of the Network

Figure 4 of Horizon Networks’ reopener application shows the measured 11kV voltage at the Opotiki 11kV bus, located approximately 10km from the Waitotahi 11kV Point of Supply. This voltage measurement at the Opotiki 11kV bus is used as a SCADA Warning and Alarm trigger.

The diagram below shows the overlay of demand against voltage measurement at the Opotiki 11kV bus.



Question 12 What type of load management and amount is currently undertaken?

HN Horizon Networks primarily uses ripple control for load management, particularly to control hot water load. Horizon Networks is utilising ripple control to manage the peak.

Q#	Details
	<p>The graph shown in the response for question 11 already reflects the outcome of the load management on load and voltage. Currently, the ripple control manages an estimated 0.9MW controllable load across the Opotiki Networks, including part of the Opotiki network that is not voltage constrained.</p> <p>Horizon Networks also has a non-contractual agreement with one industrial customer in the Opotiki region, which can reduce their load by 0.2MW for 4-hours during a grid emergency event. As this arrangement is informal, its availability is subject to the customer’s operational constraints at the time.</p>
Question 13	At what time of the year, month and day does peak load occur, and what is the duration of the peak?
HN	<p>The attached Excel workbook titled “Opotiki SCADA Alarms Timestamps” shows instances where the Opotiki bus voltages drop below Horizon’s SCADA warning and alarm states.</p> <p>The 11.2MW threshold stated in the Reopener Application is based on simulated network performance via load flow analysis of the Opotiki system. This is based on generic assumptions defined in our load flow analysis on key factors such as:</p> <ol style="list-style-type: none"> 1. The voltage at the Waiotahi 11kV bus supplied by Transpower is maintained at 11.2kV at all times, and 2. The location of the load during the peak period is distributed across the 11kV feeders and scaled based on the capacity of the distribution transformer. <p>Through our observations of the actual network performance, the network capacity is lower than the simulated 11.2MW threshold, and we have experienced voltage issues below this threshold, as outlined in our response to question 14.</p>
Question 14	<p><u>Voltage Issues</u></p> <p>What level of investigations were carried out into the cause of the voltage drops into alarm state, and what were the outcomes of these investigations?</p>
HN	<p>There were two events that triggered investigations: Event #1 – 13th May 2022 Event #2 – 28th April 2024</p> <p>The investigation into both of these events concluded that the network is operating at its capacity limit, leaving no margin for future growth, reducing the available outage window for planned work, and making voltage compliance highly sensitive to external factors beyond Horizon Networks' control.</p> <p><u>Investigation #1 – 13th May 2022 Event – Prior to the Opotiki Subtransmission Project’s Business Case</u></p> <p>On 13th May 2022, one of the three 11kV feeds supplying the Opotiki region was taken out of service for maintenance. Approximately 2 hours into the outage, a</p>

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Details

SCADA alarm was triggered and the Opotiki bus voltage dropped to 9.77kV. Opotiki District Council also advised that some pumps under-voltage protection had tripped.

The investigation identified that the under-voltage event was due to the outage occurring during a period of higher-than-expected load, exacerbated by only two feeders being in service during the event.

To prevent further events in the immediate future, Operational restrictions were put in place to limit when Opotiki could be supplied by only two of its three 11kV feeders.

As a result, Horizon Networks cannot take any of the three feeders out of service during peak periods without triggering a voltage event that could result in consumers losing supply for a period of time.

Requiring all three feeders to be in service for extended periods means that an unforeseen failure of any one of the feeders could have a significant impact on the supply of electricity to Opotiki.

The insights from this investigation were one factor that influenced the decision to develop a business case in December 2022 to investigate options to address the voltage issues and associated risks. This business case resulted in the Opotiki Sub-transmission project, which is the subject of this reopener application.

Investigation #2 – 28th April 2024 Event - After Opotiki Subtransmission Project's Business Case

On 28th April 2024, a SCADA alarm was triggered for undervoltage at the Opotiki 11kV bus, despite the Opotiki load being below the 11.2MVA threshold.

The investigation identified that voltage volatility at Transpower's Waiotahi 11kV supply has increased due to a reconfiguration within the Waiotahi GXP to connect a generator directly to the grid at 33kV. Hot water management may have exacerbated voltage volatility seen at the Opotiki 11kV bus. Historically voltage regulation had been applied to the 11kV winding of the 110/11kV transformers, however following reconfiguration to support a grid-connected generator, voltage regulation is now applied at the 33kV winding. While Transpower's Waiotahi 11kV supply remained within compliance levels, this has a material downstream impact on Horizon Network's ability to provide a stable and compliant voltage to its connected customers.

As an interim measure, Horizon Networks reached an informal agreement with the grid-connected generator to manage the 11kV voltage through tap operation of the transformers.

Q#	Details
	<p>Horizon Network’s planned migration to the 33kV supply is expected to resolve the ongoing voltage issues at Opotiki, so no additional long-term remedial actions are being taken.</p> <p>Impact of the investigations on the operation of the network As a result of these events:</p> <ol style="list-style-type: none"> 1. Operational restrictions from the first investigation remain in place to ensure that all three feeders are in service for peak periods. 2. Voltage at the 11kV winding is temporarily managed through a tap operation of transformers at the Waitohi GXP. <p>These actions are stop-gap solutions designed to address immediate issues, while a permanent solution to the under-voltage events is implemented.</p>
Question 15	<p>What alternative options has Horizon considered for managing voltage at Opotiki?</p>
HN	<p>Horizon Networks explored several alternative options for managing voltage at Opotiki and deferring the need for the 33kV sub-transmission investment. These options are outlined in Section 2.4 of the Reopener Application document and were assessed against the following criteria:</p> <ul style="list-style-type: none"> • Resilience to demand changes – ability to withstand a step change in demand • Timing and availability – how quickly the solution could be implemented and be in place prior to voltage constraints materially impacting the system • Cost efficiency – value of unlocked capacity (\$/MW) • Certainty of solution – how likely is it that the solution will resolve the voltage constraint <p>The three most realistic alternative options considered:</p> <ol style="list-style-type: none"> 1. A Battery Energy Storage System (BESS) solution to defer network upgrades; 2. Establishing a fourth 11kV feeder to the Opotiki bus; and 3. Distributed Energy Resources (DER) providing network support. <p>After evaluating the alternatives, the Opotiki Sub-Transmission project is the most prudent option. It delivers the lowest cost per MW of capacity unlocked, provides high certainty in resolving the voltage constraint, and offers the highest certainty of long-term capacity availability for the residents and businesses in the Opotiki region.</p> <p>Additional details on why each option was not selected can be found in Section 2.4 of the Reopener Application.</p>
Question 16	<p>How many complaints has Horizon received regarding voltage over the past two years?</p>

Q#	Details
HN	Horizon Networks received 6x low voltage complaints in FY2024 and 6x low voltage complaints in FY2025.
Question 17	<p>Costs</p> <p>How much of the \$14.269 million is not yet committed (ie invoiced or contracted)?</p>
HN	As of 31 Dec 2025, we have committed \$10.8M against \$14.3M. \$3.5M of budget is not yet committed.
Question 18	How are the ripple plant relocation and the 11kV voltage regulator related to this reopener? What is the rationale for including those cost elements in the application?
HN	<p>The relocation of the Ripple Plant and installation of the 11 kV voltage regulator is consequential works required due to the upgrade from 11kV to 33kV. This relocation is only required because of the Opotiki sub-transmission project.</p> <p><u>Relocation of the Ripple Plant:</u> Horizon Networks currently operates the Waiotahi Ripple Plant at 11kV to manage controllable hot-water load. The ripple control has proven to be effective in minimising customer impact during Grid Emergencies, evidenced by the 9th August 2021 insufficient generation event.</p> <p>Following the supply upgrade from 11kV to 33kV, the amount of flexible or controllable load will be drastically reduced if the ripple plant remains at Waiotahi. To maximise demand response capability through hot-water load control, the Ripple Plant will be relocated to Opotiki Substation, where the majority of controllable load is connected.</p> <p>Refer to Figures 3 and 5 of the Reopener Application for the current and revised network configuration.</p> <p><u>11kV Voltage Regulator:</u> The 11kV Voltage Regulator is required at Waimana to continue providing an alternative supply point in the event of Waimana cannot be supplied due to a supply transformer outage at Waiotahi. Under the new configuration, these customers will be served by a single transformer, rather than the two-transformer configuration which has historically been in place.</p> <p>To maintain Security of Supply at Waiotahi 11kV, two options were considered:</p> <ol style="list-style-type: none"> 1. Installing an additional transformer at Waiotahi; or 2. Relocating the existing and under-utilised 11kV voltage regulator currently on the Otara 11kV feeder to Waimana, allowing backfeed from the Opotiki substation. <p>The relocation of the existing 11kV voltage regulator is the more efficient, enduring and prudent solution to maintaining reliability for consumers despite moving to a single-transformer supply.</p>

Q#	Details
Question 19	In your response to our 31/10/25 RFI question 2b, you said that your application Table 5 values are in nominal dollars. We understand this to mean that the value of commissioned assets for FY26 is \$7,865k expressed in 2026 dollars and that the value of commissioned assets for FY27 is \$6,404k dollars expressed in 2027 dollars. We would not allow for any inflation of these values in our financial modelling. Please confirm that our interpretation is correct.
HN	This interpretation is correct.
Question 20	<p><u>Consumer Bill Impact</u></p> <p>Please clarify the bill impact calculations set out in Sections 4.3.1 and 4.3.2 of your application:</p> <ul style="list-style-type: none"> • Section 4.3.2 indicates a bill impact of \$17.80 per annum per ICP from FY27 to FY30 to cover the costs of the Opotiki sub-transmission project. • Horizon’s information disclosure FY25 Schedule 8 indicates an ICP count of 25,372. • This corresponds to a total additional charge of: \$17.80 per annum per ICP times 25,372 ICPs equals \$0.45 million per annum. • If this were to apply for the 4 years FY27 to FY30, this would total \$1.80m. • This value of \$1.80m is significantly less than the \$4.62m impact referenced in Sections 4.3.1 and 4.3.2. Please clarify.
HN	<p>Section 4.3.2 estimates the impact for an average residential consumer to be \$17.80 per annum.</p> <p>This modelling has been based on our FY26 pricing model, FY26 forecast consumption and FY26 forecast ICP count.</p> <p>The model used to set FY26 pricing was updated to increase the allowable revenue by \$845,219 (the increase in revenue we modelled if the Opotiki expenditure was included in the DPP4 decision).</p> <p>This increase in allowable revenue was then allocated to all mass-market consumer groups (excluding our major customers, which are not supplied via the Waiotaha GXP), in accordance with our assumptions regarding the cost to serve each consumer group.</p> <p>Of the \$845,219 increase in revenue, the cost of supply (COS) model used to set prices allocated \$394,988 to our residential consumers (LU and ND price categories).</p> <p>With a forecast ICP count of 22,185 this results in an increase of \$17.80 per residential ICP, per annum.</p> <p>The remaining \$450,231 would be allocated to our non-domestic price categories. While this is a much lower number of ICPs, their capacity, consumption and ultimately the cost to supply these consumer groups is much higher and will vary by customer. Because the characteristics of each connection can vary to a much greater degree than our LU and ND price</p>

Q#	Details
	<p>categories, an average dollar value would likely be misleading however the price increase remains proportional to the increase in allowable revenue. If the reopener is approved, we expect revenue to increase by approximately 1.81% for the remaining consumer groups (using FY26 pricing models).</p> <p>In terms of the timing of revenue recovery, the Commerce Commission’s financial model indicates that the price path for all DPP4 (RY26-RY30) would change. As a result, we expect that and any periods that already have prices set would be subject to a wash-up mechanism to allow us to recover this revenue before the end of DPP4. We have not attempted to alter the timing of revenue recovery from what is produced by the Commerce Commissions DPP4 financial model.</p> <p>Since submitting this reopener application, we have had the opportunity to review the Commerce Commission’s modelling for the “Wellington Electricity – Central Park unforeseeable large project reopener 2025”. Applying this modelling approach results in an estimated bill impact \$38.52 per residential ICP per annum (\$3.21 per month). A key difference is that our updated modelling now assumes revenue recovery will occur over three years, rather than the full five years of DPP4 as assumed in the original application. This updated modelling was the basis of the estimated \$3-\$4 per month bill impact for residential consumers that was communicated during stakeholder engagement on our 10-year investment plan.</p>
<p>Question 21</p>	<p><u>Further Information required on the ‘whether to amend’ criteria</u> Can you please provide supporting evidence for assessment against clause 4.15.13 (c) (ii)?</p> <div style="border: 1px solid black; padding: 10px; margin: 10px 0;"> <p>(ii) the extent to which the EDB:</p> <p>(A) contributed to the adverse consequences of the reopener event by its action or omission; and</p> <p>(B) could have prevented or overcome the adverse consequences of the reopener event by exercising reasonable diligence at reasonable cost;</p> </div>
<p>HN</p>	<p>4.5.13(c)(ii)(A): <u>Horizon Networks has not contributed to the adverse consequences of the reopener event by its action or omission.</u></p> <p>Horizon Networks is a reasonable and prudent network operator. As covered in our response to Question 6 and Question 7 of this RFI;</p> <ul style="list-style-type: none"> Between 2010 and 2022 we identified risks, undertook studies to understand options to address these risks and invested in the network in

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a way that deferred major capex and kept the options to address the voltage issues open.

- In 2022 it became clear that the adverse consequences would materialise with an estimated date of FY24, so there was a need to commit to a single solution to address the issue.

After considering the options and information available at the time, Horizon Networks decided to proceed with the Opotiki sub-transmission project. From the timeline provided in response to Q6 and Q7 of this RFI, it can be demonstrated that Horizon Network has been proactively monitoring and managing the voltage issues at Opotiki, so has not contributed to the adverse consequences by action or omission.

4.5.13(c)(ii)(B):

Horizon Networks could not have prevented or overcome the adverse consequences of the reopener event by exercising reasonable diligence at reasonable cost.

As noted above, Horizon Networks has been acting as a reasonable and prudent network operator.

Between 2010 and 2022 Horizon Networks was exercising reasonable diligence at reasonable cost to identify the risks, understand the options to address the risks and keep options open there was an immediate need for a decision.

In 2022 it became clear that the adverse consequences would materialise with an estimated date of FY24, so there was a need to commit to a single solution to address the issue.

After considering the options and information available at the time, Horizon Networks decided to proceed with the Opotiki sub-transmission project.

From the timeline provided in response to Q6 and Q7 of this RFI, it can be demonstrated that Horizon Networks has been exercising reasonable diligence at reasonable cost. This application of reasonable diligence and cost could not prevent the adverse consequences of the reopener.

As a result, because Horizon Networks was already exercising reasonable diligence at reasonable cost, it is not possible for Horizon Networks to have prevented or overcome the consequences of the reopener event by exercising reasonable diligence at reasonable cost.