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Infrastructure Regulation Branch

Commerce Commission

29 December 2025

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Interruption Report: Hawkes Bay Loss of Supply – 28 October 2025

At 2.33am on 28 October 2025, Transpower's 220 kV Whirinaki–Wairakei–1 (WHI–WRK–1) and Harapaki–Tauhara–1 (HRP–TAB–1) circuits tripped simultaneously during severe weather. They did not auto reclose; this caused loss of supply to Unison Networks, PanPac and First Light Network and loss of connection to Contact Energy at Whirinaki, Meridian Energy at Harapaki and Genesis Energy at Tuai. The location of the lightning strike was Tower 54 at the Taupo end of the circuits.

The region was restored using our 220 kV restoration plan. Supply was restored to the final grid exit point (Tuai) at 4.36am, and the final generation connection (Tuai) was restored at 4.40am. The unplanned interruption was equivalent to 1.86 system minutes.

Transpower must publicly report for each unplanned interruption over one system minute, or which lasts 12 hours or longer:

- the cause of the unplanned interruption
- the start date and time of the unplanned interruption
- the end date and time of the unplanned interruption
- the megawatts affected by the unplanned interruption
- the grid exit point(s) and grid injection point(s) affected by the unplanned interruption
- actions Transpower took to minimise the effect of the unplanned interruption
- a description of steps that Transpower proposes to take to mitigate the risk of future unplanned interruptions of this type.

Transpower is required to report on such unplanned interruptions within 42 working days of the interruption, in this case, by 29 December 2025. Please find **attached** our report in accordance with clause 28 of our Individual Price-Quality Path (IPP) Determination 2025. This letter and the attachment will be published on our website.

Yours sincerely,

Mark Ryall

Executive General Manager, Grid Delivery

INTERRUPTION REPORT – HAWKES BAY LOSS OF SUPPLY, 28 OCTOBER 2025

Summary

At 2.33am on 28 October 2025, the 220 kV Whirinaki–Wairakei–1 (WHI–WRK–1) and Harapaki–Tauhara–1 (HRP–TAB–1) circuits tripped due to simultaneous 3 phase to earth faults caused by lightning strikes at Tower 54 at the Taupo end of the circuits.[1] Both circuits tripped all three phases. This disconnected Harapaki (HRP), Whirinaki (WHI), Redclyffe (RDF) and all stations supplied off the Redclyffe bus. Both grid side circuit breakers Wairakei (WRK) and Tauhara (TAB)) auto reclosed after a successful dead-line check, but the HRP and WHI breakers did not reclose as the synchronisation check[2] conditions for a reclose were not satisfied, due to both these buses being isolated and having no voltage supply. The anti-islanding protection at HRP operated correctly, isolating the generation at the site as the "island" conditions had been met.[3] All protection operated correctly.

We began restoration using our Hawke's Bay 220 kV restoration plan. We livened from Wairakei to Whirinaki but there were delays in livening through the Whirinaki 220 kV bus, as Contact Energy was not ready for restoration at that time (refer to the final section of the report where this is discussed in more detail). We moved on to instead liven from Tauhara to Harapaki then to Redclyffe.

Supply was restored to Whakatu (3.48am), Redclyffe (4.15am), Whirinaki (4.19am and 4.21am), Fernhill (4.20am), and Tuai (4.36am). Generator connections were restored at Harapaki (3.46am), Whirinaki (4.30am) and Tuai (4.40am). The total elapsed time between the tripping and full restoration was 127 minutes (2.33am to 4.40am).

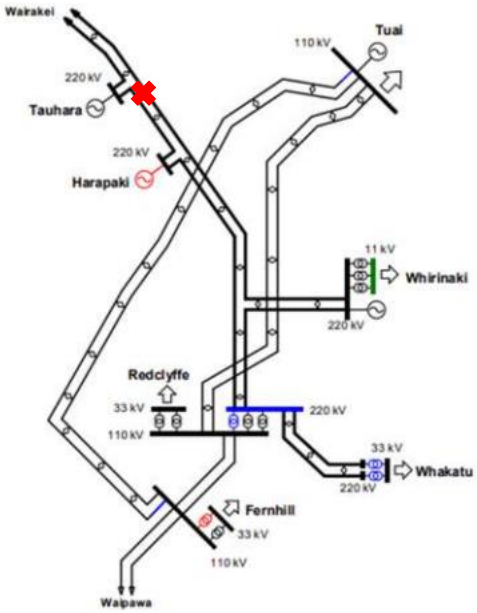
A helicopter patrol of the line following the event found no signs of damage from the lightning strike.

[1] The WRK–WHI A line – which carries both Whirinaki–Wairakei–1 and Harapaki–Tauhara–1 – traverses terrain that is susceptible to extreme weather events, notably lightning strikes (particularly close to Taupo, most likely due to the poor conductivity of the volcanic soil) and snowstorms (closer to Whirinaki).

[2] A synchronisation check occurs at all generator injection points to ensure they are synchronised to the grid before reconnecting. The purpose of this is to avoid damage to the generation assets. Once the synchronisation check function "times out" – it has a one second sync check time – the relay transitions the reclose function to lockout, leaving the circuit breaker open.

[3] This meant that the wind turbines at Harapaki did not need to shut down, though they could only supply local service load.

Figure 1: Transmission system schematic (red X shows the approximate location of tower 54, near Tauhara)



Clause 28.2.1 – the cause of the unplanned interruption

The unplanned interruption was due to lightning striking in the vicinity of tower 54, causing a flashover to conductors on the 220 kV WHI–WRK–1 and HRP–TAB–1 circuits. Both grid side circuit breakers auto reclosed, but synchronisation check conditions were not satisfied at the HRP and WHI breakers, so they did not auto reclose. All protection operated correctly.

Clause 28.2.2– the start date and time of the unplanned interruption

The interruption occurred at 2.33am on 28 October 2025.

Clause 28.2.3– the end date and time of the unplanned interruption

Supply and generator connections were restored progressively from 3.48am, with the last restored at 4.40am.

Clause 28.2.4 – the megawatts affected by the unplanned interruption

Lost load by grid exit point is shown in Table 1.

Table 1: Summary of Loss of Supply information

GXP affected	Average MW affected[4]
Fernhill	18.5
Redclyffe	20.7
Whakatu	24.0
Whirinaki S1 11 kV	12.0
Whirinaki S2 11 kV	27.9
Tuai	19.4
Total	**122.5 MW**

In addition, connection to the Harapaki wind farm was lost for 73 minutes. Generation at the time of tripping was 131 MW. Connection to Genesis Energy's Tuai hydro plant was lost for 127 minutes; the plant was generating 16 MW when interrupted. Connection to Contact Energy's Whirinaki plant was lost for 117 minutes but it was not generating at the time of the interruption.

Clause 28.2.5 – the grid exit point(s) and grid injection point(s) affected by the unplanned interruption

Grid exit points affected were Fernhill, Redcliffe, Whakatu, Whirinaki and Tuai.

Grid injection points affected were Harapaki, Tuai and Whirinaki.

Clause 28.2.6 – actions Transpower took to minimise the effect of the unplanned Interruption

To minimise the effect of the unplanned interruption, Transpower:

- Immediately advised connected parties of the loss of supply and its cause. The Regional Services Manager also communicated with offtake customers. Communications were maintained throughout the interruption.
- Restored supply from the 220 kV system following the 220 kV restoration plans. This included the use of a Control Sequence Scheduler (CSS), a tool within SCADA that we implemented in 2018 following previous double circuit outages caused by extreme weather. Using the CSS during switching of circuits reduces the time taken to complete the clearance, preparation and restoration steps, enabling faster restoration.
- When livening of the WHI 220 kV bus was delayed, we immediately moved to restore Hawke's Bay via Redclyffe (restoring TAB to HRP then on to RDF). Supply to Whirinaki

[44] This average is calculated based on a scaled profile of load on a prior weekday or weekend.

was restored once the Contact Energy issue was resolved (see next section), so the delay in restoration of supply largely affected only a single supply customer (PanPac).

Clause 28.2.7 – a description of steps that Transpower proposes to take to mitigate the risk of future unplanned interruptions of this type

On 30 October 2025 we carried out a flyover of the double circuit in the area indicated by distance-to-fault data, to identify any damage to equipment. No damage was found.

We thoroughly reviewed our response to the event, including protection operation:

- The protection review confirmed that protection operated as expected.
- Implementation of the restoration plan saw one issue, with re-livening the WHI 220 kV bus. We were able to work around this issue by restoring supply to Hawke's Bay via the Wairakei to Redclyffe circuit and have subsequently taken action to ensure this situation does not arise in future (refer below). In general, we were satisfied that the restoration went well.

Since 2000, we have had several double circuit faults caused by adverse weather – including three lightning strikes in the past decade – resulting in loss of supply into Hawke's Bay. A review of Hawke's Bay security in 2014 considered options to improve resilience of the line, and several changes were implemented as a result, including protection upgrades and installation of interphase spacers on one section of the WHI–WRK circuit.[5] Further changes were evaluated and ruled out for reasons of cost, complexity and technical feasibility. Following an event on 21 December 2024[6] we committed to reconsidering the viability of several options that might reduce the likelihood or duration of such events.

Protection (firmware) upgrades

We investigated and decided to progress some protection (firmware) updates to relays that would improve the single pole tripping function (i.e., will allow for auto reclose onto a single phase), avoiding events such as that which occurred on 21 December 2024. These upgrades required work by the relay supplier followed by laboratory testing by Transpower, prior to issuing settings to service providers for application and testing. The updates have been applied to the Tauhara–Wairakei circuit; the updates to relays on the Harapaki–Redclyffe, Harapaki–Tuahara and Whirinaki–Wairakei circuits are being applied during planned outages over the period from December 2025 to March 2026.

Note that these upgrades would not have prevented the 28 October 2025 event, as this was a three-phase to ground fault, not a single-phase event.

[5] We have not experienced any unplanned outages due to snow/ice or wind since these were installed in 2018.

[6] A report on this failure was submitted to the Commerce Commission on 25 February 2025.

Wider resilience initiatives

As mentioned above, an earlier review considered various options to improve resilience of the line, such as installing an aerial earthwire or installing surge protection on a section of the line. These options were ruled out for various reasons, mainly cost and system stability.

Since that time, the system has changed significantly, with new grid injections at Harapaki and Tauhara (and from 2026, the Te Rahui solar farm near Taupo), and increased load. Technological progression may also have an impact. Our Grid Development team are reviewing previous investigations to determine whether system or technology changes may present new options or change the viability of those that were previously considered. This includes assessing the cost of interruptions[7] and the specific fault locations. One such option is a live-line/dead-bus auto-reclose to increase the probability of circuits reclosing during double circuit failures (currently prevented by lack of voltage reference to the various 220 kV buses). This will require the installation of three phase bus voltage transformers, voltage selection schemes and modifications to the existing protection in the region. However, more work is required to determine whether this is a feasible option as it has potential risks of under frequency events, breach of voltage limits and voltage stability issues.

The Protection Analysis report that was prepared following the 21 December 2024 failure, which includes this option, was finalised in May 2025. We are currently undertaking follow up work arising from the recommendations of that report, which we plan to complete by the end of this year. Further detailed scoping work will be required beyond this to confirm feasibility and costs.

Whirinaki bus livening

The primary restoration circuit in our 220 kV restoration plan is WHI–WRK–1 and RDF–WHI–1.[8] This is the circuit we attempt to restore first as it less complex than the alternative circuit.

At 3.23am, Transpower was ready to restore the WHI 220 kV bus; one step in the contingency plan requires that we confirm that Contact Energy is ready for livening of the WHI generator transformers.[9] However, we found that Contact was not ready for restoration. It noted that its normal practice involves opening the HV breakers[10], and as it was unable to

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[7] Preliminary analysis shows that WHI–WRK and RDF–WRK have the 6th highest number (four each) of 220 kV unplanned faults (excluding auto recloses) over the past decade. Causes have been primarily environmental, in contrast to the previous decade when most had other causes such as equipment or human error. Excluding the Cyclone Gabrielle event, these circuits both have better than average availability.

[8] We completed a periodic (18 month) review of our Hawkes Bay 220 kV restoration plan in May 2025. Prior to this time, the primary restoration circuit was TAB–WRK–1, HRP–TAB–1 and RDF–WHI–1; the change was made to speed restoration by moving from three sections to two (fewer circuit breakers to operate) and involving fewer generators. The plan was also revised more generally to make it more modular and reflective of the multiple sections of circuits which may be affected.

[9] We also check that the generators themselves are disconnected; the LV breakers being open satisfies this condition from our side.

[10] In discussions after the event, Contact noted that it considers opening the HV breakers is best practice to reduce inrush currents of three transformers and station load current, in order to ensure the safest restoration of its plant. Given the lightning storm in the area, this practice also clears transformers from the Bus before livening in case of a lightning strike at the time of reinstating the circuit and bus.

operate the HV breakers remotely due to a fault[11], it was sending local personnel to site to open them.

We proceeded to restore Hawke's Bay via the secondary circuit. Whirinaki was restored only when the primary circuit could be energised. This resulted in a delay in restoring the WHI bus, where PanPac is also a connected party, and was without supply.

Following discussion with Contact after the event we have decided to update our restoration plan to include a step where we specifically instruct Contact to open these generation breakers; this step would occur early in the process – at the same time we clear the WHI 220 kV bus of other circuit breakers – to avoid any undue delays when we are ready to restore.

[11] Contact normally has remote control of the HV breakers, via the Stratford control room. A fault prevented remote control of the breakers. The fault dates to implementation of remote control of the breakers in 2021. The relay sending the signal runs off an AC power supply; as there was no AC power, this could not be operated. Contact has now changed this to a DC supply off the UPS, and tested operation back to the Stratford control room.