TRANSPOWER

Waikoukou
22 Boulcott Street
PO Box 1021
Wellington 6140
New Zealand
P 64 4 495 7000
F 64 4 495 6968
www.transpower.co.nz

Infrastructure Regulation Branch

Commerce Commission

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By email: infrastructure.regulation@comcom.govt.nz

Copy to: Matthew.Clark@comcom.govt.nz;

Interruption Report: Upper South Island Loss of Supply – 23 October 2025

At 5.01 am on 23 October 2025, Transpower's 220 kV Islington–Culverden–Waipara–Kikiwa–2 (ISL–CUL–WPR–KIK–2) circuit tripped during severe weather and did not auto reclose. Following a manual reclose at 5.58 am, it tripped again at 6.14 am and did not auto reclose. These trips did not result in a loss of supply.

At 7.24 am the Islington–Culverden–Waipara–Kikiwa–3 (ISL–CUL–WPR–KIK–3) circuit also tripped, resulting in loss of supply to Culverden. At 7.45 am the third circuit supplying the upper South Island – Islington–Kikiwa–1 (ISL–KIK–1) – also tripped, causing loss of supply to Kaikoura, Stoke, Blenheim, Greymouth, Murchison, Orowaiti, Reefton, Dobson and Greymouth. At 9.34 am, a second trip of the ISL–CUL–WPR–KIK–3 led to a second loss of supply to Culverden, which had been restored at 8:21 am. All protection operated correctly.

We restored supply using our 220 kV Nelson-Marlborough-Buller Contingency Plan. Supply was restored to the final grid exit point (Dobson) at 10.55 am, and to the Argyle hydro generator at 9.54 am. The unplanned interruption was equivalent to 3.09 system minutes.

The cause and exact locations of the faults have yet to be determined. Initial protection data provided a very wide distance to fault range; we were able to narrow this down slightly before commencing a drone survey, which is underway.

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 23 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 – UPPER SOUTH ISLAND LOSS OF SUPPLY, 23 OCTOBER 2025

Summary

At 5.01 am on 23 October 2025, the Islington–Waipara–Culverden–Kikiwa–2 (ISL–WPR–CUL–KIK–2) circuit tripped during extreme weather (high winds and rain) across the upper South Island. The circuit did not auto-reclose but was returned to service at 5:58 am following a risk assessment. It tripped again at 6.14 am and again did not auto reclose. There was no loss of supply in either case. Patrols were dispatched from both the Hanmer Springs and Nelson ends of the circuit to inspect it for damage or a downed conductor, but a considerable portion of the circuit length was unable to be reached due to dangerously high winds and limited visibility.

At 7.24 am, the Islington–Waipara–Culverden–Kikiwa–3 (ISL–WPR–CUL–KIK–3) circuit tripped and did not auto reclose. With the ISL–WPR–CUL–KIK–2 circuit already out of service, supply to Culverden was lost. The remainder of the upper South Island continued to be supplied via the Islington–Kikiwa–1 (ISL–KIK–1) circuit.[1]

At 7.45 am, ISL–KIK–1 also tripped, resulting in loss of supply to additional grid exit points in the Upper South Island: Kikiwa, Murchison, Blenheim, Stoke, Orowaiti, Reefton, Dobson and Greymouth.[2]

All protection operated correctly.

We proceeded to restore supply, using the 220 kV Nelson-Marlborough-Buller Contingency Plan.[3] Culverden 33 kV supply was restored at 8.21 am,[4] and ISL–KIK–1 and ISL–WPR–CUL–KIK–3 were returned to service at 8.57 am. As we continued with the restoration process, the ISL–WPR–CUL–KIK–3 circuit tripped again at 9.34 am, causing a second loss of supply to Culverden 33 kV. As the risk assessment remained unchanged, this was able to be quickly returned to service, with supply restored at 9.43 am.

Restoration continued, with ISL–WPR–CUL–KIK–2 returned to service at 10.06 am and the final grid exit point, Dobson, was restored at 10.55 am, 190 minutes after supply was lost. The generator connection to Argyle was restored at 9.54 am (129 minutes).

The following day, once winds had subsided, we were able to undertake a helicopter patrol, flying from Islington to Kikiwa.[5] No visible damage was identified that the tripping could be

[1] This is the 'A' line and does not go through Culverden and Waipara, as shown on Figure 1.

[2] GYM–KUM was removed from service at 7.43 am at the request of the system operator. This is standard practice when there are outages of two ISL–KIK circuits, to avoid a severe overload if the remaining 220 kV circuit were to trip.

[3] Following an assessment of possible causes and risks we decided to attempt to manually re-liven the circuits. Because we have not historically seen issues with conductor clashing in this part of the grid and patrols were unable to provide insight, it was important to take the time to consider possible causes before making a decision. This decision is made in conjunction with the Regional Services Manager who has in-depth knowledge of the specific equipment.

[4] The 66 kV Culverden load was backfed through Mainpower's network from Waipara, from 7.35 am.

[5] Over the same period, HVDC overland circuits in the same area tripped several times. We were able to combine the helicopter patrol of the ISL–KIK circuits with a patrol of the HVDC circuits.

attributed to, although there was considerable evidence of the damage caused by the extreme winds (such as irrigators blown into towers, and shelter belts flattened). Protection data provided a very wide distance to fault (DTF) range. As a result, drone patrols of these circuits will not be fully complete until early next year.

Figure 1: Transmission system map: ISL–KIK–1 is on the (dashed) single circuit ISL–KIK A line, while ISL–CUL–WPR–KIK–2 and 3 make up the ISL–KIK B line.

Clause 28.2.1 – the cause of the unplanned interruption

The unplanned interruption was likely caused by conductors clashing or 'galloping'[6] due to high winds or wind-blown debris. No damage or obstructions (e.g., trees caught up in towers) were observed on the patrols, during either the initial inspection or the helicopter survey the next day. As such, we do not yet have a definitive view on the cause of the

[6] This refers to the oscillation of overhead lines due to wind, typically in the vertical plane. It can also cause conductor clashing. Successful auto-reclose is unlikely in these conditions, as the reclose attempt occurs very quickly after the tripping.

trippings. Protection has provided a very wide DTF range. We narrowed this range down slightly using other protection data. This has reduced the scope of drone patrols which will looking closely for indications of flashover or conductors contacting the tower. The drone patrols are in progress.

Our initial conclusion (that trippings were caused by the high winds) is supported by the fact that the circuits returned to service without issue, and no issues have arisen on the circuits (such as breakages) since that weather event.

Clause 28.2.2 and 28.2.3– the start date and time and end date and time of the unplanned interruption

Two grid exit points were affected by the initial tripping: Culverden 66 kV and Culverden 33 kV. Supply to these was lost at **7.24 am on 23 October 2025** and restored at 7.35 am (backfed on the Mainpower network) and 8.21 am, respectively. A subsequent fault caused loss of supply at other grid exit points – Kikiwa, Murchison, Blenheim, Stoke, Orowaiti, Reefton, Dobson and Greymouth – at 7.45am; these were progressively returned to service, with the last of them (Dobson) restored at **10.55am**. A third fault caused supply to Culverden 33 kV to be lost for a second time at 9.34 am; this was restored at 9.43 am.

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	MW affected[7]
Culverden 33 kV (first interruption)	7.7
Culverden 66 kV (first interruption)	3.4
Culverden 33 kV (second interruption)	1.9
Culverden 66 kV (second interruption)	0.0
Kikiwa 11 kV	1.7
Blenheim 33 kV	42.0
Murchison 11 kV	2.2
Orowaiti 11 kV	3.7
Reefton 11 kV	4.2
Dobson 33 kV	3.7
Greymouth 66 kV	7.3
Stoke 66 kV	27.5
Stoke 33 kV	73.5

[7] This is the estimated average MW lost, based on a similar weekday/weekend.

In addition, connection to the Argyle hydro station was lost for 129 minutes (restored at 9.54 am). It was not generating any electricity at the time of tripping.

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

Grid exit points affected were Culverden, Kikiwa, Blenheim, Murchison, Orowaiti, Reefton, Dobson, Greymouth and Stoke.

The grid injection point affected was Argyle.

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. Police were also advised. The Executive General Managers and Regional Services Manager also communicated with offtake customers. Communications were maintained throughout the interruption.
- Dispatched line patrols south from Nelson and north from Hanmer Springs to check for issues or signs of damage along the line. These patrols were called off when they could not safely proceed due to the high winds.
- Implemented a local Coordinated Incident Management System (CIMS) to support the executive level CIMS established for the extreme weather event on 23 October. The local CIMS supported management of issues on the Islington–Kikiwa and overland HVDC circuits, pole failures on the West Coast, and other South Island issues. This team was able to obtain and provide information to NGOC to support risk assessment and restoration.
- Restored supply from the 220 kV system following the established 220 kV Nelson-Marlborough-Buller Contingency Plan. While NGOC was managing several other issues at the same time, the process to restore supply ran well, returning all assets to service in just over three hours.

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

Potential interventions

This unplanned interruption occurred during extreme weather conditions. Historically, the assets involved have individually tripped in extreme weather only rarely. The helicopter patrol the following day found evidence of irrigators blown into towers and significant damage to vegetation, and a landowner in the area reported winds of over 200 km/h.

A drone survey is currently being conducted to identify a clearer cause and pinpoint the location but will not be finished until early next year.[8] The need for additional protection analysis to reduce the survey area, availability of drone operators, access issues due to storm damage to tracks, and the need for landowner permissions have delayed this work. Once complete, any findings will be reviewed to determine whether an intervention is warranted. An example of a potential intervention is installing interphase spacers on some conductor spans, if conductor clashing was an issue. Any investment decision will take into consideration what we are able to determine about the cause and location, potential interventions, and the costs and benefits.

Change to emergency switching procedure

In the period between the loss of the second and third circuits, a Grid Emergency was declared, and an instruction was given by the Security Coordinator to put in place the West Coast split (Greymouth–Kumara circuit). Urgent reconfiguring of the grid, without prior notification to the market can only be through a Grid Emergency Notice (GEN). This was enacted to avoid the overload of the 66 kV network circuit were the third ISL–KIK circuit to trip; it would also contain any loss of supply and minimise the number of affected customers. Putting the West Coast split in place requires working through a structured switching sequence – this was completed at 7.43 am, two minutes before the third circuit tripped. This prevented the loss of the supply extending through the remainder of the 66 kV network south of Greymouth, potentially as far as Islington.[9]

We have since made a change to our Emergency Operating Procedures to allow for controlled but immediate removal of equipment without a switching sequence when instructed to do so by the Security Coordinator, when a GEN is declared.[10] Once the equipment has been offloaded, the operator can write and implement the wider sequence to deal with related non-urgent elements (for example, disabling auto-reclose). This is a controlled approach that will allow faster removal of equipment in an emergency.

[8] Drone imaging of identified towers around the Culverden area will be completed before Christmas, with the remaining sites scheduled for early 2026.

[9] Voltage collapse from Stoke southwards would also be likely in this case, as well as thermal overloads.

[10] The changes stem from the USI event and another incident where a service provider accessed a live feeder causing an arc flash.