Rangitata Flood - December 2019
Damage to Transpower Assets

Don Simms – Service Delivery Manager

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Transpower Transmission Lines Crossing the Rangitata River

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- SH1 and SH79 were closed by flooding at the Rangitata River bridges (as was SH6 on the West Coast).
- Transpower Lines fault crews responded from Timaru and Christchurch.
- Arrived either sides of the river at last light. Confirmed several towers down/damaged on the ROX_ISL circuit on both sides of river, but unable to get close due to flooding and fading light.
- Alpine Energy reported one of our 220kV lines had fallen on one of their 11kV lines on the south side of the river, bringing it down.

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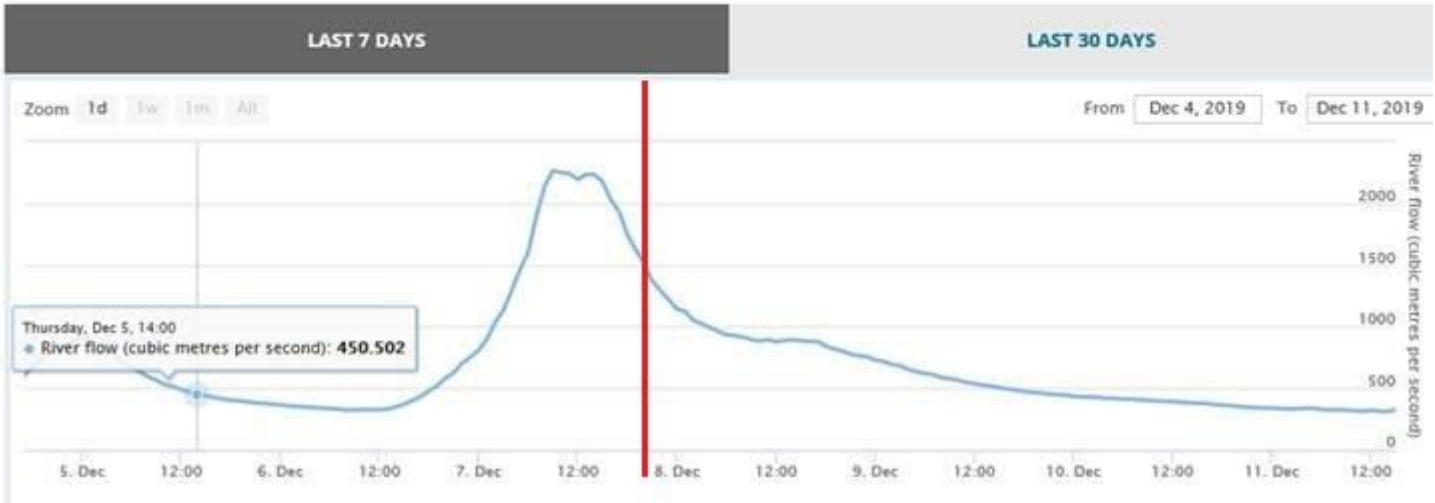
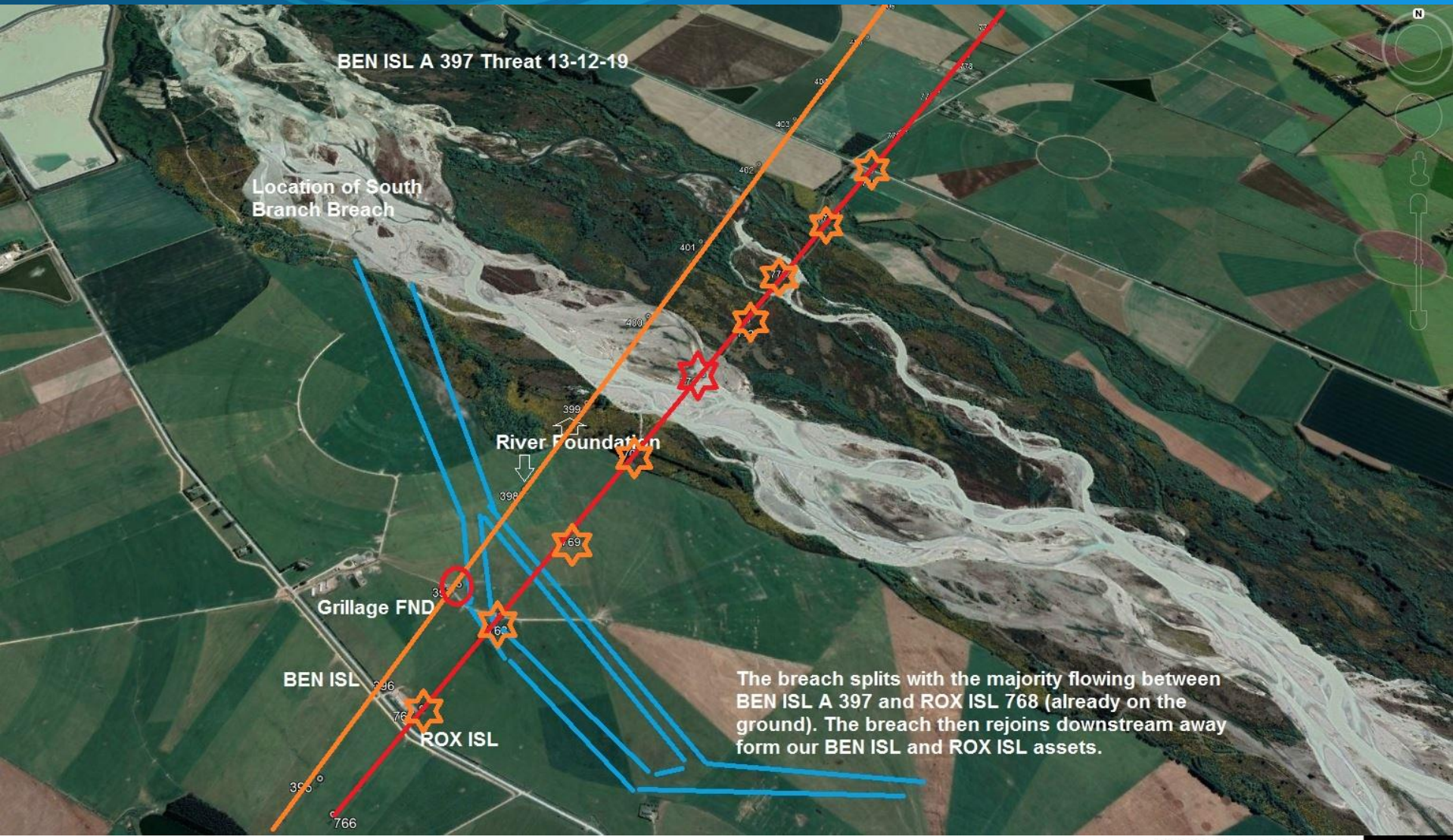
River Flow for Rangitata River at Klondyke

LAST SAMPLE (NZD STD TIME)	STAGE M	FLOW M3/S	CHANGE MM/H	7 DAY PEAK STAGE	7 DAY PEAK FLOW	7 DAY PEAK DATE	TEMP CELSIUS
11-Dec 15:30	2.431	303.517	-94	8.336	2307.3	07-Dec 09:20	11.20

River flow (cubic metres per second)




River breaking out of south side here
BEN ISL and ROX ISL
All water should be in this main channel
CHH TWZ


BEN ISL A 397 Threat 13-12-19
Location of South Branch Breach
River Foundation
Grillage FND
BEN ISL
ROX ISL
766
The breach splits with the majority flowing between BEN ISL A 397 and ROX ISL 768 (already on the ground). The breach then rejoins downstream away form our BEN ISL and ROX ISL assets.

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ROX_ISL Line (with the BEN_ISL in the background)

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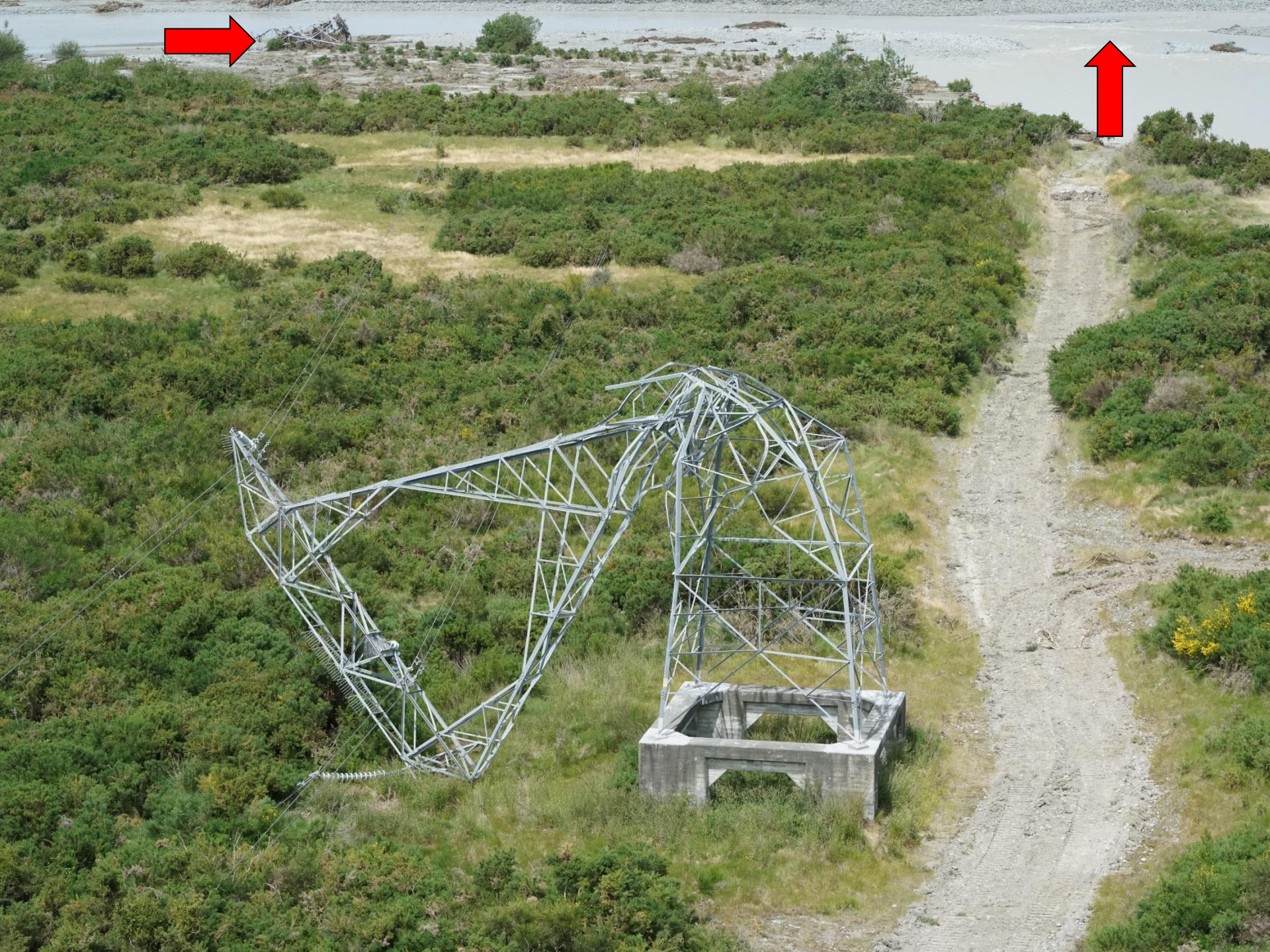

BEN_ISL Line (not on river foundations!)

TWZ_ISL Line (also not on river foundations!)

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Irrigation Ponds Upstream on South Side of River

Lower Pond Over Topping

Recovery

Emergency Tower (example)

Constructing the Temporary Pole Line

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Replacement Tower Construction

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Resilience

An essential element of Lifelines infrastructure

- The South Island's geography makes our infrastructure vulnerable (long and stringy with many major rivers and mountains to cross). Power, telecoms, roading and rail all face the same challenges.
- Critical infrastructure ***must*** have redundancy built-in (i.e. multiple alternative paths for service, preferably not all exposed to the same risk – easier said than done in NZ!).
- Assets with a long life may need to initially be over-built/over-engineered to allow for future growth and unknowns – e.g. climate change and HILP events.
- Initial design/risk assumptions may change over time – we need to be adaptable and agile in our ongoing asset management and operations.
- Network owners/operators must have pre-prepared and well exercised contingency plans - know where your vulnerabilities and risks are.
- Pre-position personnel, spares, fuel and equipment to mitigate the above known risks.
- Have fully trained and exercised internal CMIS teams.
- Having backup comms and contact lists readily available is essential.

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Other Lessons

- The loss of normal Comms and road access was initially a big challenge.
- Unauthorised aircraft and drone operations around our assets put our crews in helicopters at risk. How do we better control this?
- Difficulty in initially getting suitable helicopters (just like after the Kaikoura earthquake).
- Getting the Timaru ECC to understand the risks to Transpower's assets and prioritise resources was challenging (especially when we couldn't talk to them for several hours).
- Only declaring a local State of Emergency rather than a regional one didn't help (same as Kaikoura).
- Funding of river bank reinstatement work became an issue.
- There was very real potential for this event to have been a ***LOT*** worse for the upper South Island's electricity supply (we were lucky).

Is your organisation ready for the next event?