Firstlightnetwork®

Unplanned Interruptions Report

for the assessment period ended 31 March 2024

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1. Introduction

1.1 Purpose Statement

This year has been another difficult year for the people of Tairāwhiti and Wairoa. The devastating impact of two cyclones in early 2023 caused extensive property damage and disruption across the Gisborne District, including extended interruptions to their electricity supply. During this assessment period, our district was affected by torrential rains and extreme winds. This adverse weather resulted in multiple slips across our network and created an adverse environment.

Regrettably, for the assessment period that ended 31 March 2024, we have exceeded our annual unplanned SAIDI[1] limit.[2] Accordingly, as prescribed by the Default Price-quality Path (DPP) Determination, we have provided the Commerce Commission with this Unplanned Interruptions Report[3] at the same time, we made the report publicly available on our website at https://firstlightnetwork.co.nz/. [4]

1.2 Who are we

Firstlight Network is the electricity lines company for Tairāwhiti and Wairoa, as shown in Figure 1. We own and maintain the poles, wires and underground cabling used by electricity retailers to supply customers with electricity. We also own the region's high- voltage electricity transmission network (the steel poles and towers that connect our region to the national grid).

We are a team of people who, with our contractors, are responsible for keeping the lights on across 12,000 square kilometres of the East Coast.

On 1 April 2023, Firstgas Group (now Clarus) took over ownership of the Eastland Network from Eastland Group. Firstlight Network is part of Clarus and is owned by Igneo Infrastructure Partners.

Igneo Infrastructure Partners has been investing in infrastructure for more than 30 years and is one of the leading infrastructure asset managers worldwide. Its investments in New Zealand includeTuatahi First Fibre, along with Clarus and Waste Management New Zealand, which already service consumers and businesses in the Tairāwhiti region.

Clarus is one of New Zealand's largest energy groups, with brands that touch many parts of the energy supply chain – from energy transmission and distribution to retail supply and even storage.

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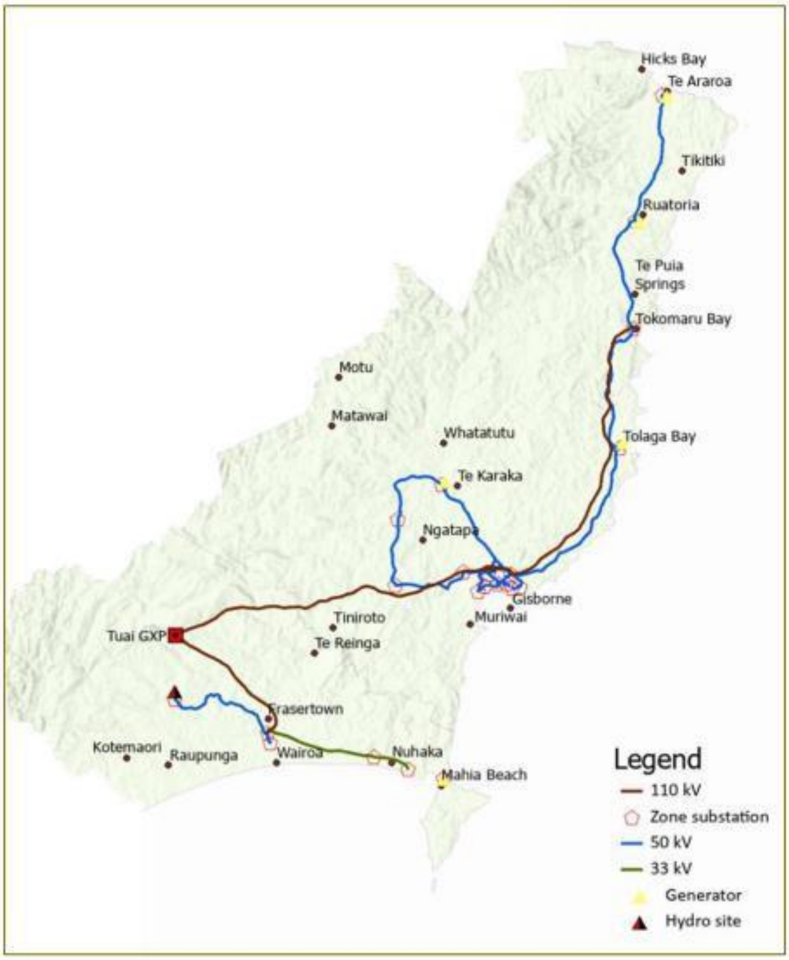
[1] Means System Average Interruption Duration Index (SAIDI).

[2] As per clause 9.8 of the Commerce Commission, Electricity Distribution Services Default Price-Quality Path Determination 2020, [2019] NZCC 21, 27 November 2019 (the DPP Determination).

[3] As prescribed by clause 12.3(a) of the DPP Determination.

[4] At the same time, we provide the report to the Commission as per clause 12.3(b) of the DPP Determination.

Figure 1: Firstlight Network's region



1.3 We are a regulated service provider

As a provider of electricity distribution services, Firstlight Network is the supplier of regulated service and, accordingly, is subject to price-quality regulation administered under Part 4 of the Commerce Act 1986 by the Commerce Commission. Under its price-quality regulations, the Commission regulates the maximum annual revenue we can earn from our consumers and the minimum quality of service we must deliver them.

The Commission regulates us because there is little or no competition in the provision of electricity distribution services. The regulatory framework is intended to mimic the pressures of a workably competitive market so that we have the incentive to offer our services at the price consumers are willing to pay at the level of service that they expect to receive.

The price-quality framework is prescribed in the DPP Determination. The quality standards are specified in clause 9 of the determination and require us not to exceed the unplanned SAIDI or SAIFI limit[5] during the assessment period[6]. Regrettably, for the 31 March 2024 assessment period, we exceeded our unplanned SAIDI limit.[7]

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[5] As prescribed in paragraph (1) of Schedule 3.2 of the DPP Determination.

[6] The 12 months between April to March.

[7] Please note that we complied with our unplanned SAIFI limit.

1.4 We exceeded our unplanned SAIDI limit during this assessment period

Our unplanned SAIDI and SAIFI performance, as reported in our RY24 Annual Compliance Statement, is shown in Table 1 and Table 2.

Table 1: Performance against the Unplanned SAIDI limit RY24

Unplanned interruptions quality standard RY24 - SAIDI		
Unplanned SAIDI assessed value ≤ Unplanned SAIDI limit		
Unplanned SAIDI limit		219.46
Unplanned SAIDI assessed value	*Sum of normalised SAIDI values for Class C interruptions commencing within the assessment period*	314.65
Compliance result		Not Compliant

Table 2: performance against the Unplanned SAIFI limit RY24

Unplanned interruptions quality standard RY24 - SAIFI		
Unplanned SAIFI assessed value ≤ Unplanned SAIFI limit		
Unplanned SAIFI limit		3.1525
Unplanned SAIFI assessed value	*Sum of normalised SAIFI values for Class C interruptions commencing within the assessment period*	2.7948
Compliance result		Compliant

During this assessment period, we exceeded our annual unplanned SAIDI limit and therefore, have not complied with clause 9.8(a) of the DPP Determination. Accordingly, within five months of the end of the assessment period (i.e., by 31 August 2024), we must provide the Commission with the 'unplanned interruption reporting' prescribed in clause 12.4 of the DPP Determination and make a copy available on our website.

This Unplanned Interruptions Report is provided to meet the reporting requirements following our non-compliance with the quality standards for the assessment period that ended 31 March 2024. A copy of the report is available on our website at https://firstlightnetwork.co.nz/

1.5 Structure of our Unplanned Interruptions Report

We have provided the information required by the Commission in this Unplanned Interruptions Report in the following secti'ons —

Section 2 — we discuss the reasons for the non-compliance and provide supporting evidence for those reasons.

Section 3 — we provide a link to the underlying data for each unplanned interruption on our network for the assessment period.

Section 4 — we provide the findings of the independent review of the state of our network and operational practices completed during the assessment period, including the three preceding assessment periods.

Section 5 — we provide a summary of the major events that occurred during the assessment period and our internal investigations into that SAIDI or SAIFI major event.

Section 6 — we provide a summary of the investigations conducted to date.

Section 7 — we discuss the findings of the analysis conducted in the assessment period and the three preceding assessment periods:

i. trends in asset conditions
ii. causes of the unplanned interruptions
iii. asset replacement and renewal
iv. vegetation management.

Section 8 — we provide an outline of our internal review, analysis and investigation of the events that contributed to our non-compliance in this assessment period.

Section 9 — we included the signed Director certification in the form set out in Schedule 10 of the DPP Determination.

1.5.1 Performance is presented as raw SAIDI unless otherwise stated

To present our performance in a consistent and relatable manner, we have chosen to report using raw SAIDI unless otherwise stated. While the DPP framework allows us to normalise our performance for the purpose of measuring compliance, normalisation does not necessarily reflect consumer impact. We believe that using raw SAIDI does reflect the impact on consumers, and it is correct to report using that.

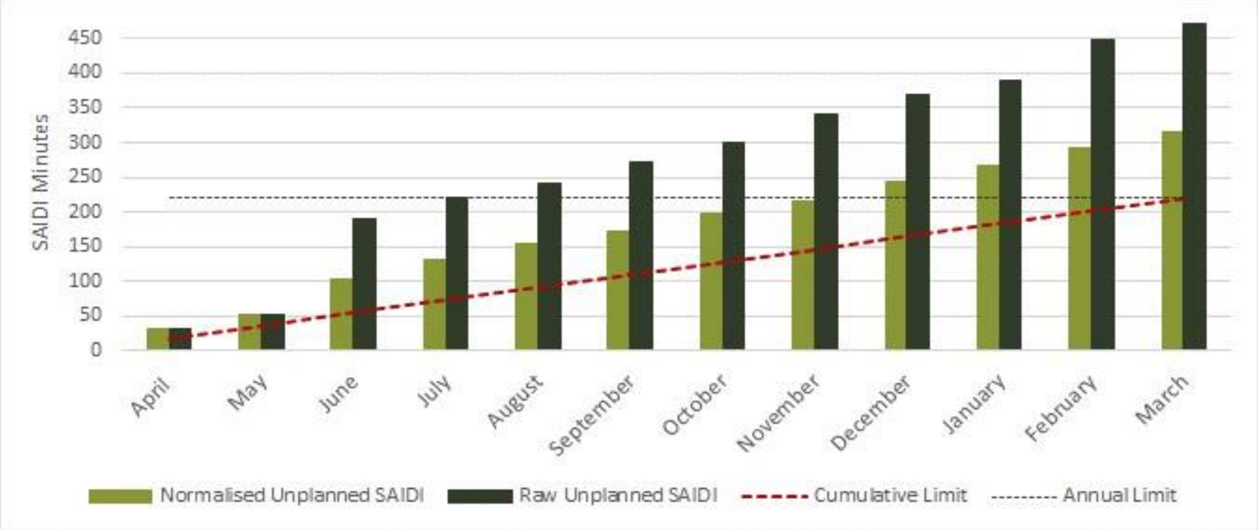
2. Causes of our non-compliance

2.1 Overview

In this section, we report the reasons for not complying with our annual unplanned SAIDI limit and provide supporting evidence for those reasons.[8]

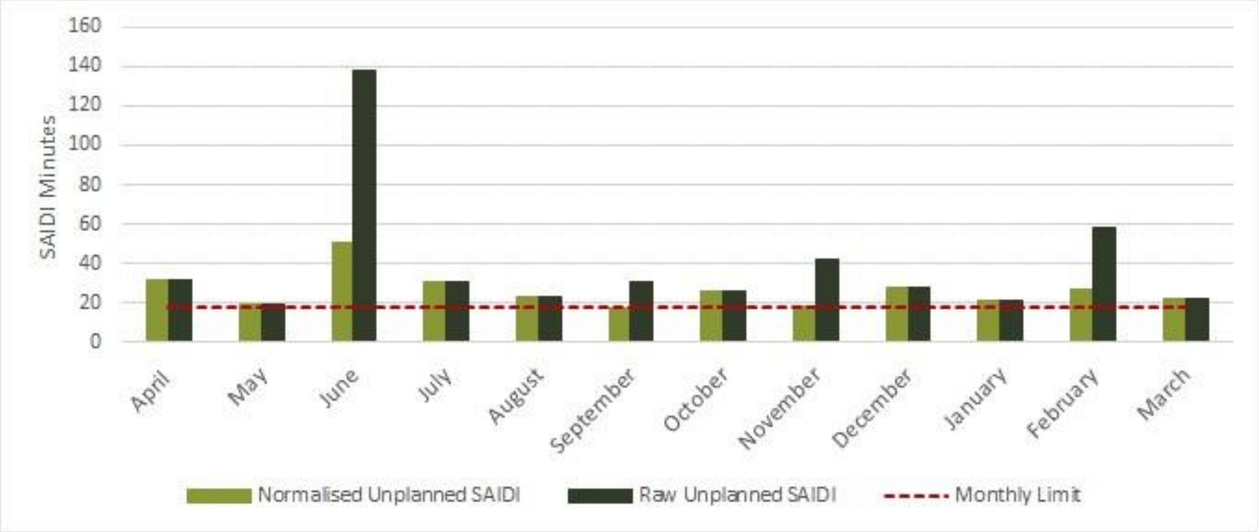
During this assessment period, we exceeded our annual unplanned SAIDI limit by 95.2 SAIDI minutes, normlised (or +44%). Graph 1 shows that by December, we had exceeded our annual unplanned SAIDI limit for the assessment period.

Graph 1: Accumulating Annual Unplanned SAIDI Performance for the assessment period



Graph 2 shows that we exceeded our monthly SAIDI target in ten out of twelve months, with June having the greatest impact on our annual performance.

Graph 2: Monthly Annual Unplanned SAIDI Performance for the assessment period



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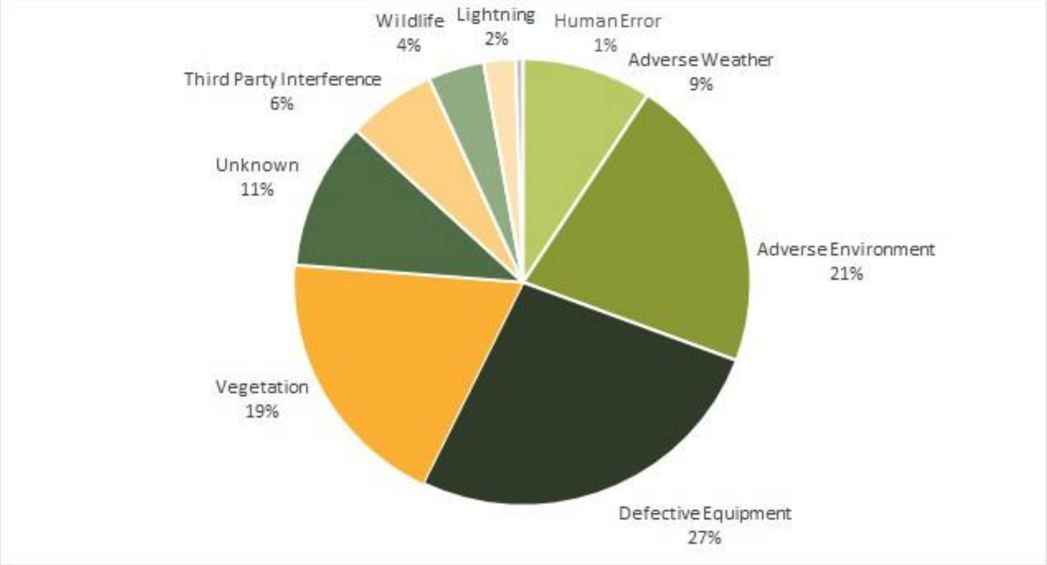
[8] As prescribed by clause 12.49 of the DPP Determination.

2.2 Adverse weather causing adverse environments has been the largest contributor to our performance

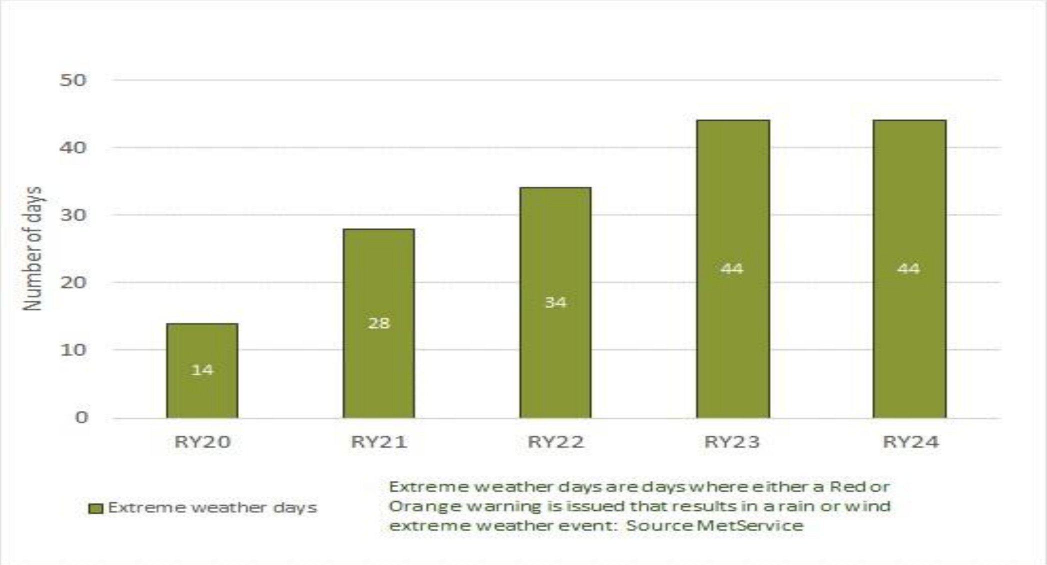
As a contribution to the total raw SAIDI Graph 3 shows that adverse weather and adverse environment were the largest contributors to our performance during this assessment period, accounting for some 30% of the total raw SAIDI.

Graph 3: Breakdown of the causes of interruptions during the assessment period



This assessment period has been difficult for the people of our district. Torrential rains and extreme winds have affected the district, causing multiple slips across our network and creating an adverse environment. This impacts the network directly and access roads which can delay response times. Graph 4 shows this assessment period had the same number of extreme weather days as the prior period when two cyclones struck the district. At 44 extreme weather days, this assessment period and the prior were 29% higher than RY22, 57% higher than RY21, and 214% higher than RY20.

Graph 4: Extreme weather days over this assessment period, including the previous four periods



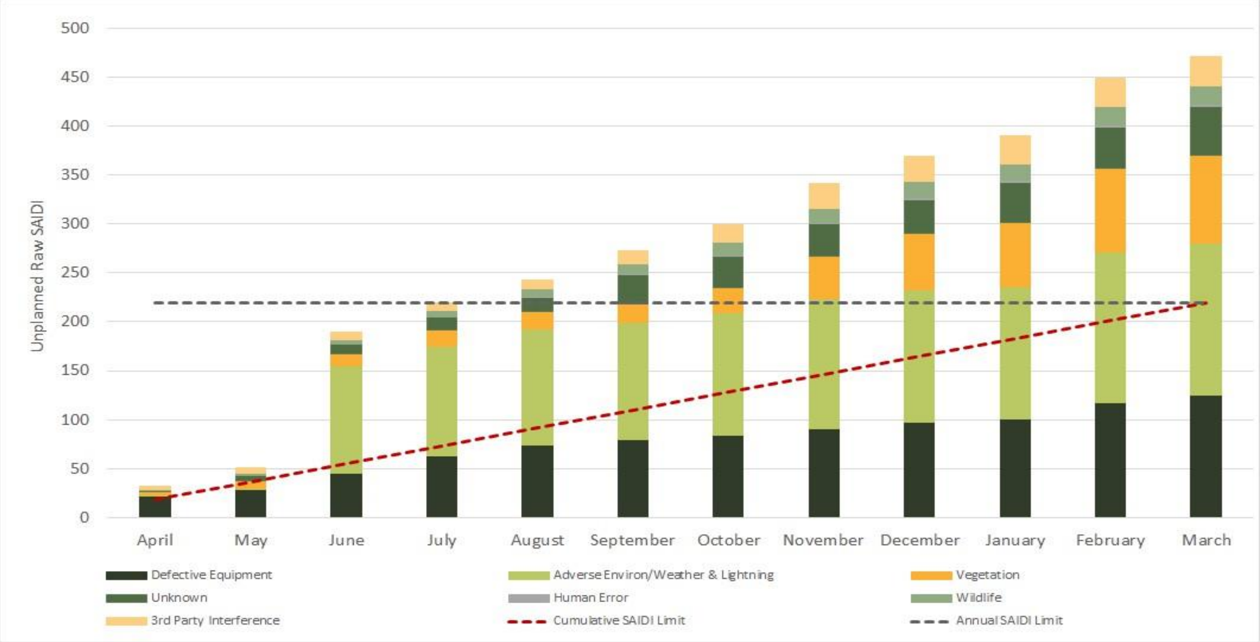
Five factors principally contributed to our non-compliance during this assessment period.

1. Adverse weather, including torrential rain and extreme wind, resulted in unusually heavy precipitation that saturated the soil and caused slips across our network (46 caused interruptions), thereby creating an adverse environment. This combination of adverse weather and environment was the most common cause of interruption during this assessment period, which contributed to interruptions caused by defective equipment.
2. Ageing assets are generally more vulnerable to adverse conditions. The prolonged and repeated exposure to adverse conditions in the last three years has contributed to interruptions caused by defective equipment during this assessment period. Asset failures during the assessment period were predominantly in insulators, conductors, cables, and cross-arms. The level of failure has not increased significantly; however, the time to restore supply has. It is accepted that the change in the operating environment is becoming the new normal.
3. Out-of-zone trees were again a contributing factor to us exceeding our limits in this assessment period. 57.98 SAIDI minutes were attributable to trees outside the growth limit zone being pushed into our lines by extreme wind, torrential rain, and slips.
4. The weather conditions were also a contributing factor in 15 vehicle incidents, contributing 20.03 SAIDI minutes. The accidents occurred largely on bad weather days when the region experienced heavy downpours, making for slippery road conditions.
5. Due to the spread of the outages, the Major Event threshold was triggered fewer times over 24-hour periods than might have been expected, given the scale of the extreme weather.

Our ability to influence extreme weather and its impact on the environment is limited. This assessment period's heavy rain and strong winds led to numerous slips across our network, causing 46 interruptions.

Graph 5 shows the impact of the cause on our accumulating raw SAIDI performance over the assessment period. The trend shows that the interruptions in June pushed us above our SAIDI limit and set the trajectory for the remainder of the year.

Graph 5: Cumulative Unplanned Raw SAIDI by Cause RY24



We discuss each of the five principal contributing factors in more detail in the following sections.

2.2.1 Saturated soil caused 46 slips creating an adverse environment

The region has experienced significant increases in rainfall over the last two years, saturating the ground and causing major slips, road closures, and raised groundwater levels. In RY24, the network suffered from 46 slip events, resulting in 101.07 SAIDI minutes (or 21.45% of total SAIDI minutes).

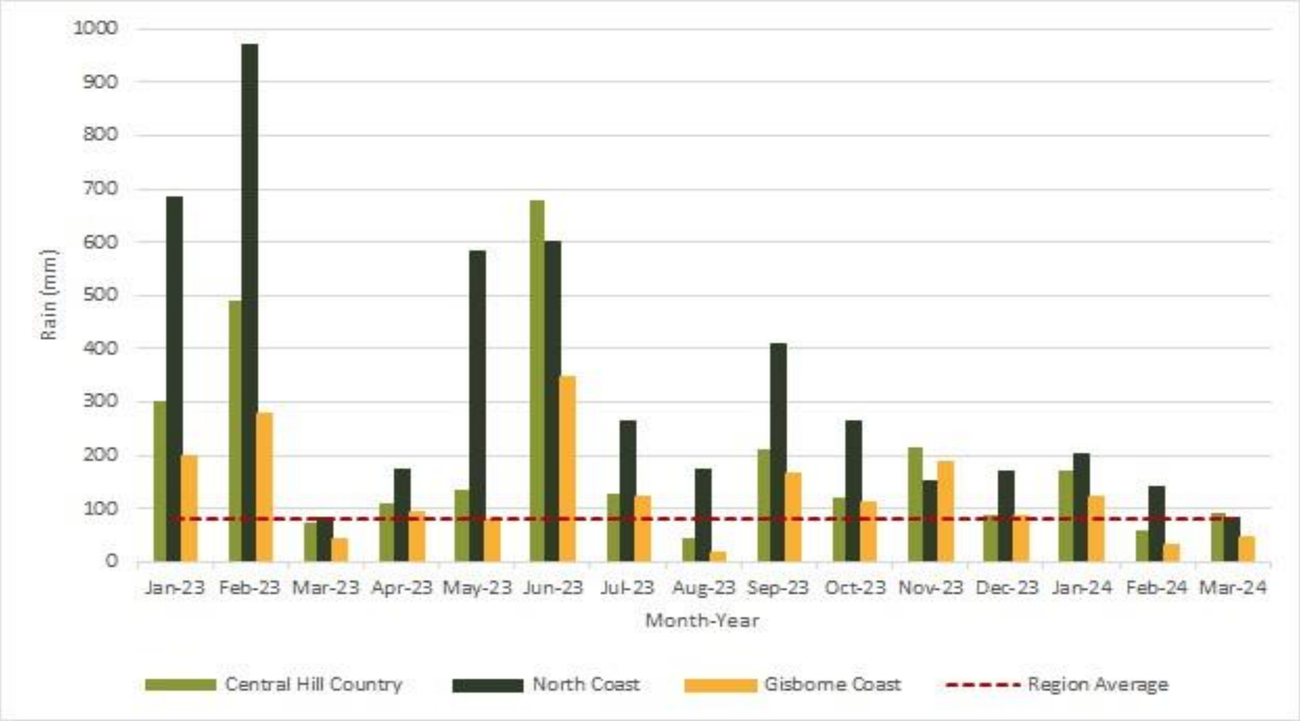
Photograph 1: Pole damaged by a slip

Photograph 1 shows a pole made unstable by a slip and Photograph 2 shows the scale of the slip-on Te Hau Road, Whatatutu, which was caused by heavy rain during the storms on 28 June 2023 (major event details can be found in section 5 on page 49).

Graph 6 presents a summary of rainfall at three points within the region.

Graph 7 presents the distribution of slips per month. The volume of rain and 21 slips played a significant role in June 2023, our worst unplanned SAIDI month.

Graph 6: Gisborne District Rainfall this assessment period[9]



Note: Region average based on years 2010 -2019

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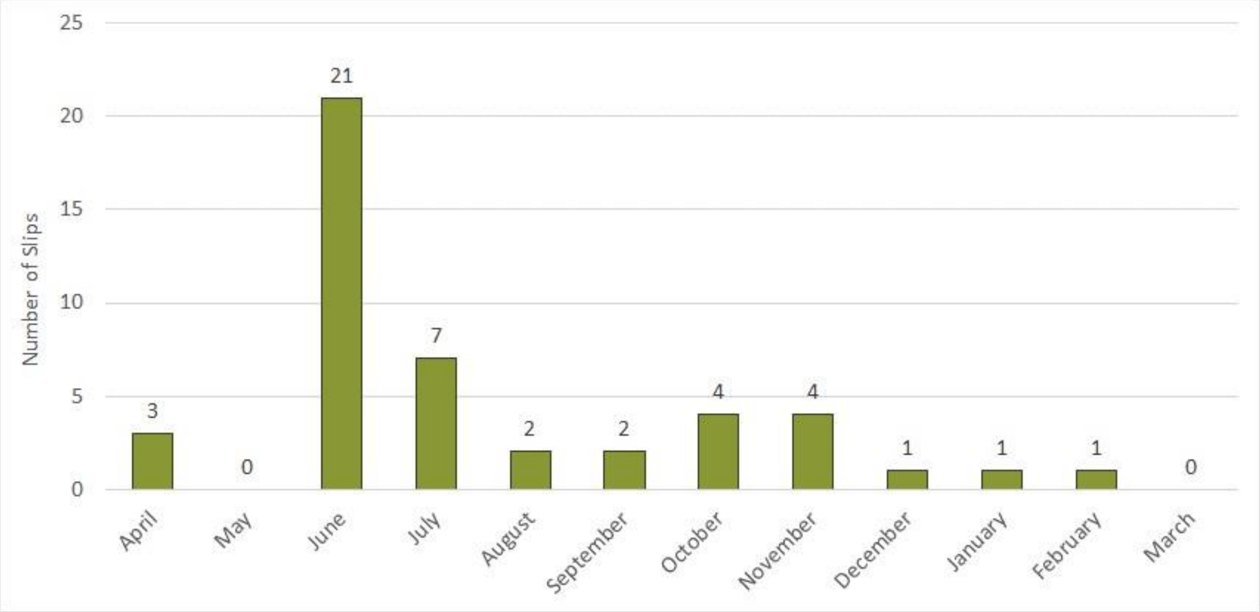
[9] Source: Rainfall data | Gisborne District Council (gdc.govt.nz)

Although January and February are often wet, NIWA statistics show that based on the region's 10-year average, the increased rainfall occurs in autumn or winter and further increases are predicted to be either “likely” or “highly likely.”

Graph 7: Number slips that occurred each month during the assessment year

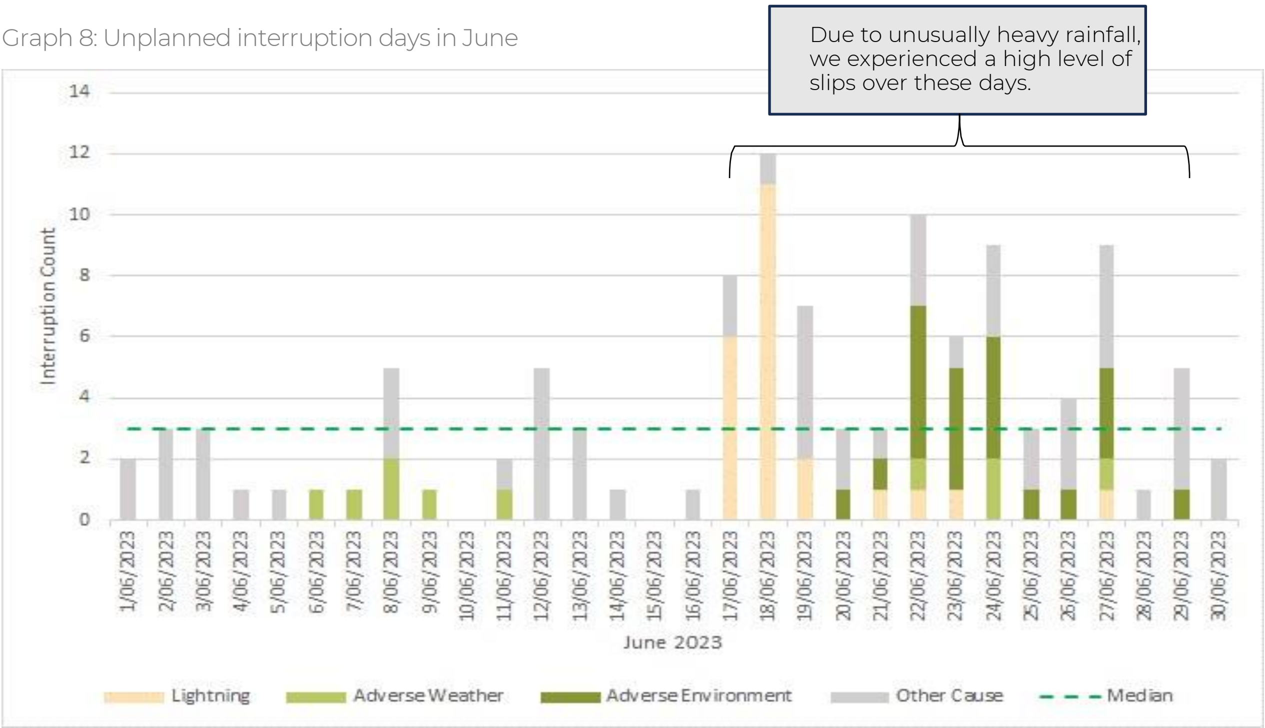


Photograph 2: Slip on Te Hau Road caused by heavy rains and a storm on 20 June 2024

Sustained raised groundwater has a longer-term impact as the bases of wooden poles and cable joints are exposed to higher moisture levels. This is of great importance when considering the age of these asset fleets.

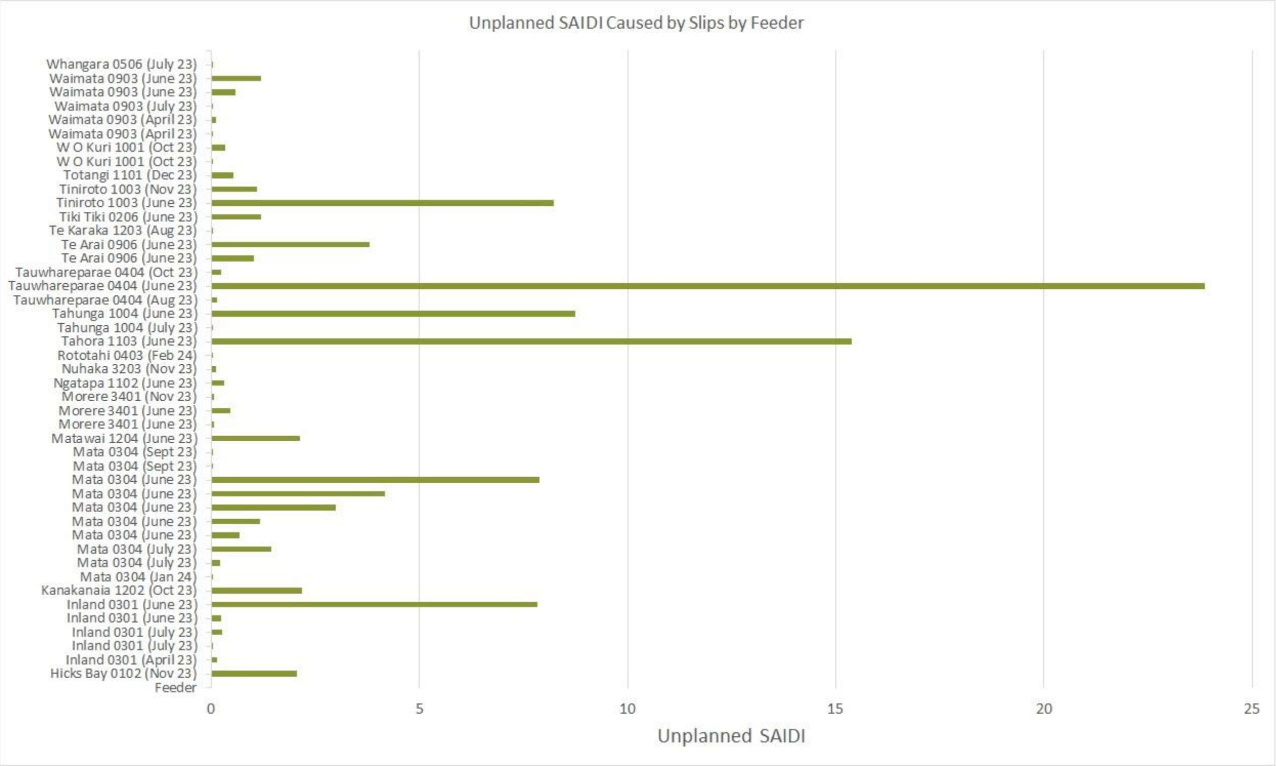
In June 2023, we had nearly 30 minutes of unplanned SAIDI caused by slips, lightning, and wind. Graph 8 shows the interruptions occurring in June by cause.

Graph 8: Unplanned interruption days in June


Due to unusually heavy rainfall, we experienced a high level of slips over these days.

Graph 9 shows the slips that impacted our feeders across our network during the assessment period.

Graph 9: Unplanned SAIDI caused by slips on our Feeders during the assessment period

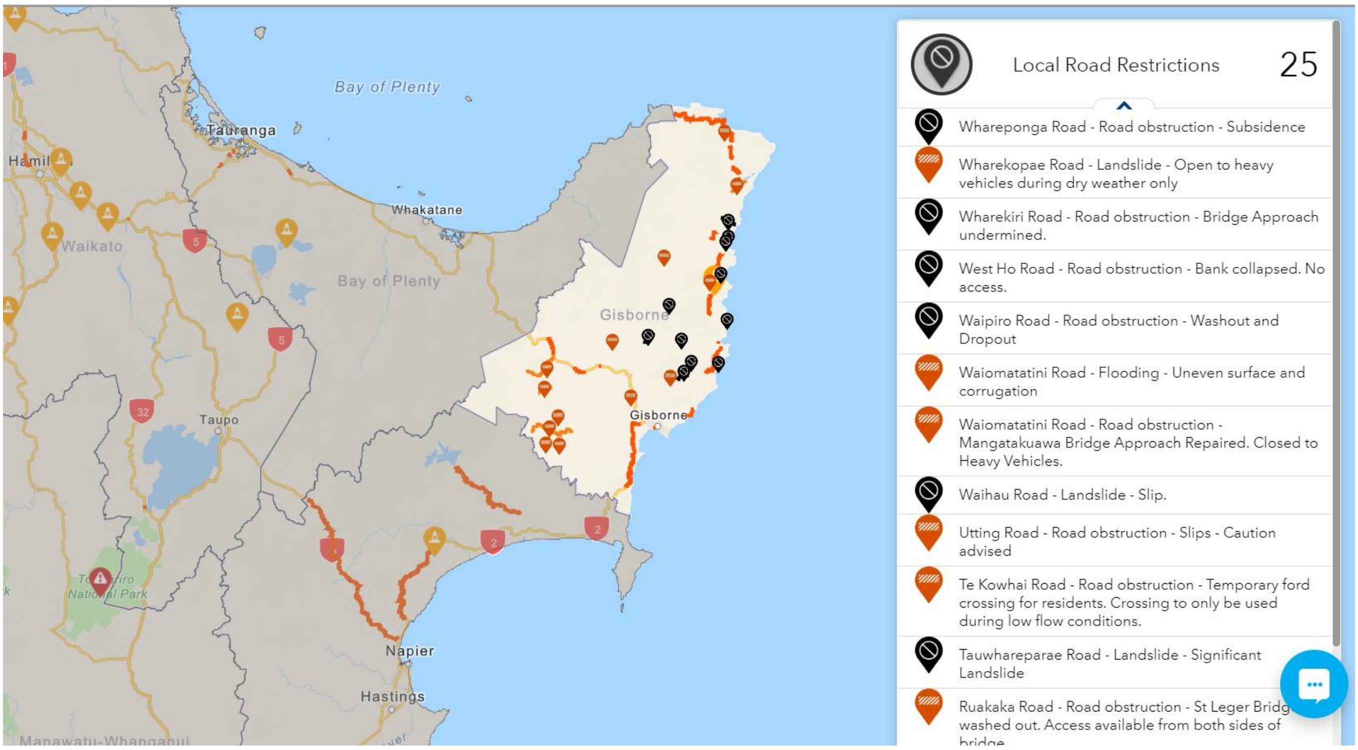


2.2.2 Restricted Road access and closures prolonged outage times for many consumers

Cyclones Hale and Gabrielle in January and February 2023, respectively (i.e., the prior assessment period), and the heavy rains during this assessment period have resulted in long-term damage to the roading network around the region. Ongoing roading repairs and reinstatement impact access to many parts of our network, slow and delay maintenance and fault restoration work, and create an adverse environment.

Screenshot 1 shows the 25 local road restrictions on our network.[10] Table 3 includes key routes that are still restricted or closed at the time of writing this report.

Screenshot 1: Local Road Restrictions as per the Gibson District Council Road Information



Local Road Restrictions 25

- Whareponga Road - Road obstruction - Subsidence
- Wharekopae Road - Landslide - Open to heavy vehicles during dry weather only
- Wharekiri Road - Road obstruction - Bridge Approach undermined.
- West Ho Road - Road obstruction - Bank collapsed. No access.
- Waipiro Road - Road obstruction - Washout and Dropout
- Waiomatatini Road - Flooding - Uneven surface and corrugation
- Waiomatatini Road - Road obstruction - Mangatakuawa Bridge Approach Repaired. Closed to Heavy Vehicles.
- Waihau Road - Landslide - Slip.
- Utting Road - Road obstruction - Slips - Caution advised
- Te Kowhai Road - Road obstruction - Temporary ford crossing for residents. Crossing to only be used during low flow conditions.
- Tauwhareparae Road - Landslide - Significant Landslide
- Ruakaka Road - Road obstruction - St Leger Bridg washed out. Access available from both sides of bridge

Table 3: Key routes that had restricted access or were closed during the assessment period

Route	Description of the restriction or closure
State Highway 35	Road restrictions and closures at multiple locations from Mangatuna to Cape Runaway.
State Highway 2	Restrictions and closures inland from Waipaoa through to the Opotiki District.
Wharekopae Road	Restrictions and closure (Alternate route to State Highway 2).
Tiniroto Road	Closed
Paparatu Road	Closed
Tauwhareparae Road	Closed, blocked with landslides.
Mahora to Reporua	Sections remain closed.

The health and well-being of field crews have been the top considerations, particularly for fault response after dark or in poor weather conditions. We will not send first responders out after dark where we deem it unsafe due to residual risk to workers and public safety based on the location of the fault.

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[10] Road Information, Gisborne district Council (gdc.govt.nz).

2.3 Ageing assets are more vulnerable to adverse conditions

Large portions of the network were installed in the 1960s, 1970s, and 1980s. These assets are now reaching a point in their lifecycle where, in the environmental conditions experienced in the last two years, the likelihood of failure is increasing.

2.3.1 Network Asset Health Profiles

We use the DNO Group's Common Network Asset Indices Methodology (CNAIM) and the EEA's Asset Health Indicator (AHI) Guide to determine the health of our assets. The health ranges from H1 to H5, with H1 meaning replacement is recommended and H5 meaning is 'like new'. The health score is weighted, considering age, last inspection result, and environmental attributes.

The prolonged and repeated exposure to adverse conditions in the last three years will accelerate the degradation of network asset conditions. This has put pressure on asset renewal budgets as the effective life of assets is shortened faster. Given the increase in adverse conditions and the number of interruptions caused by equipment failure (categorised as defective equipment), we are developing a risk-based approach to asset inspections and reprofiling of assets within fleet strategies.

Our current asset replacement programme is detailed in section 7.2, with the quantity of assets for replacement identified as those with H1 and H2-rated health. However, there is a need to re-inspect assets possibly impacted by the weather events of the last two years.

2.3.2 A Four-year trend in defective equipment incidents indicates a correlation to adverse weather over the last two years

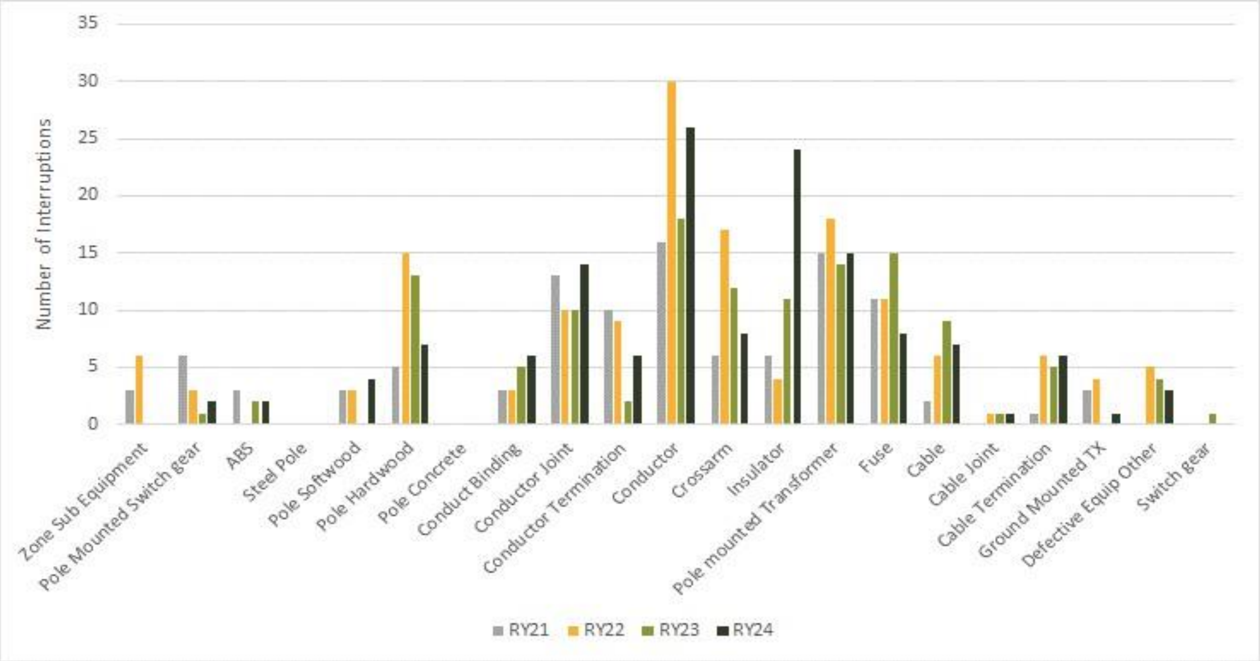
Graph 10, Graph 11, and the supporting data in Table 4 show the four-year trend for interruptions caused by defective equipment.

The trend indicates a material uplift in the attributed SAIDI for failure of conductors and insulators in this assessment period and the prior assessment period. Our network sustained extensive damage because of Cyclone Hale and Gabrielle in January and February 2023, respectively (more discussion is available in our 2023 Report and section 4.3.1 of this report).

During this assessment period, torrential rain and strong winds have impacted us, causing multiple slips and creating adverse environments. Further, there has been a significant increase in lightning in RY23 and RY24, shown in Graph 40 section 7.3.3, showing a correlation with the increase in insulator and conductor failures shown in Graph 10.

We have an accelerated pole replacement programme. The replacement pole is normally concrete and is replaced as an assembly including new cross arms and insulators, other pole mounted components will be considered for replacement dependent on condition and ease of future access to the location.

Graph 10: Four-year trend of interruption count caused by defective equipment



Graph 11: Four-year trend of SAIDI minutes caused by defective equipment

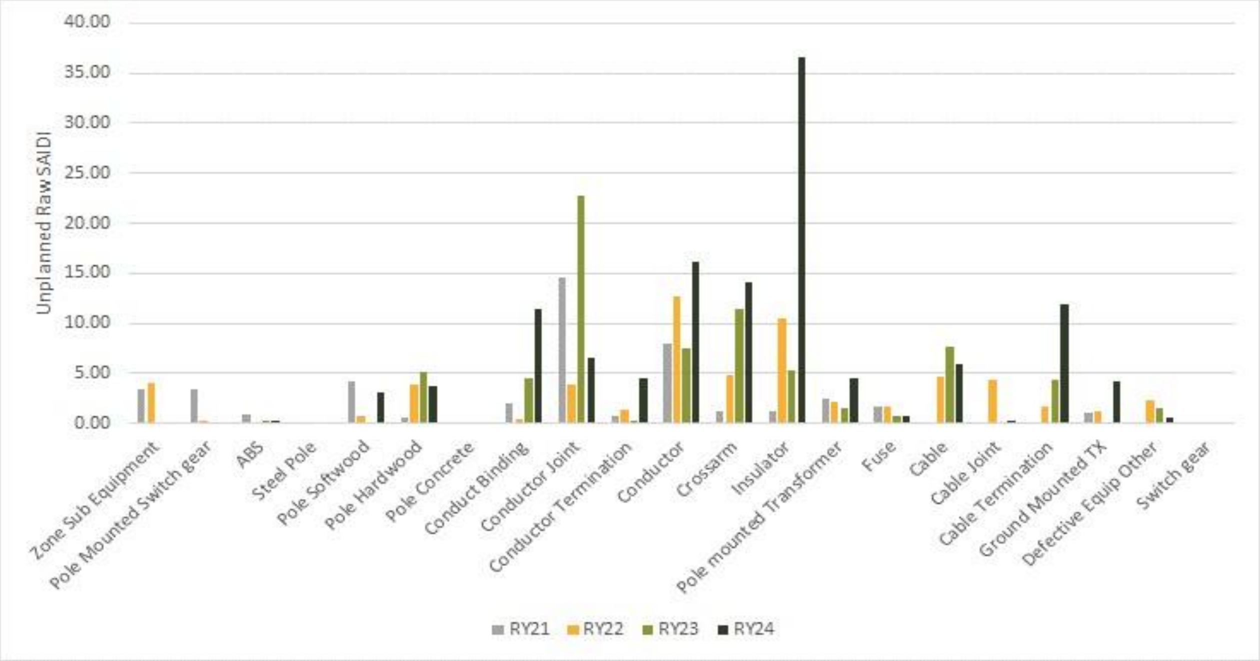


Table 4: Supporting data for Graph 10 and Graph 11

Defective Equipment	2020/21		2021/22		2022/23		2023/24		Averages		RY24 Shift	
	No. of	SAIDI	No. of	SAIDI	No. of	SAIDI	No. of	SAIDI	No. of	SAIDI	No. of	SAIDI
Conductor	16	7.97	30	12.60	18	7.51	25	18.71	21	9.36	4	9.35
Pole mounted Transformer	15	2.39	18	2.08	14	1.53	15	4.58	16	2.00	(1)	2.58
Conductor Joint	13	14.55	10	3.92	10	22.77	14	6.56	11	13.75	3	(7.19)
Fuse	11	1.60	11	1.74	15	0.72	8	0.65	12	1.35	(4)	(0.70)
Insulator	6	1.20	4	10.47	11	5.32	23	34.63	7	5.67	16	28.97
Crossarm	6	1.13	17	4.88	12	11.36	8	14.06	12	5.79	(4)	8.27
Pole Hardwood	5	0.52	15	3.88	13	5.17	7	3.79	11	3.19	(4)	0.60
Conductor Termination	10	0.74	9	1.31	2	0.28	6	4.50	7	0.78	(1)	3.72
Cable	2	0.04	6	4.73	9	7.67	7	5.95	6	4.15	1	1.80
Zone Sub Equipment	3	3.37	6	4.08	-	-	-	-	3	2.48	(3)	(2.48)
Cable Termination	1	0.03	6	1.63	5	4.34	6	11.82	4	2.00	2	9.82
Conduct Binding	3	1.95	3	0.40	5	4.50	6	11.39	4	2.28	2	9.11
Defective Equip Other	-	-	5	2.30	4	1.55	3	0.57	3	1.28	0	(0.71)
Pole Softwood	3	4.13	3	0.80	-	-	4	3.06	2	1.64	2	1.42
Pole Mounted Switchgear	6	3.36	3	0.22	1	0.02	2	0.06	3	1.20	(1)	(1.14)
Ground Mounted TX	3	1.10	4	1.18	-	-	1	4.20	2	0.76	(1)	3.44
Air Brake Switch (ABS)	3	0.92	0	0.00	2	0.27	2	0.20	2	0.40	0	(0.20)
Cable Joint	-	-	1	4.42	1	0.05	1	0.24	1	2.24	0	(1.25)
Switchgear	-	-	-	-	1	0.01	-	-	-	0.00	0	(0.00)
Steel Pole	-	-	-	-	-	-	-	-	-	-	-	-
Pole Concrete	-	-	-	-	-	-	-	-	-	-	-	-
Total	106	45.00	151	60.62	123	73.09	138	124.98	126	59.57	11	65.41

Our analysis found that the event count for defective equipment has shown a slight increase, however the time to restore has increased significantly as shown in our unplanned SAIDI minutes in graph 12, which has increased each assessment period and particularly in the last two assessment periods.

Graph 12: Event count compared against raw SAIDI trend

2.4 Tree contacts were the third largest contributor to our total SAIDI minutes

Vegetation contributed the third-largest amount to our total unplanned SAIDI during this assessment period, at 89.48 SAIDI minutes (or 19%), as shown in Table 5.

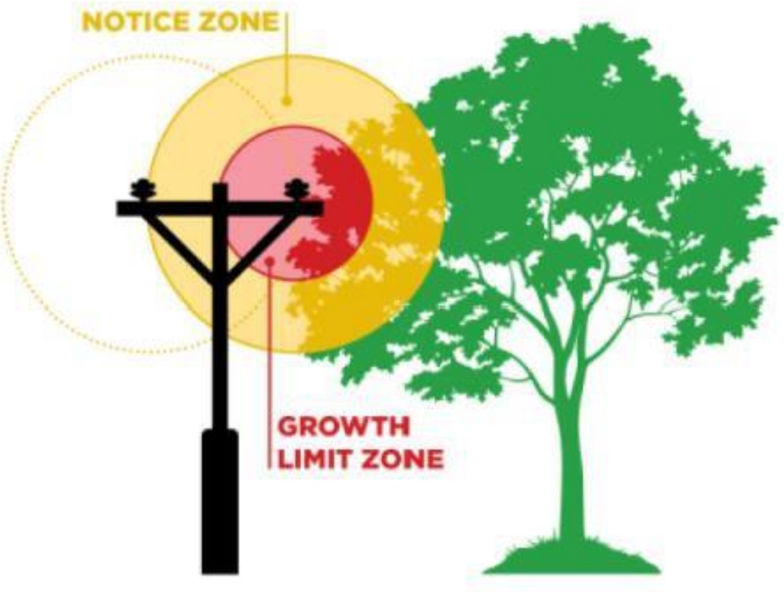
Table 5: Breakdown of vegetation-related interruptions

Vegetation category	Unplanned SAIDI	Percentage of vegetation interruptions
Tree Contact In-zone	32.17	36%
Tree Contact Out-of-zone	44.14	49%
Plantation Tree In-zone	0.08	0.1%
Plantation Tree Out-of-zone	13.09	15%
Vegetation other	0.00	0.0%
Total	89.48	100%

Out-of-zone trees contributed 57.23 SAIDI minutes (or 64%) to our vegetation-related unplanned SAIDI, with approximately 13.09 SAIDI minutes (or 15%) of those interruptions caused by plantation trees.

We have consistently maintained in-zone clearances for the last five years. However, we struggle to gain customer and forestry support for the management of out-of- zone trees, as shown by the green area in Figure 2.

Figure 2: Illustration of the responsibility for trees within the fall zone.



To help us address this, we have entered negotiations with forestry companies to broaden the clearance corridor for the most vulnerable feeders. The timing of these negotiations is key, as forming an agreement prior to replanting blocks will reduce the impact of managing existing trees.

Trees within the fall zone are managed under the Electricity (Hazards from Trees) Regulations 2003 (the tree regulations), which clearly define our responsibilities and those of the tree owners. The tree regulations aim to protect the safety of the public and the supply of electricity. Under the regulations, trees within the 'growth limit zone' (GLZ) must be clear of power lines. Line owners can issue a request to trim trees within the notice zone. There is no obligation on the tree owners to agree to the request, though except for commercial plantations, it is unusual for a tree owner not to grant a request to trim a tree within the notice zone.

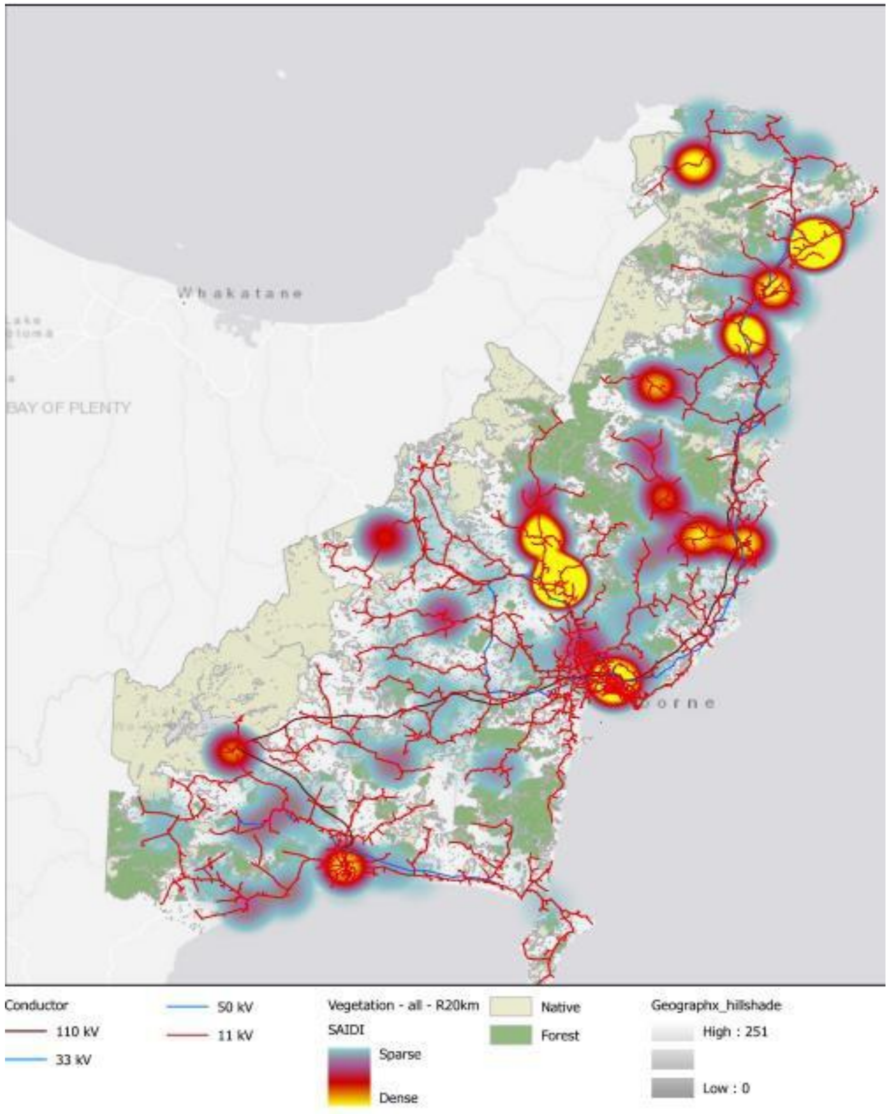
As with the prior assessment period (discussed in section 4.5.3), extensively, the damage to our lines that was caused by vegetation during the assessment period was from trees outside the GLZ or the notice zone. During the assessment period, 44.14 SAIDI minutes were attributable to out-of-zone tree contacts where the tree was outside the GLZ (the red area as shown in Figure 2) and the notice zone (the yellow area as shown in Figure 2).

We have a proactive vegetation strategy that supports us in actively maintaining vegetation within the notice zone (discussed further in the section 7.5), thereby reducing interruptions caused by trees within the GLZ. Again, this year, more vegetation-related disturbances were caused by trees outside the GLZ than inside because extreme winds pushed out-of-zone trees to fall into our lines and cause extensive damage.

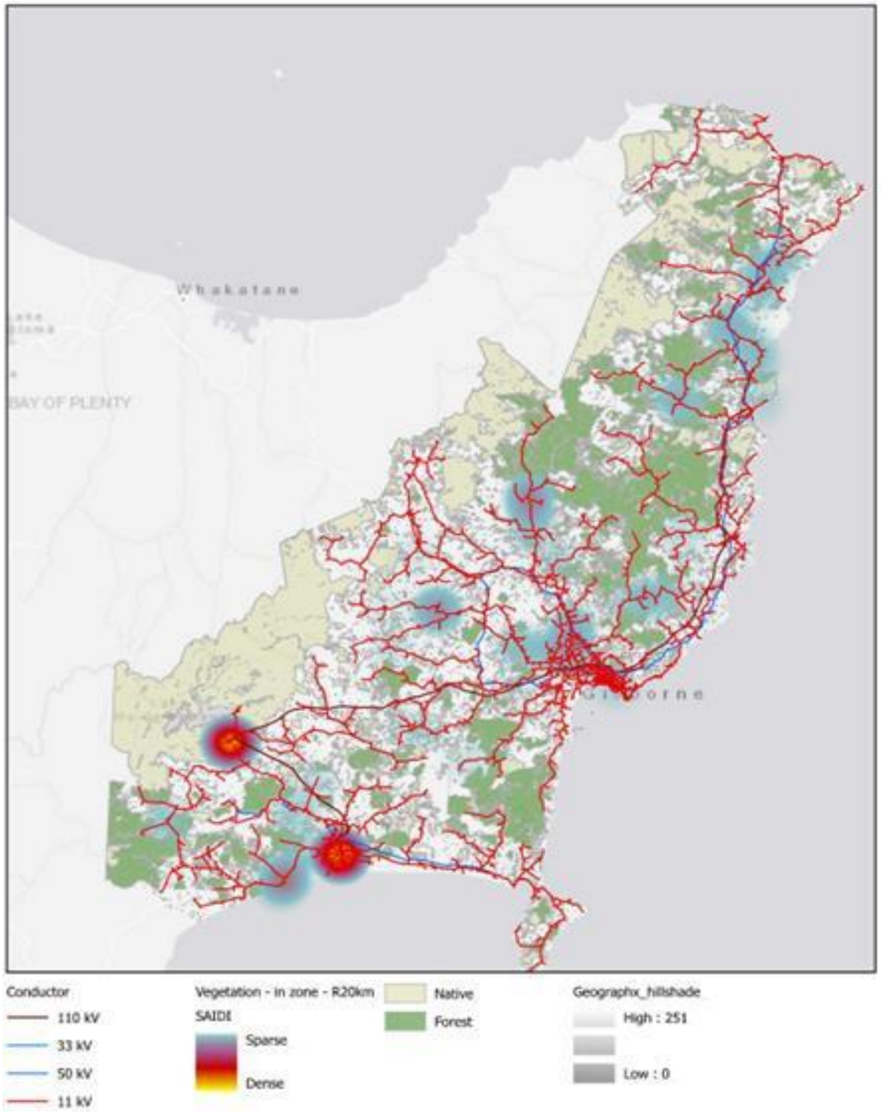
We have formed an Eastern Vegetation Management group forum to work with other EDB's on collective solutions to improvement in vegetation management. A new future hazards Notice has been developed, providing improved information on landowners risks and obligation.

Screenshot 2 provides a map of interruptions caused by trees outside the zone and Screenshot 3 provides a map of interruptions caused by trees inside the zone during the assessment period. These maps illustrate that interruptions were predominately caused by trees outside the zone and that tree damage was sporadic and widespread.

Screenshot 2: map of interruptions caused by trees outside the zone



Screenshot 3: map of interruptions caused by trees inside the zone



The tree regulations, as they currently stand, do not give us the power to manage vegetation outside the notice zone, leaving us vulnerable to outages caused by out-of-zone trees. On 18 May 2024, Energy Minister Simeon Brown announced new measures to protect powerlines from trees.

> *"During Cyclone Gabrielle, out-of-zone tree outages interrupted electricity supply to 68,000 households. These interruptions and outages underscored how important it is to proactively manage risks to local electricity infrastructure. Many of the outages experienced during the cyclone could have been prevented if these proposed regulations were in place."*

Under the proposed amendments, a 'clear to the sky' zone will be created to prevent vegetation from hanging over the line by one meter around the GLZ. If vegetation enters this zone, the line owners will be permitted to alert tree owners about the risk of encroaching vegetation.

An example of a tree trimmed under a clear-to-sky policy is shown in Photograph 3. While the amendments to the tree regulations are intended to reduce interruptions to supply, we believe that had the amendments been in place during Cyclone Hale and Gabrielle or even more recently, i.e., this assessment period, there would have been very little change in our overall performance. This is because the trees that caused the interruptions were largely outside the GLZ and were plantation-owned.

Photograph 3: Example of a tree trimmed to a 'clear to the sky' policy

Trees being plantation-owned make a difference as there is a strong commercial incentive on the decision to agree or reject trimming or removing a tree within the notice zone. Our network, built in the 1950s and 60s, is a largely rural network originally designed and constructed to deliver electricity to beef and sheep farms. In the 1980s, farms were sold to forestry, and there has been extensive conversion to forestry, with a mix of farming usually located at the end of a spur. The change from farming to forestry has seen many of our lines go from being built through large tracks of mostly open farmland to running through the middle of large forestry plantations.

We have never built a distribution line through a forestry plantation. Most plantation owners maintain their lines within the growth limit zone of four (4) meters under the tree regulations. However, as trees approach harvesting, they are over 30 meters tall. The high winds combined with the wet conditions during this assessment period resulted in several interruptions when plantation trees came into contact with our line or fell through our lines.

Consultations on further amendments to reduce the risk of trees outside the GLZ falling into lines are expected to begin 'shortly', with changes expected to be gazetted in September 2024.

2.5 Safety of our staff and contractors

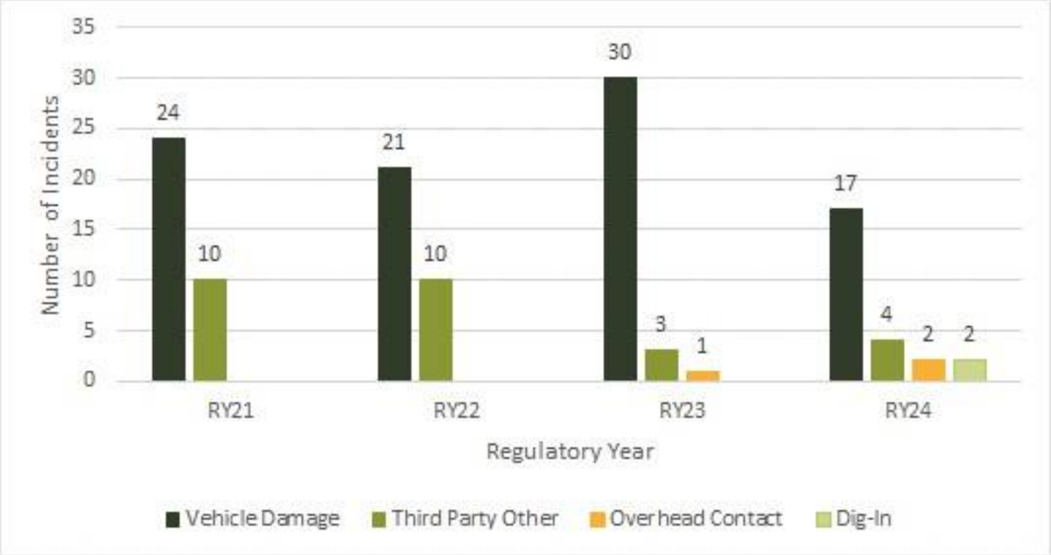
Ensuring the safety and well-being of field crews is our top priority, especially during fault response after dark or in adverse weather and environmental conditions in remote or rural areas of our network. As a precaution, we refrain from sending first responders out after dark where we deem it unsafe due to residual risk to workers and public safety, considering the specific fault location.

The impact of our decision has been an additional 39 SAIDI minutes over what we have incurred in other assessment years. This additional 39 SAIDI has been constrained through mobilizing resources to remote locations such as Tokomaru Bay and Tiki Tiki in preparation to respond when advance weather warning conditions arise, and road closures become imminent. This is further supported through engaging our Teir 2 network approved contractors to support network recovery through fault prioritization and allocation of work to support FNL's primary fault response contractor.

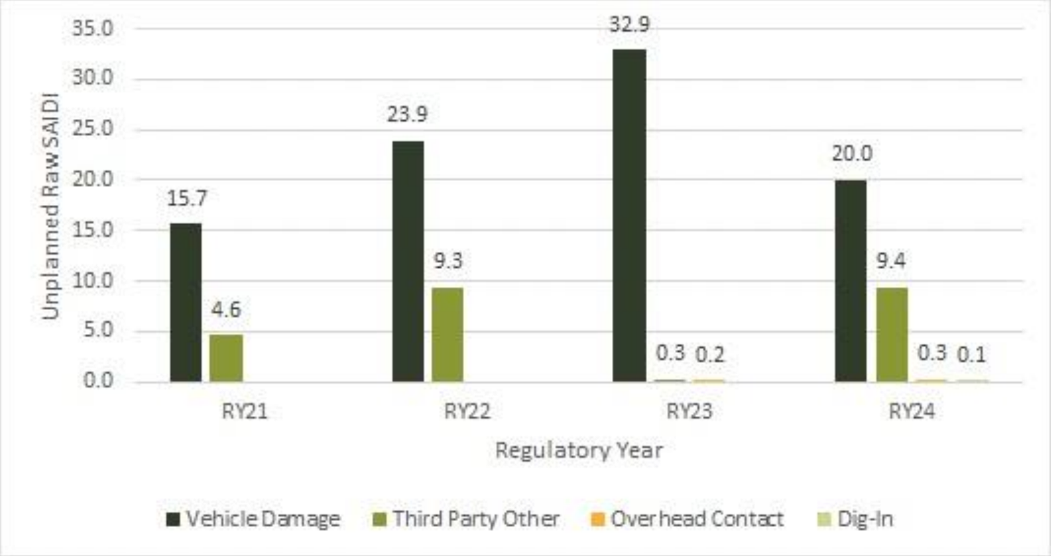
2.6 Third-party interference is down on prior years but remains a contributing factor to performance

Graph 13 shows that the number of interruptions caused by third-party interference is trending down and Graph 14 shows the average SAIDI caused by vehicles has also reduced compared to the prior two assessment periods.

Graph 13: Number of unplanned interruptions caused by third-party interference



Graph 14: Unplanned raw SAIDI caused by third-party interference



Interruptions caused by vehicle damage are down in this assessment period and at a four-year low. A contributing factor to the Increasing SAIDI is our adoption of the EEA guide to Manual Reclosing and Risk Management. We are patrolling impacted lines in full before restoring power. We intend to reduce unplanned SAIDI caused by these events by further sectionalising feeders and reducing the manual switching zones, thus impacting customers. We will also look at whether relocations of assets would reduce risk to third parties and minimize interruptions.

Since February 2024, twelve visits have taken place with various organisations across the region to discuss close approach requirements when working beside power lines.

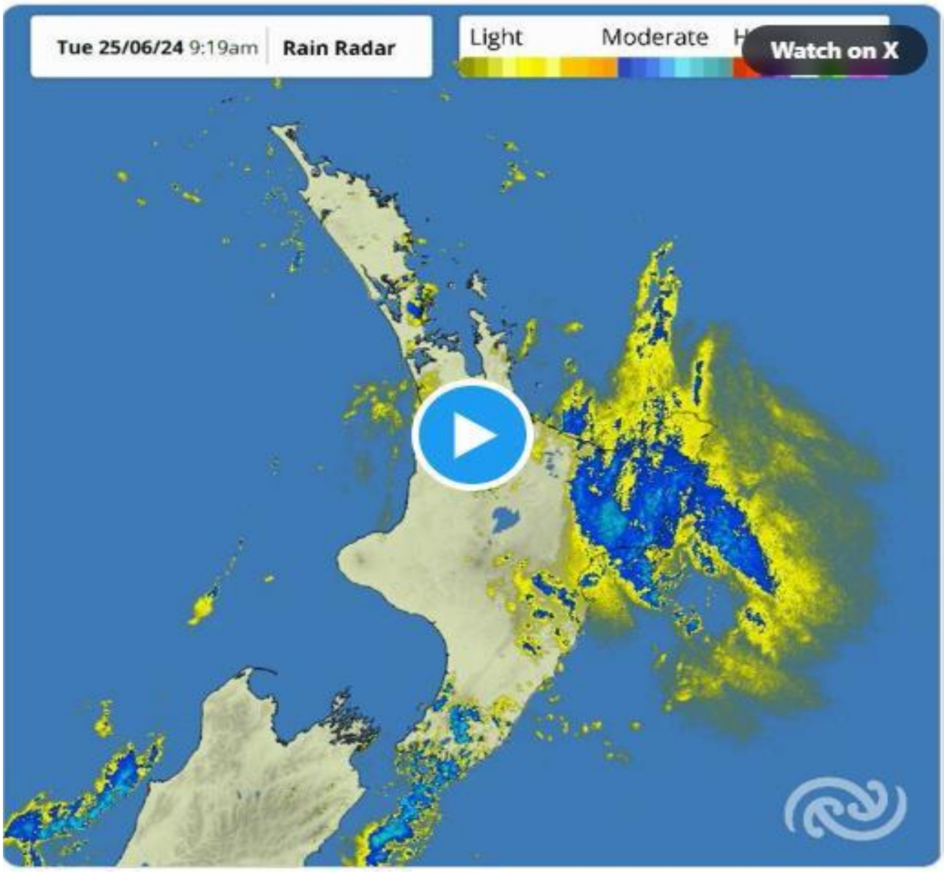
2.7 The second year of high winds hit us hard

High winds caused 42 minutes of unplanned SAIDI this regulatory year, resulting in 69 interruptions impacting 24 of our 11kV Feeders across the network Wind accounted for 9.1% of all unplanned SAIDI during this assessment period. Due to the nature of our network, 89% of our assets are overhead and located in exposed terrain, making our assets more vulnerable to the impacts of high winds.

On 25 June 2023, RNZ issued a warning to the Gisborne District—Power cuts and road closures amid wild Gisborne weather.

Greg Shelton, Uawa Tolaga Bay, Civil Defence manager, described the wind conditions as some of the worst he had seen in a long time, stating —

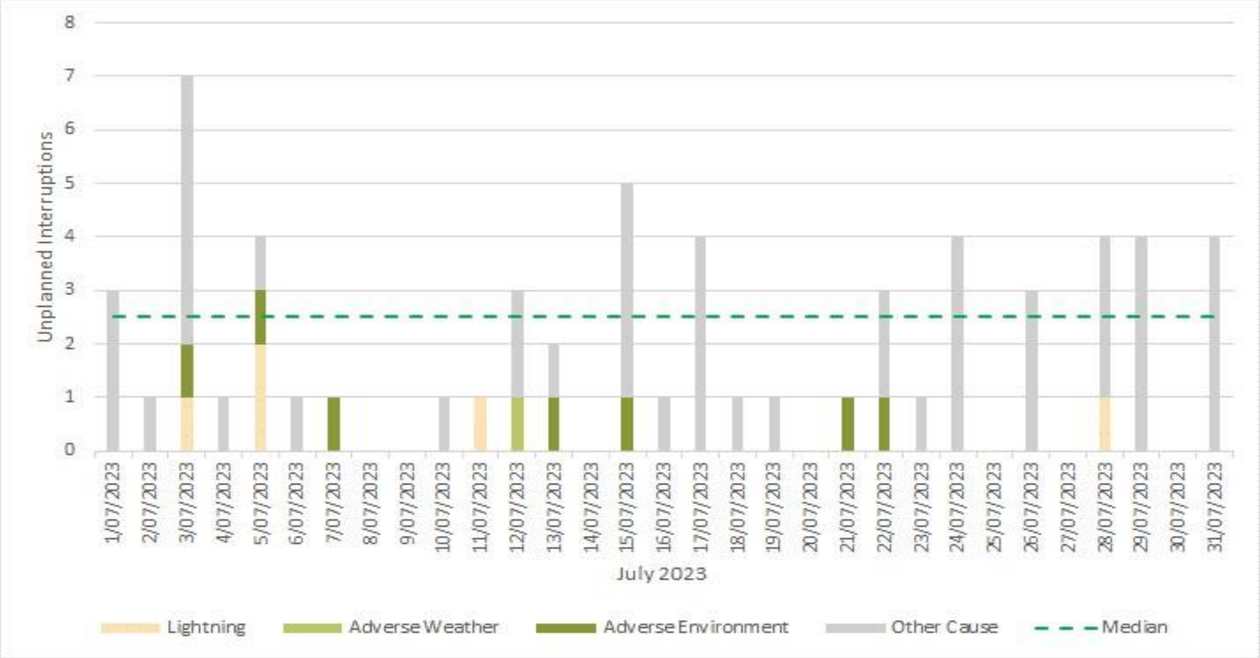
> "*We're expecting a lot of damage from the wind, more than anything.*
> *I'd say in the morning, we're going to be faced with some pretty ugly scenes.*"



2.8 The major event threshold did not normalise as many events as might have been expected

Despite 12 days (or 39% of days) in July 2023 exceeding the median number of unplanned interruptions per day, there were no major event days during the month. The trend for Unplanned Interruptions in July 2023 is shown in Graph 15.

Graph 15: Unplanned Interruption days in July 2023

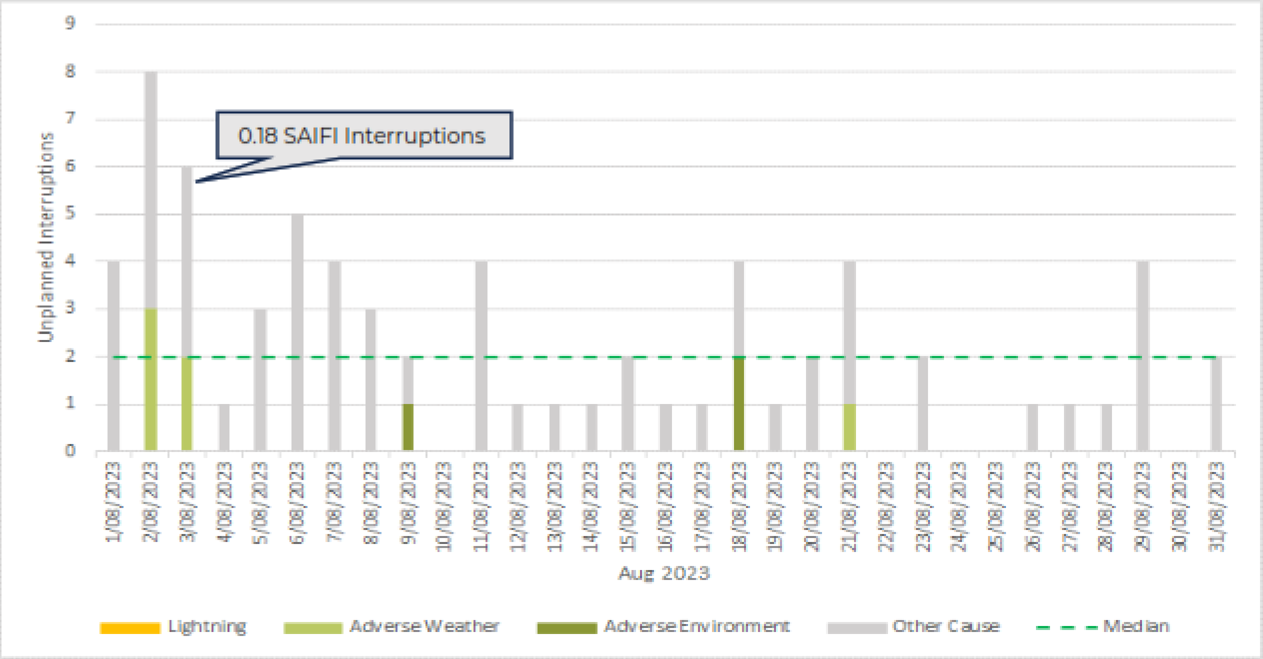


This contrasts with eleven (11) days in June and August, eight (8) days in September, six (6) days in November 2023, and nine (9) days in February 2024, which exceed the median number of Unplanned Interruptions per day and major events were triggered. The trends for these months are shown in Graph 16 to Graph 20.

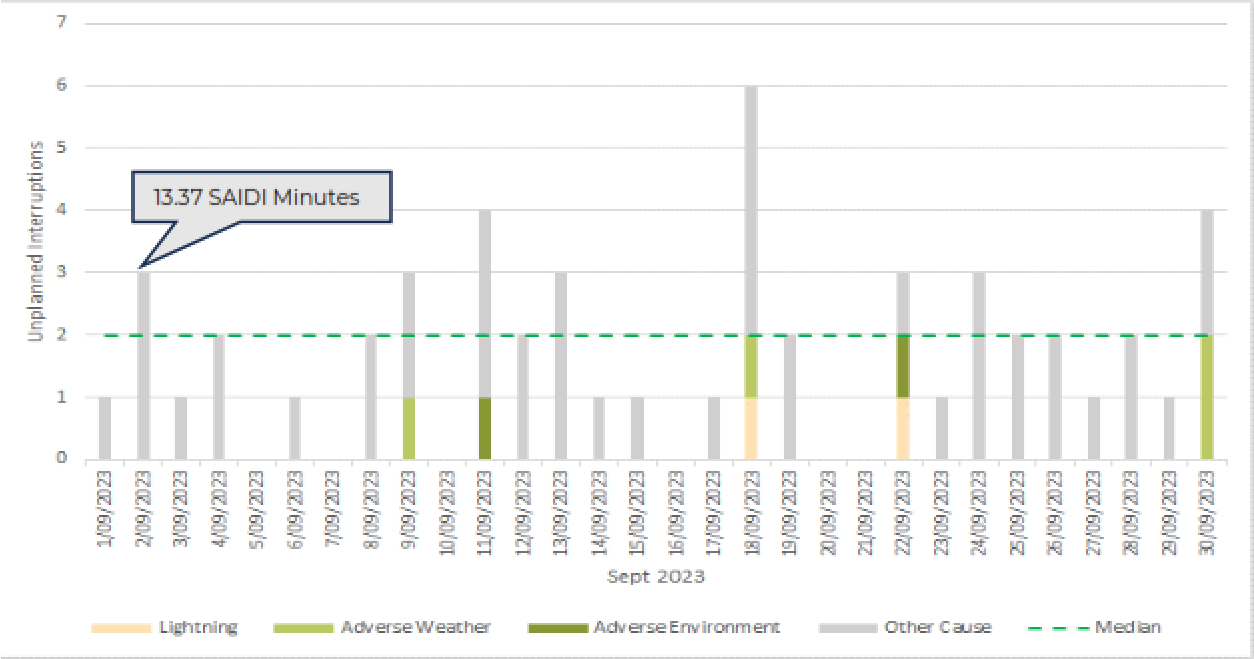
Graph 16: Unplanned Interruption days in June 2023

70.97 SAIDI Minutes

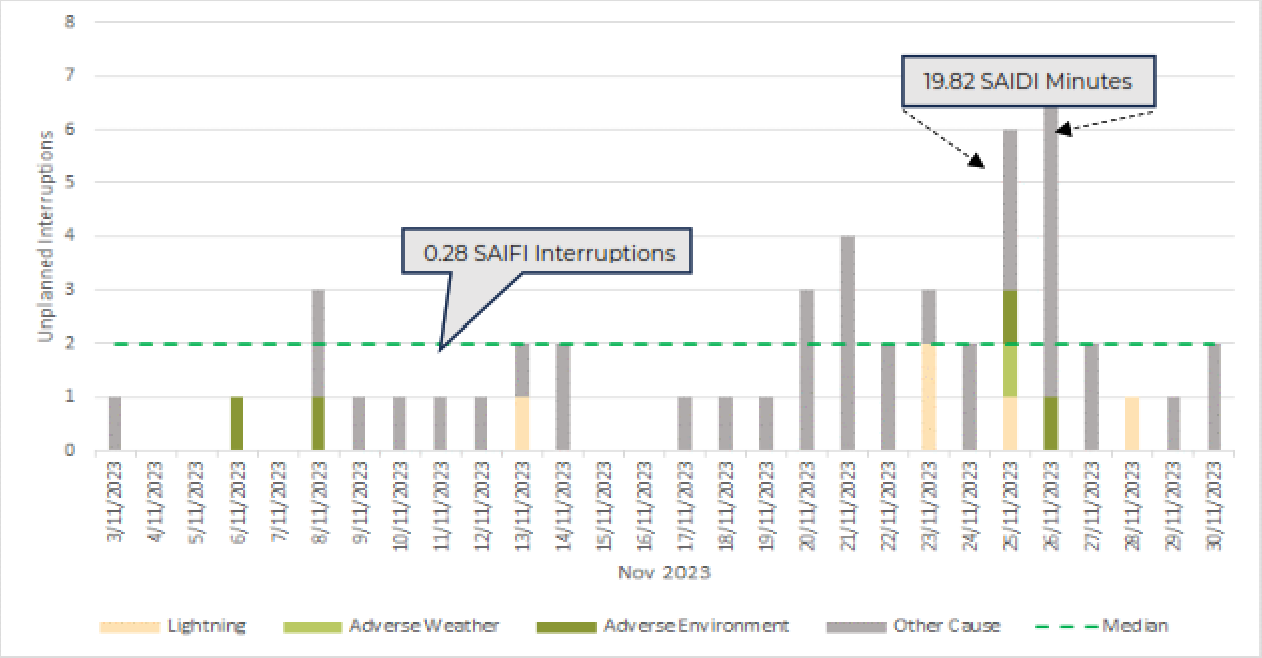
Graph 17: Unplanned Interruption days in August 2023



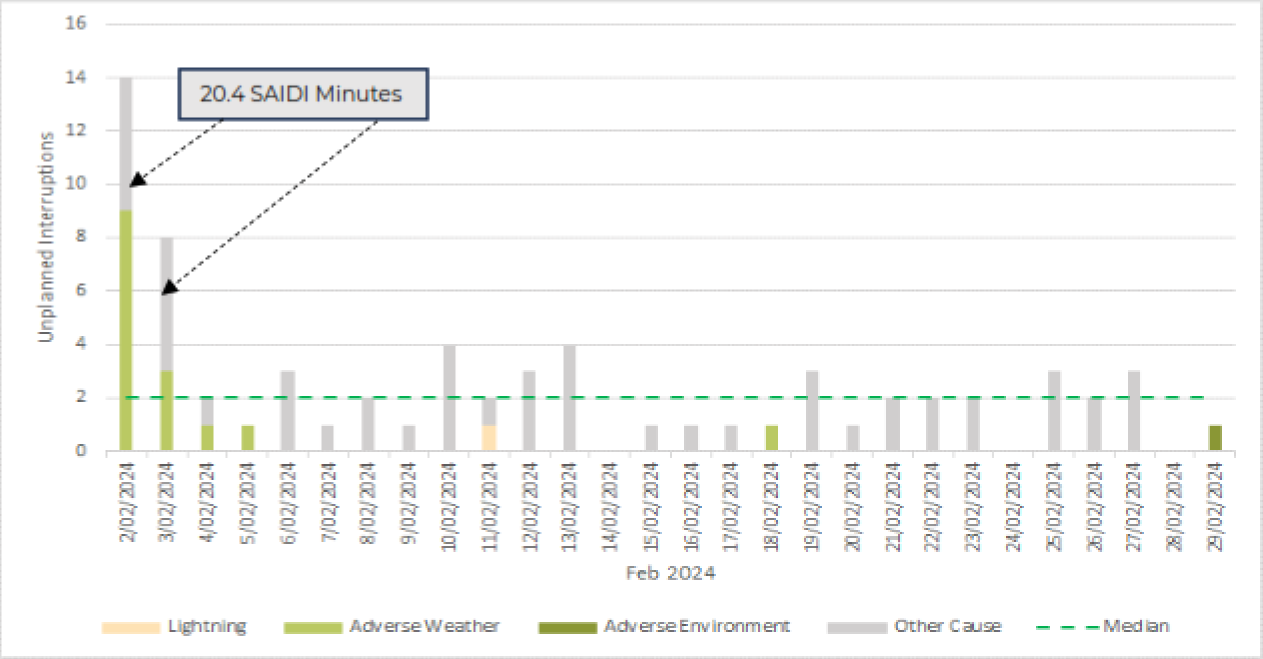
Graph 18: Unplanned Interruption days in September 2023



Graph 19: Unplanned Interruption days in November 2023

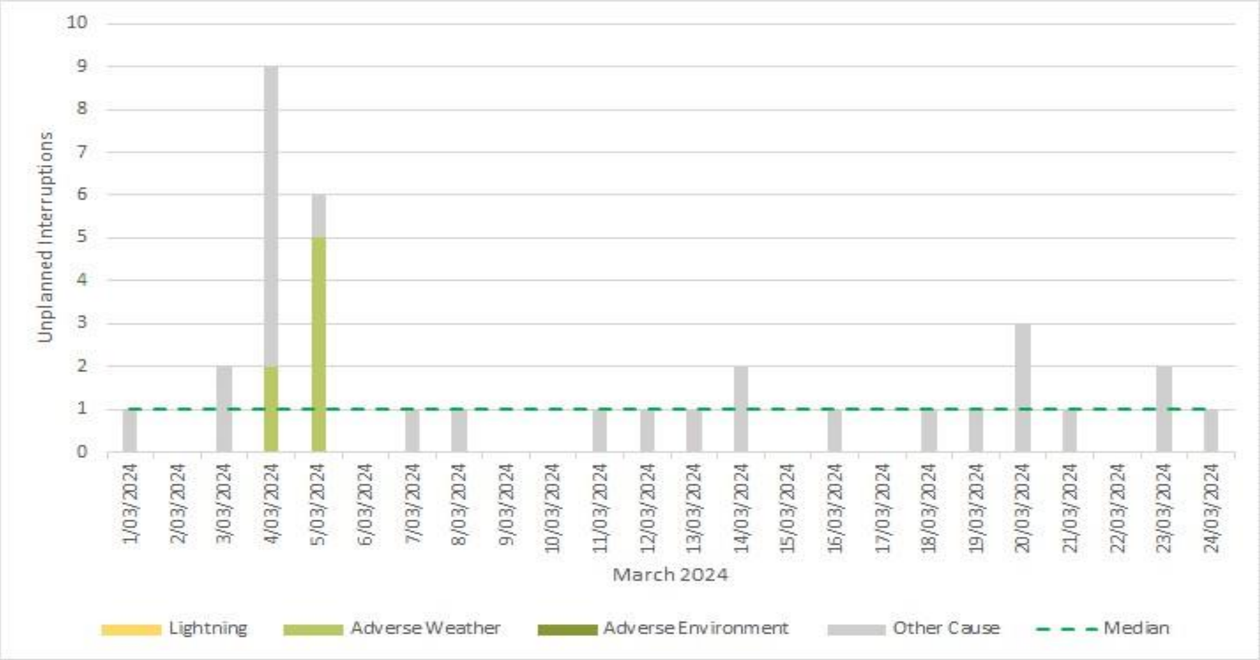


Graph 20: Unplanned Interruption days in February 2024



On March 4 and 5, 2024, we materially exceeded our median number of unplanned interruption days, with nine (9) and six (6) unplanned interruptions, respectively, occurring on those days. However, no major events were triggered. The trend for March 2024 is shown in graph 21.

Graph 21: Unplanned Interruption days in March 2024



2.9 Standby generation reduced the impact of interruptions on our consumers

Our approach to managing the price-quality trade-off attributable to network security is to deploy mobile generators to supplement supply during any unplanned outage that cannot be restored within our service level periods. This is typical in long rural feeders where the load is minimal, making this approach a cost-effective solution and assisting our planned shutdowns should the area affected include a critical connection, e.g., health support equipment and businesses.

We avoided 481 SAIDI minutes during the assessment period by deploying standby generators on our network, as shown in Table 6. The DPP framework does not reward us for using standby generation, particularly when that generation is low-voltage and used to support remote and rural areas with few consumers. Despite the lack of a direct incentive, we believe that standby generation is an effective and appropriate approach to providing consumers with redundancy where it is cost-prohibitive to provide more traditional means.

Table 6: SAIDI minutes avoided by employing standby generation for unplanned interruptions

Location	Customer minutes avoided	SAIDI minutes avoided
Te Araroa	2,320,314	90
Ruatoria	3,823,065	147
Tolago Bay	358,515	14
Mahia	1,786,768	69
300 kVA	2,030,586	78
Small	2,141,070	83
Total	12,460,318	481

Supply to rural and sometimes remote areas on our network requires significant infrastructure investment and maintenance to supply a proportionately small number of consumers. Consequently, it is difficult to justify expenditure toward network security that materially increases the cost of supply to consumers.

3. Interruption data

3.1 Overview

In an Excel Workbook, we have reported the following for each Class C interruption for the assessment period:

i. the start date (dd/mm/yyyy) of the Class C interruption

ii. the start time (hh:mm am/pm) of the Class C interruption

iii. the end date (dd/mm/yyyy) of the Class C interruption

iv. the end time (hh:mm am/pm) of the Class C interruption

v. SAIDI value of the Class C interruption

vi. SAIFI value of the Class C interruption

vii. the cause.[11]

3.2 Questions about the interruption data

The data is operational and detailed, which could be easily misunderstood by interested people unfamiliar with it. Before using this data, we urge interested persons to contact us at (+64) 06 869 0700 or info@firstlightnetwork.co.nz.

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[11] As prescribed by clause 12.4(b) of the DPP Determination.

4. Independent review findings

4.1 Overview

In this section, we summarise the findings of the existing independent reviews of our network, or operational practices completed in this assessment period and the three preceding assessment periods.

4.2 Summary of the independent reports undertaken this assessment period

By the mid-assessment period (December 2023), it became clear that we were likely to exceed our unplanned SAIDI limit. To better understand our underlying performance, we commissioned independent reports from PBA Consulting [12].

- *Unplanned SAIDI Review December 2023, outlining our performance between 1 April and November.*
- *Individual Feeders* Reports and *Network Summary Report* that provided deeper analysis of unplanned SAIDI year-to-date to further understand the causes and recommendations to manage and improve performance.
- *Network Analysis* Overview that provides a method to identify and prioritise preventative measures to reduce unplanned interruptions in the future.

PBA made several continuous improvement action recommendations, split into network and non-network solutions.

4.2.1 Recommended Network Solutions

PBA recommended we undertake several network solutions, including—

i. Carry out (or update) a more detailed load flow/fault levels study using network modelling software. The results will support the selection and configuration of protection devices and schemes to enable faster restoration times (point iii below); the study also serves as a check for voltage level compliance within the network and aids future load predictions.

ii. Carry out a risk-based review and prioritisation of asset maintenance and renewal programmes. Include findings in more detailed targeted replacement of assets based on criticality to the customer base, asset age, condition, and performance. A specific asset fleet strategy is required for insulators, which can be developed in consultation with other distributors to gather lessons learned.

iii. Support faster restoration times:

   a) Urgent review of network protection devices per circuit. Include a review of settings within reclosers, sectionalisers, and dropout fuses. Add fuse savers to further improve the sectionalisation of circuits, thereby supporting faster restoration times.

   b) Establish a rigorous Reliability Safety Environment Capex programme using fault location and SAIDI heat maps following best practice. The initial recommendation for the worst-performing feeders is included in the PBA Consulting reports. This could include:

      - Adding interphase line spacers to overhead circuits most vulnerable to wind.
      - Retrofitting bark catchers, possum guards, extra reclosers, sectionalisers and dropout fuses, switching links, generators, BESS, etc.

iv. Upgrading network assets is normally only needed for System Growth Capex, but augmenting the network for increased security of supply also fits this option.

Based on these reports, among other actions, we accelerated our programme to roll out additional reclosers and sectionalisers. We discuss these programmes in more detail in sections 6.2 and 6.3 respectively.

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[12] PBA is part of the Unison Group, providing critical infrastructure services for the distribution of electricity to consumers in the Hawke's Bay, Taupo and Rotorua regions.

4.2.2 Recommended Non-network Solutions

PBA recommended we undertake several non-network solutions, including—

i. Accelerate plans to embed Clarus's risk management framework operationally and culturally.

ii. Accelerate plans to improve our Asset Management System (risk-based prioritisation of standards, processes, and procedures), including contractor proficiency.

iii. Plan and implement targeted special projects to reduce risk for the most critical sections of the network. Introduce project prioritisation based on risk management for all activities and with suitable software/processes to allow reporting on progress and against KPIs.

iv. Security of Supply: Review the levels set considering the Energy Trilemma, as discussed in chapter 7 of the Firstlight Networks Asset Management Plan 2023. Then, carry out a gap analysis and include it in AMP-based priorities (criticality, safety, best practice, etc.).

v. Invest in vegetation surveys to support risk assessment, notification process, and OPEX funding to address the scale of the issues faced.

vi. Prioritise aligning processes to best practices (e.g., ISO 55000, International Infrastructure Management Manual).

4.2.3 Improvement Action Plan

A cross functional team has been established to address reliability improvement. The prioritised action plan incorporates recommendations from PBA, Energia and actions identified from internal analysis. Examples of these actions are as shown in table 7

Table 7: Worst performing feeders' statistics

Actions in response to PBA recommendations		
Recommendation	Action	Target
Load flow/fault levels study	Conduct study	RY25 - RY26
Risk-based review and prioritization of asset maintenance	Conduct review	RY25
Review of network protection devices	Conduct review	RY25 - RY26
Reliability Safety Environment Capex programme	Add interphase spacers	Implemented
Reliability Safety Environment Capex programme	Inspectors and contractors have stock of guards to retrofit possum guards	Implemented
Reliability Safety Environment Capex programme	Accelerate rural automation programme, implementing sectionalisers, reducing affected customers on outage	Eleven additional sectionalisers installed, Phase three project in execution for a further six in RY25
Reliability Safety Environment Capex programme	Replace Ground mount oil switches	Four units installed, further ten by end of RY25
Reliability Safety Environment Capex programme	Maintain accelerated pole replacement programme replacing wooden poles, mainly with concrete, providing increased strength and less susceptible to deterioration	Ongoing
Remove hazards	Harden the network: various actions	Commence RY 25
Shorten restoration tail	Accelerate rural automation programme, implementing sectionalisers, reducing affected customers on outage	Eleven sectionalisers installed, Phase three project in execution for a further six in RY25.
Shorten restoration tail	Run pilot on fault passage indicators, reducing time in identifying physical fault location	Installation of first pilot units – Sept 2024. Further installations RY24-RY25 upon

Actions in response to PBA recommendations		
		success
Clarus risk management framework	Implement asset risk tool and process	Implemented Feb 2024
Improve Asset Management System	Improve standards, processes and procedures	RY25 – RY26
Implement special projects to reduce risk	Review and manage projects	RY25 – RY26
Vegetation survey to support risk assessment	Implement new vegetation strategy	Initiated RY25 and is ongoing

4.3 Worst-performing feeder analysis

We asked PBA to provide a deeper analysis of the worst-performing feeders, as shown in Table 8. The analysis was compiled from control room data for unplanned interruptions and geographic information system (GIS) asset records. The report provided a method to identify and prioritise preventative measures to reduce unplanned interruptions in future assessment periods.

Table 8: Worst performing feeders' statistics

Feeder	Unplanned SAIDI	No. 1 Cause	No. 2 Cause	No. 3 Cause	Access Constraints
Tauwhareparae	42.6	Slips	Wind	Equipment cross-arm	Tauwhareparae Road closure (blocked by slips)
Hicks Bay	28.6	Equipment Insulator	Equipment cross-arm	Out-of-zone Tree	Road restrictions in place (see Section 2.3, Screenshot 1)
Ruakituri	27.2	Wind	In-zone Tree	Equipment Conductor Binding	Very difficult terrain to patrol
Mata	27.2	Slips	Wind	Equipment Hardwood pole	Forestry Road – Dangerous after dark
Raupunga	23.5	Wind	Out-of-zone Tree	Out-of-zone Plantation	Very difficult terrain to patrol
Tiniroto	18.9	Slips	Out-of-zone Tree	Wind	Tiniroto Road closure (blocked by slips)
Inland	15.6	Slips	Equipment Conductor	Out-of-zone Plantation	Very difficult terrain to patrol
Wairoa Tahaenui	13.9	Equipment Insulator	Equipment Conductor	Equipment Softwood pole	Extensive flooding made access difficult and dangerous after dark
Mahia	12.9	Equipment Conductor	Equipment Insulator	Lightning	
Frasertown	12.6	Equipment Insulator	Equipment Conductor	Wind	

4.3.1 Adverse weather and environment were the most common cause of interruptions on our worst-performing feeders

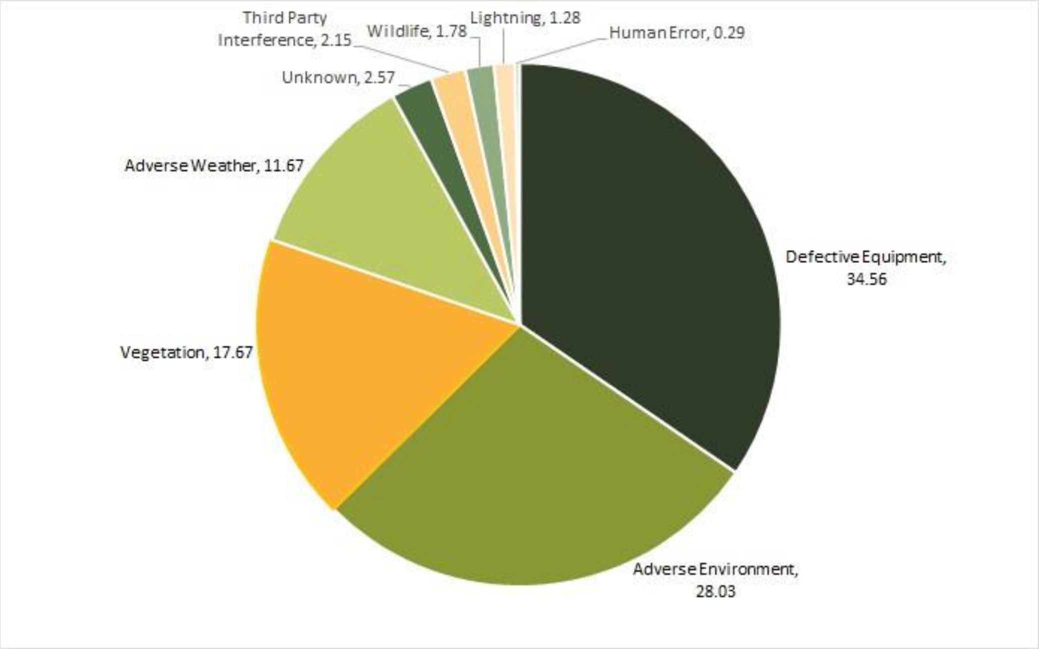
PBA analysis indicated that adverse weather combined with an adverse environment, primarily slips, was the largest contributor to interruptions on our worst-performing feeders. Graph 22 shows that adverse weather and environment accounted for 39.7% of unplanned SAIDI minutes on our worst-performing feeders.

Adverse weather and the environment significantly impacted our network during this assessment period, driving interruptions caused by defective equipment. Graph 23 shows the ten feeders most impacted by unplanned SAIDI caused by defective equipment.

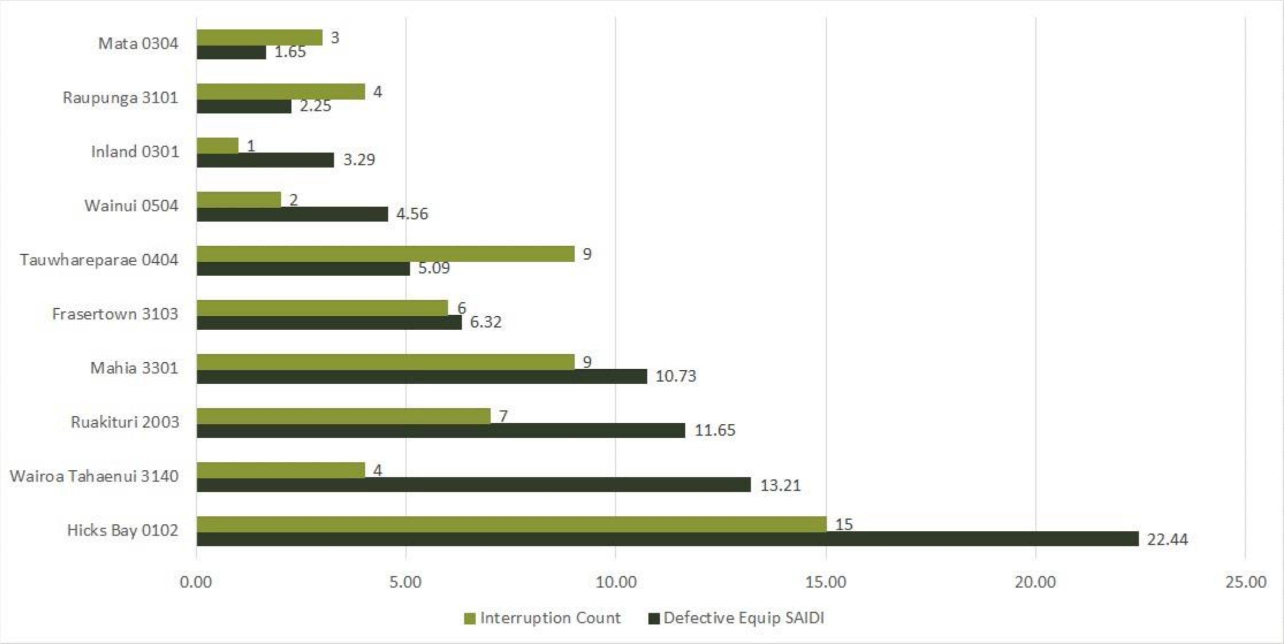
PBA found that, as shown in Graph 24, many unplanned interruptions caused by defective equipment were related to overhead conductors and supporting assets. Five out of ten of the impacted feeders are in rural or remote areas with difficult topography.

> "Currently, Firstlight Network does not have a specific inspection programme for overhead conductors as a separate asset class. Assets mounted on poles (referred to as "fittings" on the inspection form) are visually inspected under the pole inspection process. Pole inspection record samples viewed had commentary on conductor condition within the proximity to the pole."

Graph 22: Cause analysis on the worst-performing feeders



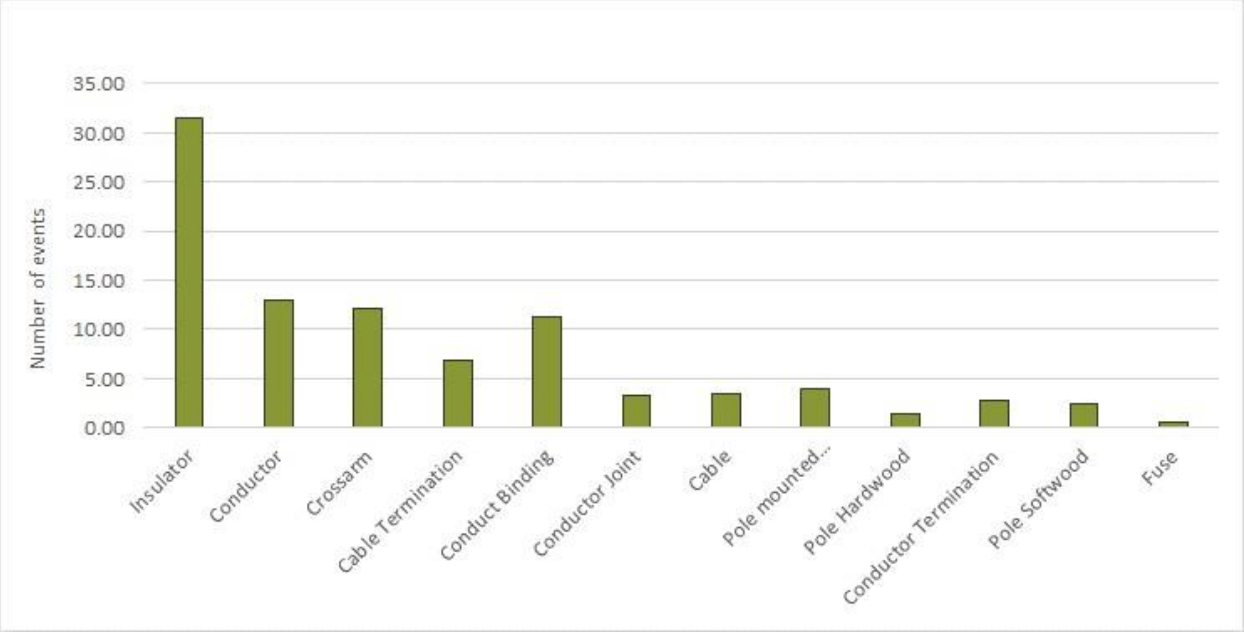
Graph 23: Defective equipment SAIDI and interruption count for the worst-performing feeders



PBA advised that without a specific inspection programme to check the condition of the spans, not just at support points or terminations, the asset renewal programme is likely based on an age assessment only, which has significant risks associated with it. PBA recommended that we build a conductor inspection programme around the following:

i. Asset type and age—conductor construction, i.e., strengthening cores, strands, insulation, and materials
ii. Environmental conditions, i.e., coastal, wind, temperature range/extremes
iii. Consequence of failure, i.e., public safety, livestock, property damage, including forest fire, and others.

Graph 24: Defective equipment breakdown for the ten worst-performing feeders

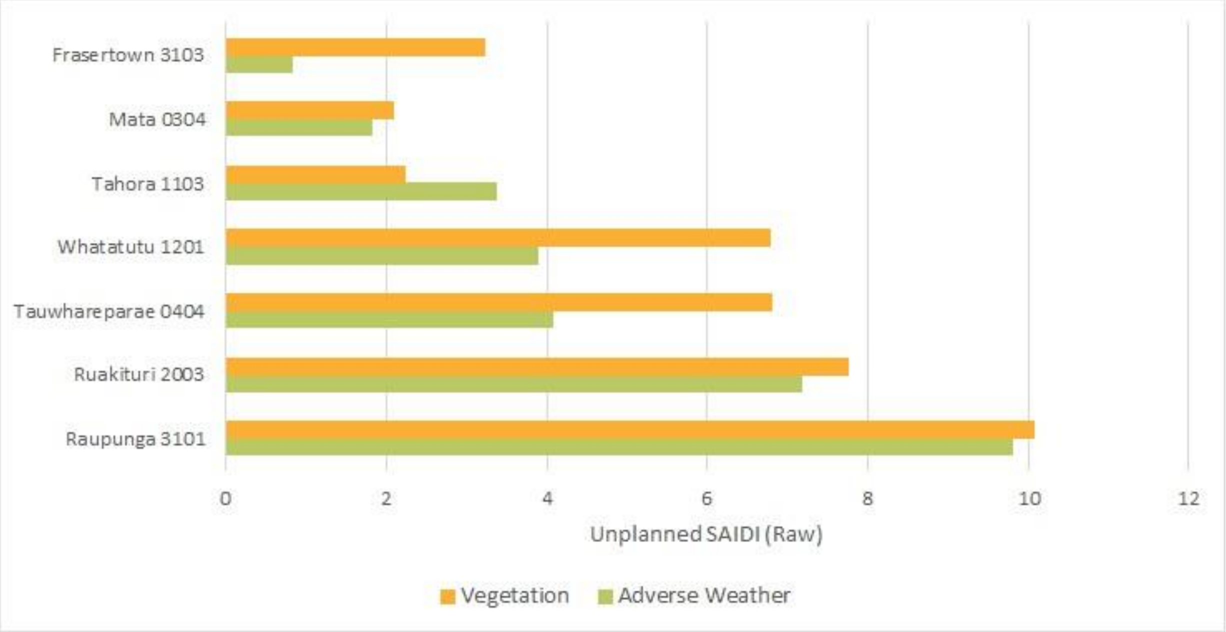


Single-strand steel conductors are among the highest-risk assets in the conductor asset class due to their age and likelihood of failure under wind loading and highly corrosive environments (coastal). Accordingly, PBA further recommended that we assess the likelihood of failure with the consequences and create a set of controls to mitigate the risk and reduce the residual risk to the lowest practical level.

4.3.2 There is a correlation between adverse weather and interruptions caused by vegetation

Graph 25 shows the correlation between unplanned SAIDI caused by Adverse weather and Vegetation.

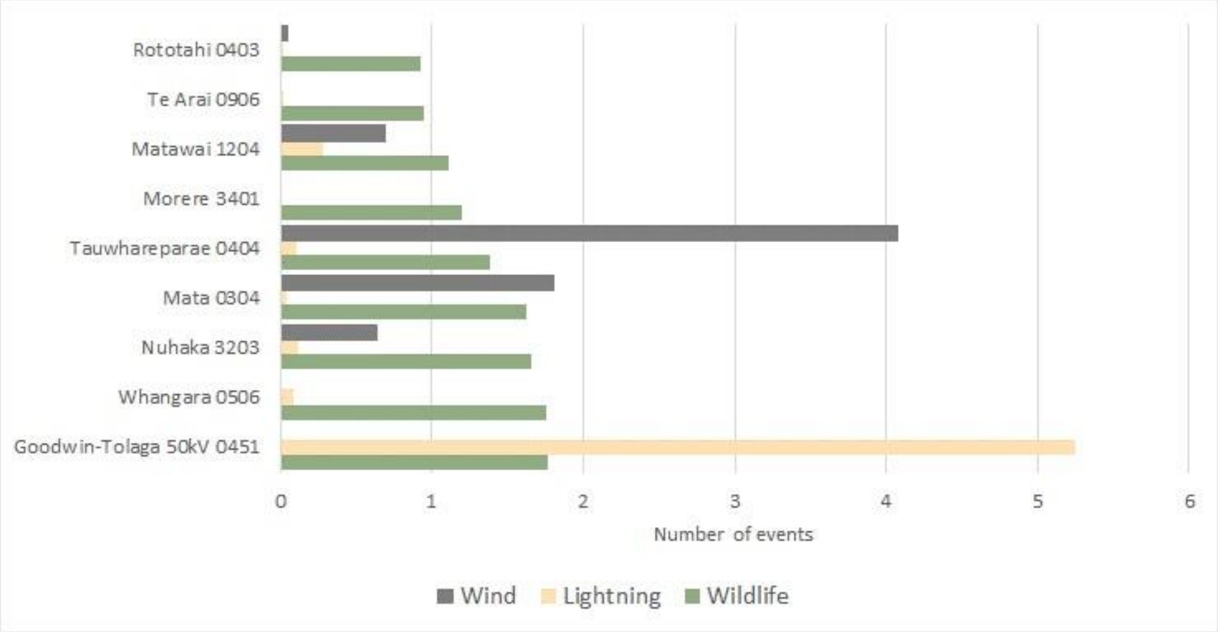
Graph 25: Correlation between adverse weather and vegetation caused interruptions



It demonstrates that the same feeders impacted by adverse weather also have vegetation control challenges. Making a case for an increase in inspection frequency and negotiating an increase in vegetation corridor width (clearance requirements) to protect the electrical network and minimise the residual risk of forest/vegetation fires caused by vegetation contacting electrical assets.

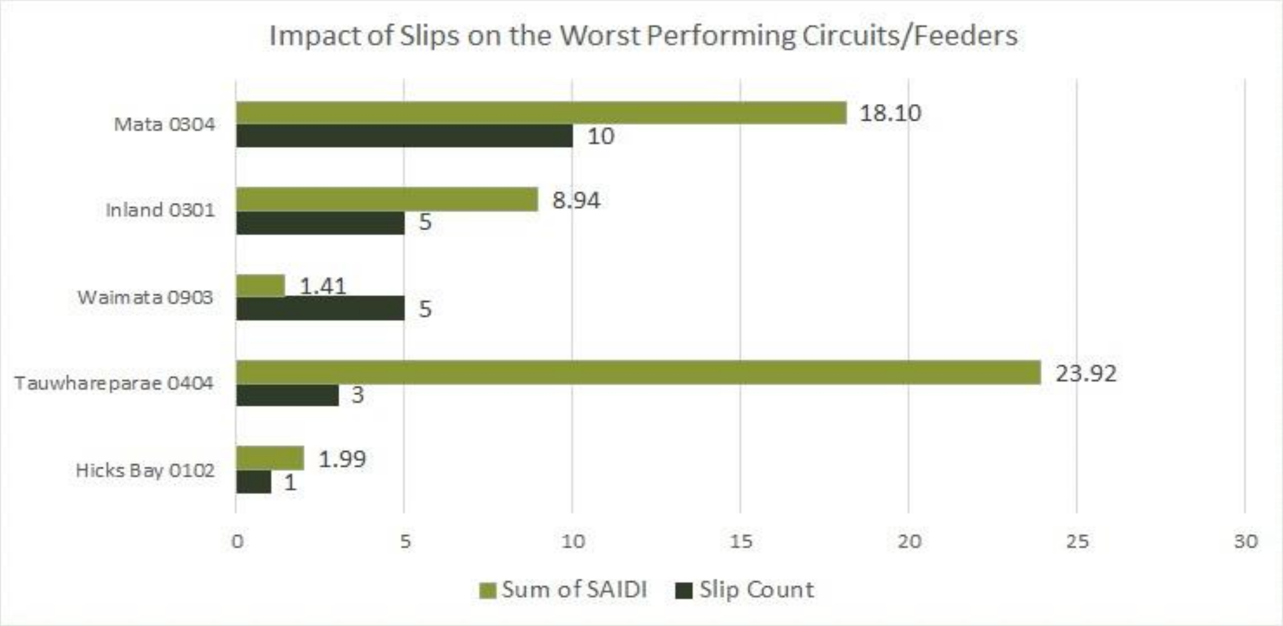
Graph 26 shows unplanned SAIDI caused by Wind, Lightning, and Wildlife. For the worst-performing feeders, 97.8% of unplanned SAIDI caused by wildlife was caused by bird strikes. There seems to be a correlation between feeders that experience adverse weather (wind) and Lightning events and the number of bird strikes on feeders.

Graph 26: Correlation between wind, lightning, and wildlife caused interruptions



Graph 27 shows that five out of ten of the worst-performing feeders (i.e., 50%) were hit with slips, causing unplanned SAIDI.

Graph 27: Impact of slips in the worst-performing circuits/feeder



Access constraints after cyclones Hale and Gabrielle in January 2023 delayed fault restoration. In some cases, the roads in the area remain closed or dangerous for after- dark fault crews to navigate. This has resulted in us postponing restoration work until the following day when it is safe to traverse the route.

4.4 Asset information review

PBA conducted an on-site review of available records and documentation to further understand our approach to asset management. PBA focused on our asset record, health and renewals.

4.4.1 Asset records are available and complete

We maintain asset records for the following asset classes —

Wood and concrete pole
110kV Steel structure
Conductor
Cable
Power Transformer
Zone substation switchgear
GM transformer
GM switchgear and RMU[13]
Overhead (OH) transformer
OH recloser, sectionaliser, load breach switch
OH fuse, link, Air Brake switch (ABS), Earth switch
Zone substation
Protection relay
SCADA
Communication
Other network asset
Generator

We asked PBA to review our asset data and determine if any data is missing and if there is anything we are not doing and should be doing. Reviewing evidence from both the Asset Management Application (IBM Maximo), Esri GIS, and our ODK (field inspection capture), PBA, found that a high percentage of asset attributes have been captured for most asset classes.

Given that our network consists of approximately 89% overhead infrastructure, PBA recommended capturing further details for overhead assets, including treating the following assets as a class in their own right:

- crossarms (child of poles/steel structures)
- insulators (a child of crossarms)—
  - high voltage insulators (33kV, 50kV, 60kV, etc.)[14]
  - medium voltage (11kV) subclass
- Surge arrestors/lightning protection
- Monitoring equipment
- Voltage regulators.

For example, treating crossarms as a child asset class to poles would be very beneficial and align with our peer EDBs. Maintaining records of the cross-arm assembly (including insulators and strain points, surge arrestors, etc.) can prompt further detailed asset condition monitoring. This will support closer monitoring and trend analysis of cross-arm and insulator performance, helping to drive renewal planning. Enabling us to review cross-arm configurations in high wind zones and support the planning of suitable solutions, such as —

- Line configuration (flat vs delta and spacing between phases) to prevent line clash.
- Stronger crossarms or alternate support structures for aerial bundled conductors (no risk of line clash with ABC, weight distribution and loading will impact in high winds).
- Spacing and asset configuration between voltage levels (e.g. 11kV and 400V conductors supported on the same pole).

PBA was of the view that surge arrestors/lighting protection could also be in an asset class of their own to ensure they are monitored and managed appropriately with their own testing, maintenance, and renewal programme. Monitoring equipment such as Power Quality, Voltage, line-fault indicators, etc., should also be treated as its own

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[13] Ring Main Unit (RMU)

[14] Noting, sub-transmission already captured.

asset class to ensure they are monitored and managed appropriately with their own testing, maintenance, and renewal programme.

To develop a Common Information Model for Asset Management, the Electricity Engineers Association (EEA) run the Asset Information Managers Forum in collaboration with the Commerce Commission, EDBs and Transpower. PBA recommended that we remain active in this community to gain access to force multipliers associated with forum-generated asset management knowledge and best practices tuned to the NZ regulatory environment.

There are currently two types of common information models (CIM) under review in New Zealand.

1. Electrical Model – e.g. the IEC 61970-301 standard vs alternatives. Focused on standardising the model used within the SCADA and ADMS environment.
2. The Asset Management CIM focused on best practice asset attribute management beyond the electrical model. This is considered in conjunction with ISO 55013, which guides the management of data assets. The EEA Asset Info Forum is currently focusing on this topic.

An electrical CIM is a prerequisite for our migration to an advanced distribution management system (ADMS).

4.4.2 Asset Attribute Data Quality 'good' with room for improvement

We maintain an Asset Information Issues Register to support our asset data management. The correction of issues generally occurs when they are discovered and are fixed through our business-as-usual processes. Our Computerised Maintenance Management System (CMMS) is updated as and when new information comes to hand. When reviewing the quality and accuracy of our asset data, PBA made the following observations —

- Because we have moved from paper-based inspections to a mobile application with a database back-end, not all assets have electronic inspection records in the digital systems (Maximo, GIS, Access Database).
- Gaps in conditions assessment details impact our ability to prioritise asset renewals.
- An estimated 40,000 conductor spans and 11,600 poles require digital inspection records to be either uploaded from paper records or captured by the new system.
- Reviewing Transformer Asset Attributes: 24 assets were missing their location code and/or location description. These assets are indicated as 'operating.'

PBA recommended that we create a strategy to address these weaknesses in our asset data as soon as practical to ensure the digital systems deliver the intended outcomes and value.

4.4.3 Asset inspections have been linear rather than targeted

PBA reviewed a sample of asset inspection templates for:

- distribution boxes
- distribution transformers
- poles
- switchgear
- earth testing

PBA found that our methodology to date has been linear rather than targeted, and we identified several opportunities for improvement, including the process around the recording, collation and granularity of information collected during inspection.

We intend to move to a targeted inspection approach based on asset risk profiling over the coming assessment periods.

4.4.4 Asset Health Assessment align with good industry practice

PBA determined that our current methodologies for asset health (including conductors) are determined using:

- the standardised method from the Distributed Network Operations method
- the asset characteristics (material, age, Inspection result, environment etc.) were compared against the maximum predicted life based on the published EEA Asset Health Indicator Guide
- inspection data is joined with the Esri data for built and natural environment information using an open data kit (ODK).

- the collective is fed into the Distributed Network Operations formula resulting in a deterioration value and a health value (H5 to H1).

PBA found that where inspection records are not available (paper records are not uploaded, or a digital record is yet to be captured), the calculation is a desktop estimation of asset health. For example, the conductor health rating is derived from a combination of altitude, coastal region and age characteristics with an MPL based on the conductor material type (copper conductors, aluminum conductor, steel reinforced conductor, all aluminum conductor, Steel or other).

4.4.5 Asset renewals are based on age, condition and environment

PBA found that we calculate asset health based on age, most recent inspection results, and environmental weighted conditions (altitude and proximity to coast). PBA made the following observations about our asset renewal practices.

- Inspection results of 11kV and LV assets are reviewed directly through the ODK digital system (app and access database). Upon review, where replacement is required, it is identified and assigned to a project.[15]
- HV scheduled inspection results provide feedback to a network planner, supporting decision-making for asset replacements. Actions, Work orders, and Risks are raised on this basis. We maintain an 'at-risk item register.'
- It is our policy that pole-mounted transformers have been run to failure based on risk assessments. We report any public safety concerns identified during inspection that would trigger a project to replace the asset.
- We maintain spreadsheets for pole inspections and health ratings that drive replacement selection and prioritisation. Operations and Engineering input determines which assets to replace as priorities based on overall risk and available budget; however, this is not a documented process. Cross arms and insulators are always replaced with the replacement pole at a minimum.
- A corrective work order process is in place for assets identified as defective or unsafe at any time, including during routine inspection.
- Our planned replacement H1-rated assets are prioritised by risk and budget allowance. This is reviewed regularly, with a re-prioritisation of assets identified as H1 and risk ranking.

4.4.6 Asset Management Maturity

PBA Consulting was asked to provide commentary on the overall condition of FNL's Network. PBA's opinions are based on the following evidence provided by FNL—

- Network performance statistics (SAIDI and SAIFI) for the last four years (RY21 to RY24)
- FNL's Asset Health assessments are provided in Section 7 of this report.
- A summary of inspections completed since 2019 (Section 7.4.1, Table 35).

FNL run a 5-year asset inspection cycle for most distribution assets (excluding substation assets which are inspected every 4 months). In the last 5 years, we have inspected approximately 46% of the distribution fleet (reference Section 7.4.1, Table 35).

Over the last 24 months, FNL have been hampered by the volume and scale of major events outside its control. This has inevitably had an impact on our inspection programmes. PBA believes this could also affect the weighting of Asset Health Indicators.

FNL use the DNO's Common Network Asset Indices Methodology and the EEA's Asset Health Indicator (AHI) guide to determine asset health. The health score is weighted as per the DNO and EEA reference documentation incorporating age, last inspection result and environment. FNL are working towards prioritising asset inspections based on Health Indicator scores to build confidence in this assessment methodology and the reference weighting of contributing data.

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[15] We intend to migrate to inspection records to IBM Maximo to integrate fully with the digital platform for asset management and reduce out digital footprint.

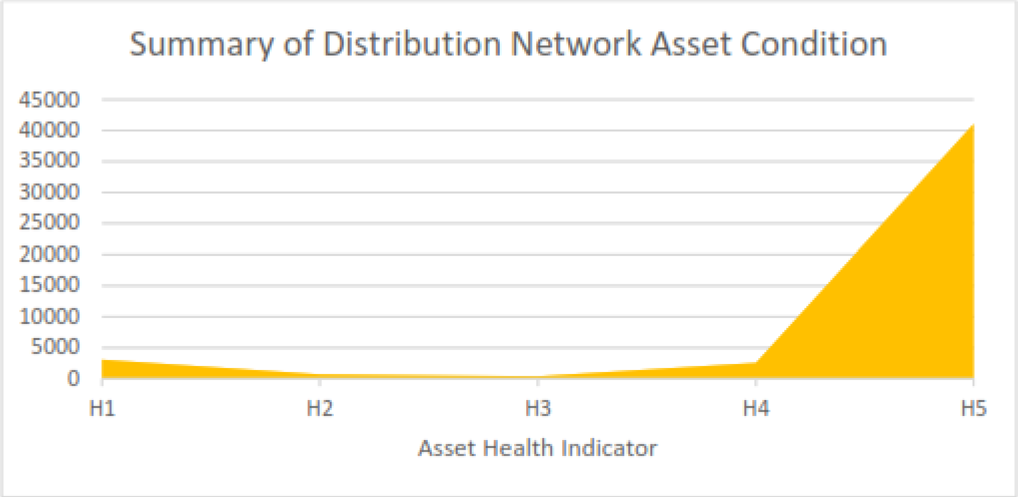
Table 9 presents a summary of our distribution asset condition.

Table 9: Asset Health summary

Count of Distribution Assets by Asset Health Category						
Asset Class	Unit	H1	H2	H3	H4	H5
Cables	Linear km	45.9	-	-	43.5	362.8
Conductors	Linear km	59.1	11.7	18.5	199.6	3,254.7
Transformers	No. of	85	120	64	206	3,257
Distribution Switchgear	No. of	214	120	79	541	3,935
Poles	No. of	2,638	417	218	1,549	30,261

Graph 28 indicates, based on our Asset Health methodology, that most of our network is in good health. it is expected that asset health scores will increase in accuracy.

Graph 28 Summary Distribution of Network Asset Health



Reviewing our asset records, PBA expected a broader range of conditions, with a larger number of assets scoring H3 and H4. As we complete our asset inspection programmes, asset health scores are expected to increase in accuracy.

Within the current assessment methodology, PBA noted that the following asset types have an elevated risk of failure.

- Single Strand Steel Conductors—These assets are used in rural locations, often across difficult terrain. Close inspection is required to detect early signs of failure, and a specific strategy is required for single-core steel assets.
- Distribution Switchgear—Failure of switches will cause significant SAIDI due to the mode of failure and requirement to de-energize to replace the assets.
- Wooden Poles—A significant number of wooden poles have been scored as H1. PBA notes that we have introduced an accelerated replacement programme to manage this risk productively.

The network has a significant number of radial circuits with very few economic options to improve protection paths. PBA's assessment indicates that our network needs a significant increase in sectionalisation to limit the manual switching zones around faults. The improvement in protection will, over time, support a reduction in SAIDI while FNL develop network and asset fleet strategies to support longer-term improvements.

4.5 Reports undertaken in the preceding three assessment periods

During the last assessment period (i.e., 31 March 2023), we exceeded our unplanned SAIDI limits and published our Unplanned Interruptions Report for the assessment period ended 31 March 2023 report (the 2023 Report). In that report, we summarised the findings of —

- the Cyclone Recovery Taskforce, which reviewed the readiness, response and recovery activities following Cyclone Gabrielle in February 2023
- our network ariel reviews post-Cyclone Gabrielle, which we undertook to assess the initial impacts of Cyclone Gabrielle on our network with a strong focus on our distribution lines

- Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, by Energia (the Energia report).

4.5.1 Findings of the Cyclone Recovery Taskforce

The Cyclone Recovery Taskforce was established to coordinate and align the economic and infrastructure recovery efforts in regions affected by the North Island extreme weather events (cyclones Hale in January 2023 and Gabrielle). Its purpose was to ensure that locals, iwi, and businesses made decisions. The Taskforce advised inisters on prioritising and sequencing needs for each region and assured that those needs were being met.[16]

The task force completed its review in early July 2023, and we have included a copy of its findings in Appendix A of our 2023 Report.[17]

Post significant events, Firstlight Network facilitate a structured debrief to ensure continuous improvement and key learning outcomes are identified and achieved. It is envisaged that response times to recover the Network and provide further resilience will increase as process and procedures become embedded.

4.5.2 Network aerial review post Cyclone Gabrielle

As reported in our 2023 Report, to assess Cyclone Gabrielle's initial impacts on our network, we undertook an aerial review of the impacted areas, with a strong focus on the state of our distribution lines.[18]

Using this approach in the days following Cyclone Gabrielle, we inspected 13% of our distribution lines (i.e., 309 km of our 2,388 km 11kv conductor) and 12% of our poles (i.e., 3,181 of our 25,485 11kv poles). The maps in Screenshot 4 and Screenshot 5 show the worst areas impacted by Cyclone Gabrielle and reveal the scale of the impact on our Network.

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[16] The taskforce was wound down in February 2024, with responsibilities transferred to the Cyclone Recovery Unit.

[17] Firstlight Network, Unplanned Interruptions Report for the assessment period ended 31 March 2023, Appendix A— Response to the Cyclone Recovery Taskforce—Cyclone Gabrielle, page 61.

[18] Firstlight Network, Unplanned Interruptions Report for the assessment period ended 31 March 2023, Figure 5, page 17.

Screenshot 4: Map showing pole inspections arising from ariel review following Cyclone Gabrielle

This map shows inspections of Poles on Distribution Network since GAB(14/02/2023).
The areas shown were specically targeted after cyclone Gabrielle to help understand damage and vulnerabilty.
Total Inspections: 2,165
Marked for Replacement: 174
Marked for Maintenance: 176

Screenshot 5: Map showing transformer inspections arising from ariel review following Cyclone Gabrielle

This map shows inspections of Transformers(536),
Earth Testing of TRansfomrers(564), Found Defects(317) and
Inspections opf Switchgear on the Distribution Netowrk Jan 2020- GAB914/02/2023)

We inspected a sample of feeders and assessed the damage, e.g., slips near poles, leaning poles, and trees that had an increased probability of contacting our lines (i.e., trees made unstable by high winds that were at an increased risk of falling into our lines post the event).

Following Cyclone Gabrielle and based on the information collected, we updated our routine maintenance programs to reflect the state of our network post-Cyclone Gabrielle. Table 10 includes a summary of the results of our network arial review post-Cyclone Gabrielle and plans to resolve the issues identified.

Table 10: Summary table of the results from the network aerial review post-Cyclone Gabrielle

Area	Distance (km)	Poles	Issues caused by Cyclone Gabrielle	Plans to resolve
Te Araroa Eastcape	14.6	194	Nil	Routine maintenance
Tikitiki - Eastcape	29.5	334	Slips three poles at risk	Relocate the three poles
Waiomatatini	4.8	59	Nil	Routine maintenance
Kopuaroa - Mangahauini	73.0	807	One leaning tree, one slip	Remove the tree urgently. Relocate the
Tauwhareparae	44.4	384	One slip near the pole	Relocate the pole
Ngatapa - Pehiri	68.5	677	Nil	Nil
Tiniroto Loop	44.9	429	Slips near 2poles	Relocate both poles
Waingake	2.9	297	One cracked pole, slip and trees near the pole	Replace cracked poles and cut trees
Total	**309km**	**3,181**	**11 issues**	
Percentage of total asset class surveyed	*13%*	*12%*		

4.5.3 Electricity Distribution Sector Cyclone Gabrielle Review

As discussed in our 2023 Report, in July 2023, Energia released its Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review.

The Energia report is an independent assessment of the appropriateness of the electricity distribution sector's risk reduction, readiness, and response to Cyclone Gabrielle. The assessment was based on an extensive information-gathering exercise from ten EDBs impacted by the cyclone, including Firstlight Network.[19]

Energia determined that the largest cause of outages for EDBs was out-of-zone tree damage. The second largest cause was high winds causing damage to overhead lines, followed by flooding damaging assets (including substations), as shown in Graph 29.[20]

Latent damage to assets could likely be discovered after adverse weather and environmental events such as those found by Energia in its July 2023 report. In its review during this assessment period, PBA recommended that feeders/circuits in locations impacted by high winds and flooding be inspected more frequently until confident that any latent damage is discovered where practical. Insulation testing of cables and inspection of ground mount asset terminations (looking for early signs of corrosion).

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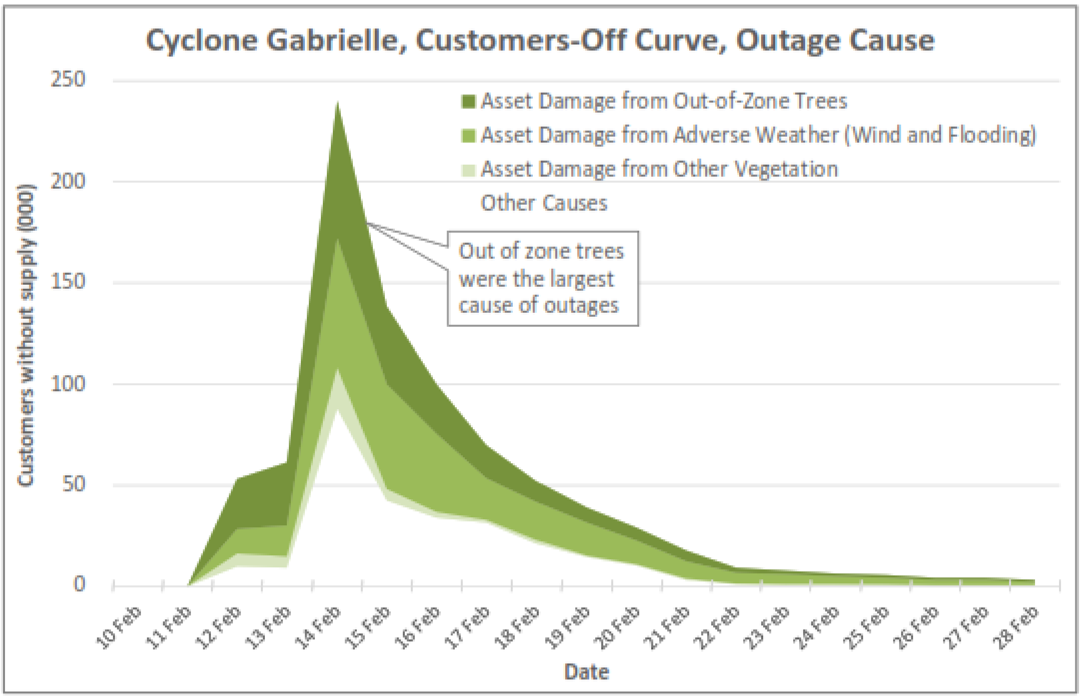
[19] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 2.

[20] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 42.

Graph 29: Material causes of customer outages extract from the energia report[21]



Out-of-zone trees contributed significantly to outage during the 2023 assessment period

Trees pose a significant hazard to distribution assets; strong winds increase this risk by toppling trees and breaking branches. The Tree Regulations are intended to give EDBs mandated powers to address the risk from trees. However, as discussed in Section 2.4 above, EDBs are not mandated to trim or remove trees outside the growth zone (i.e., out-of-zone trees). EDBs must negotiate with the tree owner to trim or remove trees at risk of damaging assets.

Engeria found that only 16% of outages during Cyclone Gabrielle were caused by in- zone vegetation, indicating that EDBs are—

> '...doing a reasonable job managing vegetation within the rules available to them.[22]

Out-of-zone trees continue to be a point of frustration. The Tree Regulations give tree owners discretion regarding trimming or removing out-of-zone trees. The quality standards make the EDBs responsible for a tree damaging their assets and causing an outage, whether that tree is in or out-of-zone. The asymmetry between the tree owner's discretion to trim or remove trees and the EDBs responsibility for any tree-damaging assets makes out-of-zone trees an ongoing performance issue unless there is a legislative or regulatory change.

Cyclonic winds exceeding our design specifications extensively damaged lines

Cyclone Gabrielle formed on 5 February 2023 and hit the North Island as a Category 2 equivalent tropical cyclone (1-minute sustained wind speeds of 165 km/h). Our lines are designed to withstand high winds, as speeds of 110 km/h are not unheard of in Hawke's Bay. Our lines are not, however, designed to withstand cyclonic wind speeds over a sustained period. Based on the findings of its independent review, Energia found that—

> 'The wind speeds experienced during Cyclone Gabrielle were very close to current design limits (for the affected regions), and we believe that it is highly likely that the windspeeds in certain locations were above the design limits for older (pre-2000) poles and that this was the primary causes of failures.[23]

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[21] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 2.
[22] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 43
[23] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 2.

Extensive flooding in the area caused widespread damage to roading, making access challenging

Energia found that flooding was the third largest cause of outages from Cyclone Gabrielle, with flood damage being 'most significant in Hawkes Bay and Tairāwhiti', interrupting over 60,000 customers.[24] The flooding and slips caused extensive damage to roading. Several bridges were washed away along arterial routes, requiring us to take alternative routes, including back roads, which was often the long way around. EDBs' responses to Cyclone Gabrielle were appropriate, but there is room for improvement

Overall, Energia considered that EDBs' responses to Cyclone Gabrielle were appropriate.

> *'In our opinion, the impacted EDBs have appropriate emergency management plans that can respond to weather events. We also believe that all impacted EDBs took the watches and warnings seriously and prepared accordingly. Only with hindsight could we be critical of the preparation efforts.*[25]
>
> *[And]*
>
> *'Our overall comment is that EDBs did an appropriate job restoring supply and competently responded to a wide range of issues. We believe there are incremental improvements that can be made that will enhance restoration and improvement communication with customers.*[26]

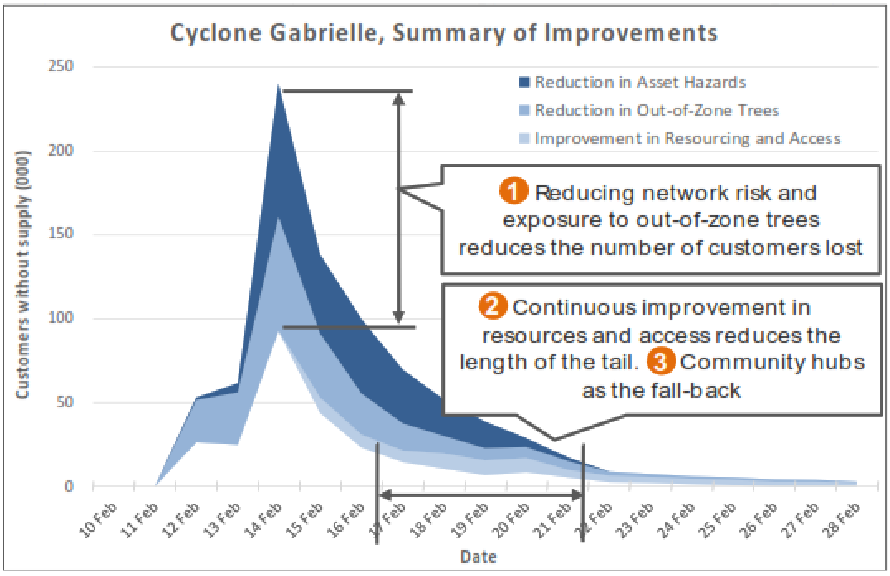
As outlined in our 2023 Report, Energia was of the view that we had identified hazards, understood vulnerabilities, and progressed mitigations appropriately.

We recognised that there was room for us to improve. Energia believes that a combination of strategies is needed to improve resilience, focusing on reducing risk. Energia identified three key activities:

1. Remove hazards—by addressing the risk posed by out-of-zone trees, upgrading critical assets vulnerable to hazards, and incrementally hardening the network as assets are renewed.
2. Continuously improve resourcing and access—improving resourcing and contingency plans helps shorten the restoration tail.
3. Develop secure community hubs — for the hard-to-restore customers (due to topography, vulnerabilities in roading networks, and types of damage that can occur); community hubs provide a secure standalone electricity supply while restoration or alternative can be brought online, offering an important but temporary safety net.

Graph 30 shows how developing a multi-strategic approach using these three key areas could improve our resilience.

Graph 30: EDB resilience improvement strategy, extracted from the Energia report



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[24] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 3.
[25] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 3.
[26] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 3

A cross functional team has been established to address reliability improvement. The prioritised action plan incorporates recommendations from PBA, Energia and actions identified from internal analysis. Examples of these actions are as shown in table 11

Table 11 Energia recommendation response

Actions in response to Energia recommendations		
Recommendation	Action	Status
Remove hazards : Out of zone trees	Implement new vegetation strategy	Improved inspection procedures in place.
Remove hazards: critical assets	Replace Ground mount oil switches	Four units installed, further ten by end of RY25
Remove hazards: critical assets	Maintain accelerated pole replacement programme, replacing wooden poles mainly with concrete, providing increased strength and less susceptible to deterioration	Ongoing
Remove hazards	Harden the network: various actions	Commence RY 25
Improve resourcing	Fault contractors pro-actively located in remote locations prior to recognized weather events	Implemented
Improve resourcing	Second tier contractors engaged to respond to significant events	Implemented
Shorten restoration tail	Accelerate rural automation programme, implementing sectionalisers, reducing affected customers on outage	Eleven sectionalisers installed, Phase three project in execution for a further six in RY25.
Shorten restoration tail	Run pilot on fault passage indicators, reducing time in identifying physical fault location.	Installation of first pilot units – Sept 2024. Further installations RY24-RY25 upon success
Secure community hubs	Increased backup communications	Implemented
Secure community hubs	Additional generator fuel handling resources	Implemented
Secure community hubs	Continue with programme for remote generation to increase security	Ongoing

5. Major Events

5.1 Overview

This regulatory year, our network had nine SAIDI and three unplanned SAIFI major events.

5.2 Summary of Unplanned SAIDI Major Events

Our Unplanned SAIDI major events are shown in Table 12. Summaries of the investigations into our unplanned SAIDI major events are included in Section 5.4 to 5.8.

Table 12: Unplanned SAIDI major events RY24

Unplanned SAIDI major events RY24			
Start	End	Pre-normalised unplanned SAIDI	Normalised unplanned SAIDI
21/06/2023 16:00	25/06/2023 9:00	80.3991	6.5476
26/06/2023 1:00	27/06/2023 15:30	15.8155	2.6955
1/09/2023 3:30	3/09/2023 2:30	13.3983	0.3197
25/11/2023 1:00	27/11/2023 0:00	27.5635	3.1523
1/02/2024 22:00	3/02/2024 23:00	36.2406	4.4752
	Total	**173.417**	**17.190**

5.3 Our risk-based approach to restoration follows good industry practices

We accept that there is an expectation that we will adapt our asset management practices, taking account of the change in land use from farming in the 1960s to forestry in the 1980s. In June 2021, we changed our fault restoration to a risk-based approach whereby we patrolled the line significantly more before reclosing. Before restoring supply, we patrol the line to ascertain and establish line damage. For example, it is common in storms for a tree to come into contact with our line at one location and the branches of another tree to cause damage at another unrelated location, resulting in multiple points of damage to our lines. Patrolling empowers us to identify the multiple points of damage and restore them safely.

Our risk-based approach aligns with the Electricity Engineers Association (EEA) Guides and industry standards. We are comfortable that while patrolling under a risk-based approach adds time until restoration, the approach aligns with good industry practices.

5.4 SAIDI Major Events – 21 June to 25 Jun 2023

Table 13: Details of SAIDI Major event – 21 June to 25 June 2023

Details of SAIDI Major event 21 June to 25 June 2023								
Cause	Start		End		RAW SAIDI value	Normalised SAIDI value	Contribution	Main equipment involved
	Date	Time	Date	Time				
Adverse Environment	20/06/2023	12:50 PM	21/06/2023	4:55 PM	0.085	0.007	0%	Distribution lines
Adverse Environment	24/06/2023	11:45 AM	29/06/2023	5:21 PM	2.904	0.236	4%	Distribution lines
Unknown cause	22/06/2023	12:46 AM	22/06/2023	8:12 AM	0.601	0.049	1%	Distribution lines
Adverse Environment	23/06/2023	9:45 AM	23/06/2023	10:20 AM	0.300	0.024	0%	Distribution lines
Adverse Environment	23/06/2023	8:25 PM	25/06/2023	1:50 PM	0.574	0.047	1%	Distribution lines
Adverse Weather	24/06/2023	12:10 PM	24/06/2023	1:31 PM	0.022	0.002	0%	Distribution lines
Lightning	23/06/2023	9:10 AM	23/06/2023	10:02 AM	0.455	0.037	1%	Distribution lines
Adverse Environment	24/06/2023	7:39 PM	24/06/2023	8:05 PM	2.987	0.243	4%	Distribution lines
Adverse Environment	24/06/2023	7:15 AM	24/06/2023	8:03 AM	1.169	0.095	1%	Distribution lines
Defective Equipment	24/06/2023	4:26 AM	24/06/2023	10:38 AM	0.382	0.031	0%	Distribution lines
Adverse Environment	24/06/2023	9:41 AM	6/07/2023	6:00 PM	8.220	0.669	10%	Distribution lines
Adverse Environment	22/06/2023	8:41 AM	22/06/2023	1:20 PM	21.234	1.729	26%	Distribution lines
Defective Equipment	22/06/2023	4:11 PM	22/06/2023	5:15 PM	0.914	0.074	1%	Distribution lines
Adverse Environment	23/06/2023	2:37 PM	23/06/2023	2:58 PM	1.129	0.092	1%	Distribution lines
Adverse Environment	22/06/2023	3:40 PM	22/06/2023	5:20 PM	7.865	0.641	10%	Distribution lines
Adverse Environment	22/06/2023	1:30 PM	22/06/2023	1:48 PM	1.012	0.082	1%	Distribution lines
Adverse Weather	24/06/2023	10:26 PM	24/06/2023	10:43 PM	0.968	0.079	1%	Subtransmission lines
Vegetation	24/06/2023	12:50 PM	24/06/2023	4:00 PM	1.172	0.095	1%	Distribution lines
Adverse Environment	22/06/2023	1:23 PM	22/06/2023	2:01 PM	0.361	0.029	0%	Distribution lines
Lightning	22/06/2023	8:31 AM	22/06/2023	10:03 AM	1.398	0.114	2%	Distribution lines
Adverse Environment	23/06/2023	2:18 AM	23/06/2023	9:06 AM	8.720	0.710	11%	Distribution lines
Adverse Environment	22/06/2023	6:19 PM	24/06/2023	11:44 AM	14.952	1.218	19%	Distribution lines
Vegetation	23/06/2023	8:07 PM	23/06/2023	8:25 PM	2.225	0.181	3%	Distribution lines
Adverse Environment	25/06/2023	6:00 AM	25/06/2023	10:30 AM	0.042	0.003	0%	Distribution lines

Adverse Weather	22/06/2023	8:00 AM	22/06/2023	12:30 PM	0.010	0.001	0%	Distribution lines
Unknown cause	24/06/2023	10:57 AM	24/06/2023	2:30 PM	0.386	0.031	0%	Distribution lines
Adverse Weather	22/06/2023	6:32 PM	23/06/2023	5:00 PM	0.312	0.025	0%	Distribution lines
				Total	**80.399**	**6.548**		

Table 14: Major Event Details 21 June to 25 June

SAIDI Major Event Information	
Cause	Multiple slips took down poles/conductor and trees
Start Date	21/06/2023
Start Time	4:00 pm
End Date	25/06/2023
End Time	9:00 am
SAIDI value of major event before replacement	80.399
SAIDI value of major event	6.548
Location of SAIDI major event	Tauwhareparae, Mata road, Waimata road, Pehiri road and Bushy Knoll road
Main equipment involved in SAIDI major event	11kV Lines, Poles and Conductor
How Firstlight Network responded to the event	On June 22, 2023, downed wires on Tauwhareparae Road caused recloser G367 to isolate 49 ICPs, with recloser G367 tripping again later due to additional slips. Generators were installed, but access issues delayed full restoration until June 30. On Mata Road, recloser H341 tripped the same day, affecting 64 ICPs, with slips causing damage and leaving nine ICPs off until June 4. On Waimata Road, a fault was addressed with a generator to restore power beyond the fault. On Pehiri Road, access issues limited fault response and restoration. On Bushy Knoll Road, initial access problems and limited helicopter access delayed restoration, which was completed seven days later when vehicle access was restored.
Mitigating factors that may have prevented or minimised the major event	Three slips on Tauwhareparae Road cut off the main access, and slips on Mata Road and Waimata Road further delayed access. Mata Road's slips caused restoration delays, with the Ihungia link out due to Cyclone Gabrielle. Waimata Road had a spur line fault and restricted access due to a slip. Pehiri Road's fault occurred at night, but severe weather delayed attendance until daybreak, with multiple slips blocking access and taking out poles. Bushy Knoll Road experienced a major rain event, causing slips that brought down poles and damaged a bridge, restricting access.

Steps taken to mitigate the risk of future major events	Significant efforts have been made across several key areas to improve infrastructure and reliability. In Tauwhareparae, significant realignments have been made to the feeder in vulnerable locations, and permanent generation options are being investigated. On Mata Road, the Ihungia link has been restored and upgraded, enhancing backfeeding capability. Additionally, two remote switches past recloser H341 have been upgraded to sectionalisers, which will help with automatic fault isolation. For Waimata Road, an alternative link between Te Wera Road and Tahora Road is under investigation. On Pehiri Road, FNL is embarking on a project to install sectionalisers on remote and large tapoffs. However, Bushy Knoll Road faces access issues beyond our control.

5.5 SAIDI Major Events – 26 June to 27 June 2023

Table 15: Details of SAIDI Major event – 26 June to 27 June 2023

Details of SAIDI Major event 26 June to 27 June 2023								
Cause	Start		End		RAW SAIDI value	Normalised SAIDI value	Contribution	Main equipment involved
	Date	Time	Date	Time				
Adverse Environment	24/06/2023	11:45 AM	29/06/2023	5:21 PM	0.898	0.153	6%	Distribution lines
Adverse Environment	27/06/2023	3:25 AM	27/06/2023	5:04 AM	0.434	0.074	3%	Distribution lines
Unknown cause	26/06/2023	10:05 PM	26/06/2023	10:54 PM	1.821	0.310	12%	Distribution lines
Defective Equipment	27/06/2023	12:00 PM	27/06/2023	12:45 PM	0.028	0.005	0%	Distribution lines
Adverse Weather	27/06/2023	1:02 AM	27/06/2023	1:03 AM	1.176	0.200	7%	Distribution lines
Adverse Environment	27/06/2023	12:46 AM	27/06/2023	5:43 PM	2.124	0.362	13%	Distribution lines
Defective Equipment	27/06/2023	12:50 PM	28/06/2023	12:56 PM	0.334	0.057	2%	Distribution lines
Defective Equipment	27/06/2023	10:36 AM	27/06/2023	10:55 AM	0.443	0.076	3%	Distribution lines
Adverse Environment	21/06/2023	1:05 PM	21/06/2023	2:46 PM	0.094	0.016	1%	Distribution lines
Adverse Environment	22/06/2023	6:19 PM	24/06/2023	11:44 AM	0.427	0.073	3%	Distribution lines
Vegetation	23/06/2023	8:07 PM	23/06/2023	8:25 PM	0.169	0.029	1%	Distribution lines
Adverse Environment	26/06/2023	4:19 PM	26/06/2023	6:49 PM	7.762	1.323	49%	Distribution lines
Unknown cause	26/06/2023	7:55 AM	26/06/2023	12:08 PM	0.088	0.015	1%	Distribution lines
Unknown cause	26/06/2023	9:04 AM	26/06/2023	10:30 AM	0.010	0.002	0%	Distribution lines
Lightning	27/06/2023	1:09 PM	27/06/2023	4:30 PM	0.008	0.001	0%	Distribution lines
				Total	**15.816**	**2.696**		

Table 16: Major Event Details 26 June to 27 June

SAIDI Major Event Information	
Cause	The pole that had slipped needed to be removed and relocated.
Start Date	26/06/2023
Start Time	1:00 am
End Date	27/06/2023
End Time	3:30 pm
SAIDI value of major event before replacement	15.8155
SAIDI value of major event	2.696
Location of SAIDI major event	Tokomaru Bay
Main equipment involved in SAIDI major event	11kV Lines and poles
How Firstlight Network responded to the event	The lines initially floated while maintaining clearance, and a larger pole was installed in stable ground.
Mitigating factors that may have prevented or minimised the major event	Simultaneous fault on another feeder limited back feed options.
Steps taken to mitigate the risk of future major events	Reviewing network configuration and alignment of lines over unstable ground.

5.6 SAIDI Major Events – 1 September to 3 September 2023

Table 17: Details of SAIDI Major event – 1 September to 3 September 2023

Details of SAIDI Major event 1 September to 3 September 2023								
Cause	Start		End		RAW SAIDI value	Normalised SAIDI value	Contribution	Main equipment involved
	Date	Time	Date	Time				
Unknown Cause	02/09/2023	3:24 AM	2/09/2023	5:03 AM	13.351	0.319	100%	Subtransmission lines
Unknown Cause	02/09/2023	6:55 PM	02/09/2023	7:20 PM	0.014	0.000	0%	Distribution lines
Unknown Cause	2/09/2023	12:00 PM	2/09/2023	1:00 pm	0.002	0.000	0%	Distribution lines
Wildlife	1/09/2023	7:00 AM	1/09/2023	8:00 AM	0.030	0.001	0%	Distribution lines
				Total	**13.3983**	**0.3197**		

Table 18: Major Event Details 1 September to 3 September 2023

SAIDI Major Event Information	
Cause	A 50kV trip with a 2000 AMP overcurrent fault was detected, but the fault could not be found.
Start Date	1/09/2023
Start Time	3:30 am
End Date	3/09/2023
End Time	2:30 am
SAIDI value of major event before replacement	13.3983
SAIDI value of major event	0.3197
Location of SAIDI major event	Gisborne Sub to Makaraka Sub
Main equipment involved in SAIDI major event	The 50kV Line Gis-Makaraka starts at CB182 at Gisborne Sub, traverses across country to Ormond Road, then down Cameron Road, across the cemetery, and ends at Makaraka Sub, covering a line length of 7 km. This feeder supplies Makaraka Sub (2830 customers), which in turn supplies JNL Sub (1 customer) and Parkinson Sub (1842 customers). The line tripped on an overcurrent earth fault with an indication of 2000 amps fault current on Saturday, September 2, at 3:24 a.m.
How Firstlight Network responded to the event	As there is additional protection at Makaraka Sub and the line is part of a ring, the controller performed remote switching to restore power to JNL Sub and Parkinson Sub (1,843 ICPs) at 4:00 p.m. A faultsman was dispatched to Makaraka Sub, which is 10 minutes out of town. The tripped line was isolated at Makaraka Sub and backfed from Parkinson Sub, bringing on the remaining 2,830 ICPs at 5:03 a.m. The line was then patrolled, but no fault cause was found.
Mitigating factors that may have prevented or minimised the major event	FNL does not operate a 24/7 manned control room. After hours and on weekends, coverage is provided by an after-hours Duty Controller who works from home. In this instance, the Duty Controller had to come into the office Control Room to carry out the switching.
Steps taken to mitigate the risk of future major events	This feeder is patrolled as part of the sub-transmission maintenance cycle. Following Cyclone Gabrielle, slips brought trees close to the line, though they were not the cause of this fault. These offending trees have been removed. We are currently proposing the installation of a new 50/11kV substation at the hospital to provide better protection and quicker restoration switching. Additionally, fault indicators are being installed at Makaraka Sub.

5.7 SAIDI Major Events – 25 November to 27 November 2023

Table 19: Details of SAIDI Major event – 25 November to 27 November 2023

Details of SAIDI Major event 25 November to 27 November 2023								
Cause	Start		End		RAW SAIDI value	Normalised SAIDI value	Contribution	Main equipment involved
	Date	Time	Date	Time				
Defective Equipment	25/11/2023	11:48 PM	26/11/2023	6:13 PM	2.9969	0.3427	11%	Distribution lines
Defective Equipment	26/11/2023	1:45 AM	26/11/2023	5:51 PM	3.3989	0.3887	12%	Distribution lines
Vegetation	26/11/2023	2:24 AM	26/11/2023	6:02 PM	3.6191	0.4139	13%	Distribution lines
Vegetation	26/11/2023	6:31 PM	27/11/2023	2:55 PM	0.0472	0.0054	0%	Distribution lines
Vegetation	26/11/2023	6:43 AM	27/11/2023	12:59 PM	1.2453	0.1424	5%	Distribution lines
Adverse Weather	25/11/2023	11:24 AM	25/11/2023	6:15 PM	4.3462	0.4971	16%	Distribution lines
Adverse Environment	26/11/2023	7:48 AM	28/11/2023	12:30 PM	1.0798	0.1235	4%	Distribution lines
Adverse Environment	25/11/2023	5:26 AM	28/11/2023	2:29 PM	1.8385	0.2103	7%	Distribution lines
Vegetation	26/11/2023	11:58 AM	28/11/2023	1:18 PM	0.4649	0.0532	2%	Distribution lines
Vegetation	26/11/2023	12:45 AM	26/11/2023	4:40 PM	8.4539	0.9668	31%	Distribution lines
Unknown cause	25/11/2023	10:45 PM	26/11/2023	9:39 AM	0.0252	0.0029	0%	Subtransmission lines
Vegetation	25/11/2023	6:04 PM	26/11/2023	12:30 PM	0.0426	0.0049	0%	Distribution lines
Lightning	25/11/2023	2:34 PM	25/11/2023	3:00 PM	0.0050	0.0006	0%	Distribution lines
				Total	**27.5635**	**3.1523**		

Table 20: Major Event Details 25 November to 27 November 2023

SAIDI Major Event Information	
Cause	Broke insulator (PIN) tracking arm burnt, faulty sectionaliser and tree through line.
Start Date	25/11/2023
Start Time	1:00 am
End Date	27/11/2023
End Time	12:00 am
SAIDI value of major event before replacement	27.5635
SAIDI value of major event	3.1523
Location of SAIDI major event	Te Reinga, Arakihi road, Waihua and Caves Road

Main equipment involved in SAIDI major event	Broke insulator (PIN) tracking arm burnt, faulty sectionaliser and tree through line.
How Firstlight Network responded to the event	At Te Reinga, a fault at 1:45 a.m. indicated a broken conductor; patrols were delayed due to terrain and a destroyed bridge, with power restored by 10:15 a.m., and a cracked insulator fixed by 5:51 p.m. On Arakihi Road, adverse weather caused multiple feeder faults; a tree through the lines was reported and removed, with power restored by 6:02 p.m. Waihua experienced high winds and rain, leading to downed conductors, likely from a clash. Caves Road had multiple faults overnight due to weather, with power restored to 694 customers by 4:13 a.m. and fully restored by 4:40 p.m.
Mitigating factors that may have prevented or minimised the major event	At Te Reinga, it was discovered that the settings at sectionaliser W9859 were incorrect; it should have operated, affecting only 33 customers. The lack of a bridge at Te Reinga further delayed patrolling and access. On Arakihi Road, several feeder faults occurred on the same day, with worsening weather impacting response times. At Waihua, the fault near W170 was limited by the interconnection, affecting 269 customers until power was restored at 6:15 p.m. On Caves Road, an error on the mimic panel showed switches in the wrong state, delaying fault location and affecting an additional 34 ICPs. Correct switch settings could have tripped the Whangara feeder, impacting 585 ICPs. Multiple faults occurred over the weekend.
Steps taken to mitigate the risk of future major events	At Te Reinga, the settings for sectionaliser W9859 have been corrected, and we are awaiting the WDC and national government to replace the bridge. On Arakihi Road, FNL is installing a sectionaliser as part of a project, with completion expected by March 30, 2024. An investigation at Waihua is underway to assess installing two generators on the Raupunga and Frasertown feeders to enhance mutual support during faults. For Caves Road, FNL is exploring a new ADMS/OMS system that would have identified the switching/mimic error.

5.8 SAIDI Major Events – 1 February to 3 February 2024

Table 21: Details of SAIDI Major event – 1 February to 3 February 2024

Details of SAIDI Major event 1 February to 3 February 2024								
Cause	Start		End		RAW SAIDI value	Normalised SAIDI value	Contribution	Main equipment involved
	Date	Time	Date	Time				
Adverse Weather	02/02/2024	9:27 PM	02/02/2024	10:54 PM	0.1726	0.0213	0%	Distribution lines
Adverse Weather	02/02/2024	9:51 PM	04/02/2024	10:13 AM	2.0335	0.2511	6%	Distribution lines
Adverse Weather	02/02/2024	9:53 PM	02/02/2024	11:20 PM	1.4948	0.1846	4%	Distribution lines
Vegetation	02/02/2024	8:49 PM	05/02/2024	4:40 PM	3.6369	0.4491	10%	Distribution lines
Adverse Weather	02/02/2024	9:05 PM	05/02/2024	5:48 PM	1.9039	0.2351	5%	Distribution lines
Adverse Weather	02/02/2024	10:24 PM	03/02/2024	10:58 AM	1.1111	0.1372	3%	Distribution lines
Vegetation	02/02/2024	8:29 PM	05/02/2024	10:03 AM	0.2443	0.0302	1%	Distribution lines
Vegetation	02/02/2024	8:40 PM	04/02/2024	12:55 PM	1.0193	0.1259	3%	Distribution lines
Human Error	02/02/2024	10:01 AM	02/02/2024	1:31 PM	1.7692	0.2185	5%	Distribution lines
Adverse Weather	02/02/2024	3:09 PM	04/02/2024	9:00 PM	1.3720	0.1694	4%	Distribution lines
Defective Equipment	02/02/2024	8:46 PM	02/02/2024	11:53 PM	6.1614	0.7609	17%	Distribution lines
Vegetation	03/02/2024	1:23 AM	03/02/2024	9:00 AM	6.1218	0.7560	17%	Distribution lines
Vegetation	03/02/2024	1:32 AM	03/02/2024	9:52 AM	2.0264	0.2502	6%	Distribution lines
Adverse Weather	02/02/2024	8:43 AM	05/02/2024	10:26 AM	2.4193	0.2988	7%	Distribution lines
Vegetation	03/02/2024	5:56 AM	04/02/2024	4:31 PM	0.0566	0.0070	0%	Distribution lines
Adverse Weather	02/02/2024	11:23 PM	04/05/2024	1:12 PM	0.3735	0.0461	1%	Distribution lines
Adverse Weather	03/02/2024	0:38 AM	05/02/2024	5:26 PM	0.0980	0.0121	0%	Distribution lines
Adverse Weather	03/02/2024	11:13 AM	03/02/2024	2:45 PM	0.1157	0.0143	0%	Distribution lines
Adverse Weather	03/02/2024	9:59 AM	03/02/2024	1:50 PM	0.6498	0.0802	2%	Distribution lines
Adverse Weather	02/02/2024	11:26 PM	03/02/2024	8:30 AM	0.3082	0.0381	1%	Distribution lines
Vegetation	03/02/2024	4:10 PM	05/02/2024	12:36 PM	1.9939	0.2462	6%	Distribution lines
Defective Equipment	02/02/2024	11:49 PM	03/02/2024	12:21 PM	1.1584	0.1430	3%	Distribution lines
				Total	**36.2406**	**4.4752**		

Table 22: Major Event Details 1 February to 3 February 2024

SAIDI Major Event Information	
Cause	Adverse Weather
Start Date	1/02/2024
Start Time	10:00 pm
End Date	3/02/2024
End Time	11:00 pm
SAIDI value of major event before replacement	36.2406
SAIDI value of major event	4.4752
Location of SAIDI major event	Armstrong Road and Raukituri
Main equipment involved in SAIDI major event	On Friday, February 2, Recloser CB E863 on Armstrong Road tripped, reclosed, and locked out at 9:51 p.m. due to overcurrent. Located near the end of the 90 km Whatatutu feeder, which has 57 customers past it, Recloser E863 is part of the feeder serving a total of 251 customers. Also on the same day, the 11kV Ruakituri feeder tripped and locked out at 8:29 p.m. at Recloser W816 due to an earth fault. The Ruakituri feeder is a remote 115 km radial feeder serving 161 ICPs from Tuia Sub, with Recloser W816 at Ohuka (about a third from Tuia Sub) and two sectionalizers (W9860 and W9859) at Ruakituri (two-thirds from Tuia).
How Firstlight Network responded to the event	On Friday, February 4th, around 8:00 PM, high winds and rain hit the District, causing 11 feeder faults between 8:30 PM and 11:30 PM, affecting 800 customers. At Armstrong Road, the controller chose not to reclose the fault due to high fault probability, and a faultman discovered a broken pole and conductors the next day. Field switching restored power to 32 customers, but 25 remained without power until a line gang repaired the fault the following day, with all power restored by 10:13 AM on February 4th. In Ruakituri, SCADA flags indicated the fault was beyond sectionaliser W9860, and remote switching left 79 ICPs without power until patrols the next morning found poplar trees had fallen through the lines.
Mitigating factors that may have prevented or minimised the major event	The delay in restoring Armstrong Road over the weekend was caused by a combination of numerous faults and a controller oversight. On Friday, February 2nd, at 11:23 PM, Circuit Breaker W54 at Tuia Substation tripped and locked out due to overcurrent. This circuit breaker is crucial as it protects the feeder, so priority was given to addressing this fault before others.
Steps taken to mitigate the risk of future major events	Firstlight Network is investigating a transition to a new ADMS/OMS system for better fault management on Armstrong Road, while in Ruakituri, the trees responsible for the issue have been identified and were set for removal.

6. Findings from our internal investigations

6.1 Overview

In this section, we summarise the findings of our internal investigations into our non- compliance with the unplanned SAIDI limit during this assessment period.28[27]

As discussed in Section 2 (on page 9), our investigation into the non-compliance determined five principal causes of our non-compliance in this assessment period. In the following sections, we discuss our internal investigations into these,

6.2 Overhead Protection Devices

The Network is 98% overhead with 14,377 spans of 11 kV conductors. These circuits traverse challenging terrain, often in high-wind and coastal locations. Given the access challenges and the scale of the overhead infrastructure, the network needs adequate automatic, remote-operated protection devices and remote-controlled manual switching devices to support the effective management of unplanned SAIDI. Table 23 provides a summary of the 11 kV feeder protection devices.

Table 23: Summary of protection devices for 11 kV feeders

No. of 11 kV Feeders	No. of Automatic Protection devices	No. of Remote Manual Operating Switching Devices	No. of Manual Operated Switching Devices
74	36	65	101

Given the specific economic issues in the Tairāwhiti and Wairoa region limiting expenditure on the network and the increase in adverse conditions in which the network must operate, we must improve the number of automatic and remote-operated protection devices in the overhead network. It is recommended that each overhead feeder has at least one automatic protection device (Recloser) and a remote-operated protection device, say, every 30-40 km of overhead lines. As a guide (based on typical NZ EDB practice), each spur with a length >1 km or having a significant number (five or more) of ICPs should have an automatic or manually operated sectionaliser.

6.3 Sectionaliser Project

To better understand the rise in SAIDI in the first quarter of the assessment period in August 2023, we reviewed our automation and protection scheme. We took the opportunity to increase the protection on rural spur lines by integrating a protection relay on existing remote switches that monitor spur lines. The relay provided a sectionalising capability, which protected downstream customers when the upstream line was impacted by faults. An example of a pole-mounted recloser is shown in Figure 3.

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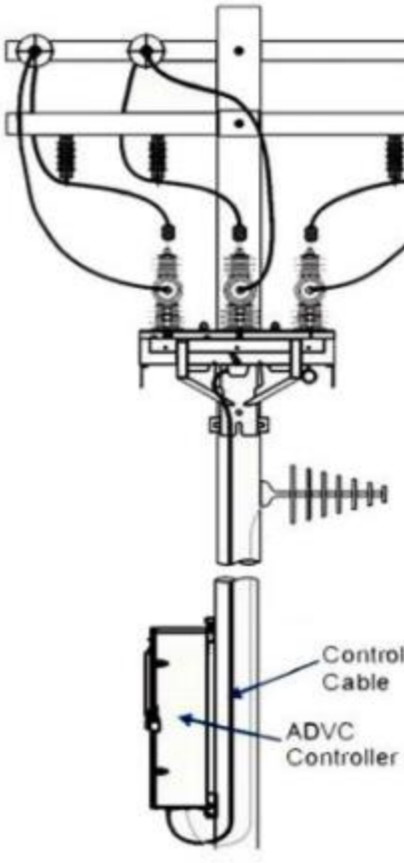
[27] As prescribed by clause 12.4(e) of the DPP Determination.

Figure 3: Example of a pole-mounted auto-recloser



An auto-recloser is a protection device that is used on electricity distribution networks to detect and interrupt transient faults.

Distributors install auto recloser's on their networks to increase reliability by isolating only the faulted part of the power system. Unlike a fuse, reclosers can automatically re-energise the line following a trip operation from a transient or temporary fault (e.g. bird files into the line).

After a certain time, interval, the recloser makes a specified number of attempts to re-energise the line to restore electricity supply to consumers.

Under our sectionaliser project, we targeted sites where remote automation already existed and, when assessed, indicated automation would provide the greatest reliability benefit (i.e., the benefits outweighed the costs). We prioritised areas with significantly higher numbers of downstream consumers than upstream consumers.

By December 2023, we had completed five (5) installations of sectionalisers on our network. The project's benefits resulted in developing a second phase to continue increasing network protection. By March 2024, we had installed a further six (6) sectionalisers on our network. The project's benefits have already begun to be realised with quicker response times and sectionalising of faults.

To continue improving our network automation and protection, where the benefits outweigh the costs, other projects can be undertaken to install protection on other existing remote sites across our network. We have begun to identify existing remote sites that could be upgraded to have protection capabilities. Further, work to upgrade manual switches to have protection and automation capabilities would be the continuation of this project during this assessment period.

In conjunction with the sectionalisers' work, a project to trial fault locators on the network to help identify faults more quickly is in progress. This network investment will allow controllers to respond quicker to faulty situations and improve the network's reliability.

7. Our network is in stable condition

7.1 Overview

In this section, we summarise the analysis we have conducted during the assessment period and in any of the three preceding assessment periods, including:

i. trends in asset condition.
ii. the cause of the unplanned interruptions. (iii) asset replacement and renewal; or
iii. vegetation management.[28]

We outline our approach to asset condition monitoring, asset health assessment, and asset renewals. Presenting the health and renewal levels for relevant overhead asset classes, including an assessment of the causes of defective equipment outages.

Our analysis found that 94% of outages and 83% of SAIDI minutes (excluding Major Events) were related to distribution lines.[29] Accordingly, the focus of our investigations has been on overhead distribution asset classes.[30]

7.2 Trends in asset condition

To establish the trend in asset conditions, we used the health conditions disclosed in schedule 12a of our 2024 AMP, shown in Table 24. [31]

Table 24: Health conditions as prescribed in the Information Disclosure Determination

Health	Description
H1	means replacement recommended
H2	means end of life drivers for replacement, high asset related risk
H3	means end of life drivers for replacement present, increasing asset related risk
H4	means asset serviceable – no drivers for replacement, normal in-service deterioration
H5	means as new condition – no drivers for replacement

7.2.1 Cable health

Our asset health assessment of cables indicates that 45.9 km (or 10%) of cables are due for replacement, i.e., are classified as H1 — 'means replacement recommended', as shown in Table 25. Of those cables that need replacing, 43.6 (or 95%) are low-voltage cables.

Table 25: Cable health by kilometre in each cable category

	H1	H2	H3	H4	H5	Total
Subtransmission UG up to 66 kV (XLPE)	-	-	-	-	1.7	1.7
Distribution UG XLPE or PVC	1.9	-	-	3.8	40.2	45.9
Distribution UG PILC	-	-	-	4.5	102.9	107.5
LV UG Cable	43.6	-	-	38.4	211.2	293.2
LV Streetlighting	0.4	-	-	1.3	6.8	8.5
Total	45.9	-	-	48.0	362.8	**456.7**

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[28] As prescribed by clause 12.4(f) of the DPP Determination.
[29] 94% of all outages were also related to distribution lines. FLN Unplanned Reliability Analysis - RY2020 to RY2023 FINAL.xlsx. Tab: Overall.
[30] Noting that overhead structures include subtransmission, distribution and low voltage assets.
[31] Defined in Schedule 16 – Definitions of terms used in Schedules 1 to 15 of the Commerce Commission, *Electricity Distribution Information Disclosure (Targeted Review 2024) Amendment Determination 2024*, [2024] NZCC2, 29 February 2024 (the ID Determination).

Table 26 indicates that most of our cables, based on age, are classified as H5 — 'means as new condition – no drivers for replacement.'

Table 26: Cable health by percentage age in each cable category

	H1	H2	H3	H4	H5	Total
Subtransmission UG up to 66 kV (XLPE)	-	-	-	-	100%	100%
Distribution UG XLPE or PVC	4.2%	-	-	8.3%	87.6%	100%
Distribution UG PILC	-	-	-	4.2%	95.8%	100%
LV UG Cable	14.9%	-	-	13.1%	72.0%	100%
LV Streetlighting	5.0%	-	-	15.2%	79.8%	100%

Insulation and impedance tests are carried out to gain early indications of issues. Cable terminations are inspected to check for corrosion and general condition degradation. Several of our cables still have bi-metallic terminations in place, which are subject to electrochemical corrosion. For example, copper (Cathodic material) and aluminum (Anodic material) create accelerated corrosion.

We also have approximately 123 km of Paper Insulated Lead Covered (PILC) cables. These cables have an estimated standard life of 70 years which indicates approx. 1.3km of our PILC cables are due for replacement. Problems with these older "oil- impregnated" cables occur when they are disturbed. New connections and new construction put mechanical or electrical stresses on these cables. In locations where cables are exposed to the weather and earthquakes, stress fractures in the lead jackets become a significant problem. A breach in the integrity of the lead jacket will allow moisture to enter the cable, resulting in rapid degradation of the cable insulation.

These cables require special attention through our inspection and testing programme to successfully implement preventative maintenance and timely replacement.

7.2.2 Conductor health

Our asset health assessment of conductors indicates that 59.1 km (or 1.67%) of conductors are due for replacement, i.e., are classified as H1 — 'means replacement recommended', and 0.33% need to be replaced soon, i.e., are classified as H2 — 'means the end-of-life drivers for replacement present, high asset-related risk', as shown in Table 27.

Table 27: Conductor health by kilometre in each conductor category

	H1	H2	H3	H4	H5	Total
Subtransmission OH up to 66 kV	0.1	-	6.1	9.2	320.4	335.8
Subtransmission OH 110kV	-	-	-	0.5	302.0	302.5
Distribution OH open wire	51.7	10.0	11.3	145.2	2,165.5	2,383.7
Single wire earth return (SWER)	-	-	-	-	0.7	0.7
LV OH Conductor	7.3	1.7	1.1	44.7	462.0	516.8
LV OH/UG Streetlight circuit	-	-	-	-	13.1	13.1
Total	59.1	11.7	18.5	199.6	3,263.7	**3,552.6**

Table 28 indicates that most of our cables, based on age, are classified as H5 — 'means as new condition – no drivers for replacement.'

Table 28: Conductor health by percentage age in each conductor category

	H1	H2	H3	H4	H5	Total
Subtransmission OH up to 66 kV	-	-	1.8%	2.7%	95.4%	100%
Subtransmission OH 110kV	-	-	-	0.2%	99.8%	100%
Distribution OH open wire	2.2%	0.4%	0.5%	6.1%	90.8%	100%
Single wire earth return (SWER)	-	-	-	-	100%	100%
LV OH Conductor	1.4%	0.3%	0.2%	8.7%	89.4%	100%
LV OH/UG Streetlight circuit	-	-	-	-	100%	100%

Although the age profile of assets does not provide a true representation of asset condition, reviewing conductors spans by age, as shown in Graph 31 (section 7.2.3), we get an indication of the number of assets that may need to be replaced in the next DPP period. Age, together with the Asset Health assessments (H5-H1), enables the prioritisation of inspections on a risk basis. It is also important to note that we have a significant number of single-strand steel conductors. As these conductors age, they become work-hardened and brittle. In windy conditions or if hit by vegetation, the older spans are more likely to fail.

The challenge is that these conductors were used for challenging terrain, as when they were new, they could span great lengths with minimal poles. Since installation, the industry has moved to multi-strand copper and aluminium conductors, which provide greater resilience over short spans. To replace the steel conductors, we would need to install many more poles to support multi-strand aluminium conductors. Steel Conductors Spans by Feeder is shown in Graph 32 (section 7.2.3).

The cost of replacing remote feeders with steel conductors could be uneconomic due to the limited demand from customers to fund the asset renewals. Network redesign and alternate energy options should be explored where practical.

7.2.3 Pole Health

Table 29 provides a count of the poles on our network by category and voltage.

Table 29: Count of poles by category

Pole Category	400 V	11 kV	33 kV	50 kV	110 kV	Total	Avg. Age
Concrete	2,576	13,695	14	1,473	99	17,857	24.1
Steel	80	38	-	11	517	646	51.3
Wood	3,695	11,548	151	1,152	34	16,580	37.6
Total	6,351	25,281	165	2,636	650	**35,083**	25.0
Concrete/Steel - total	2,656	13,733	14	1,484	616	**18,503**	
Concrete/Steel - percentage	8%	39%	-	4%	2%	**53%**	
Wood Poles - percentage	11%	33%	-	3%	-	**47%**	

Our asset health assessment of poles indicates that—

- 2,638 (or 16%) of wood poles are due for replacement, i.e., are classified as H1; replacement is recommended.
- 417 (or 3%) need to be replaced soon, i.e., are classified as H2; end-of-life drivers for replacement present high asset-related risk, as shown in Table 30 and Table 31
- 35 (or 2%) of our Concrete poles/steel structures are classified as H4; the asset is serviceable, and there are no drivers for replacement or normal in-service deterioration.
- The remainder (approximately 86%), classified as H5, are in new condition and have no drivers for replacement.

Table 30: Count of Poles by category and health

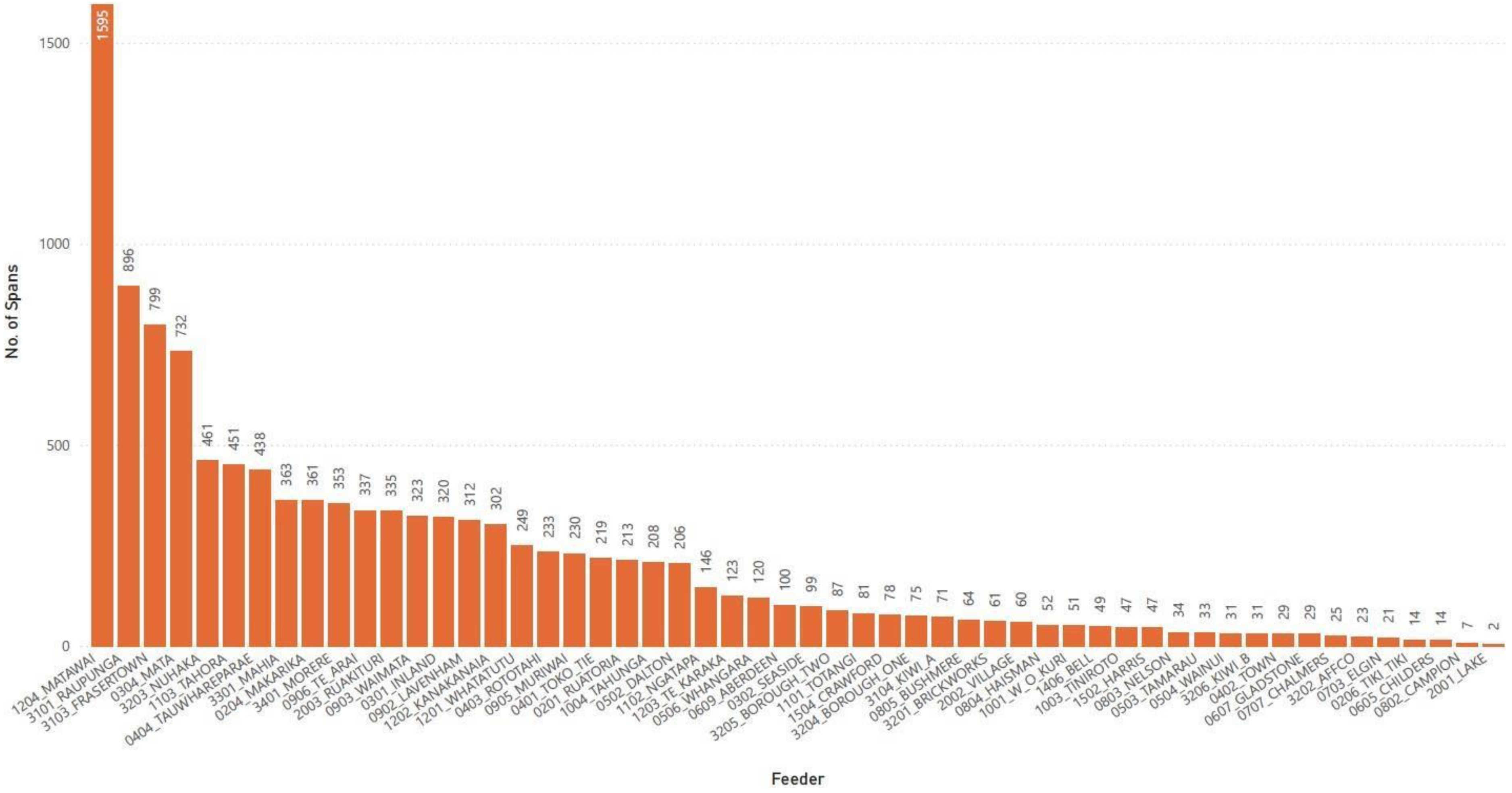
	H1	H2	H3	H4	H5	Total
Concrete poles / steel structure	-	-	-	35	18,468	18,503
Wood poles	2,638	417	218	1,514	11,793	16,580
Other pole types	-	-	-	-	-	-
Total	2,638	417	218	1,549	30,261	**35,083**

Table 31: Percentage of Poles by category and health

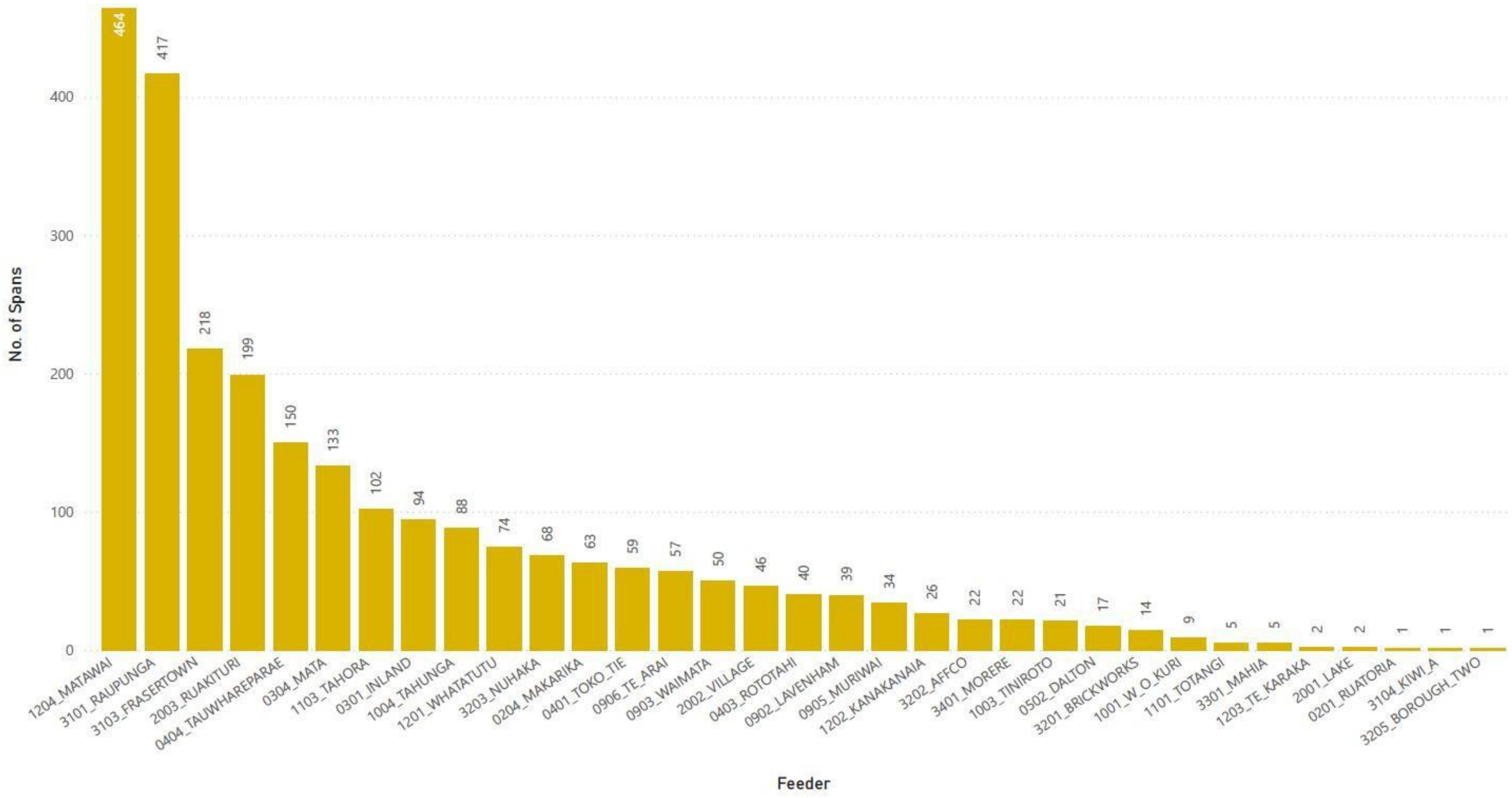
	H1	H2	H3	H4	H5	Total
Concrete poles / steel structure	-	-	-	0.2%	99.8%	100%
Wood poles	16%	3%	1%	9%	71%	100%
Other pole types	-	-	-	-	-	-

We have a high number of poles requiring immediate attention. We have recognised this and accelerated our pole replacement programme.

Graph 31: Number of 'high risk' 11 kV feeders based on >60 years old



Graph 32: Number of 'high risk' 11 kV feeders based on >60 years old – steel conductors



7.2.4 Transformer Health

Table 32, the table shows that 85 distribution transformers, H1, are due for replacement, 120 are H2 and are due for replacement soon.

Table 32: Transformer health by the number of transformers in each transformer category

	H1	H2	H3	H4	H5	Total
Zone substation transformers	-	-	1	5	30	36
Pole mounted transformers	81	117	53	170	2,675	3,096
Ground mounted transformers	4	3	10	31	542	590
Voltage regulators	-	-	-	-	10	10
Total	85	120	64	206	3,257	**3,732**

The main risk for 'older' transformers is corrosion, particularly in coastal and exposed locations. Inspection priority should be focused on these higher-risk transformers, coupled with the number of ICPs per transformer and the protection provided on either side of the Transformer.

7.2.5 Switch Health

Switches are essential for automatic or manual sectionalising feeders during a fault but can cause lengthy feeder outages when they fail. Accordingly, we have a well- planned maintenance schedule in place and regular inspections to monitor assets focused on risk management. Table 33 shows switch health by the number of switches in each switch category.

Table 33: Switch health by the number of switches in each switch category

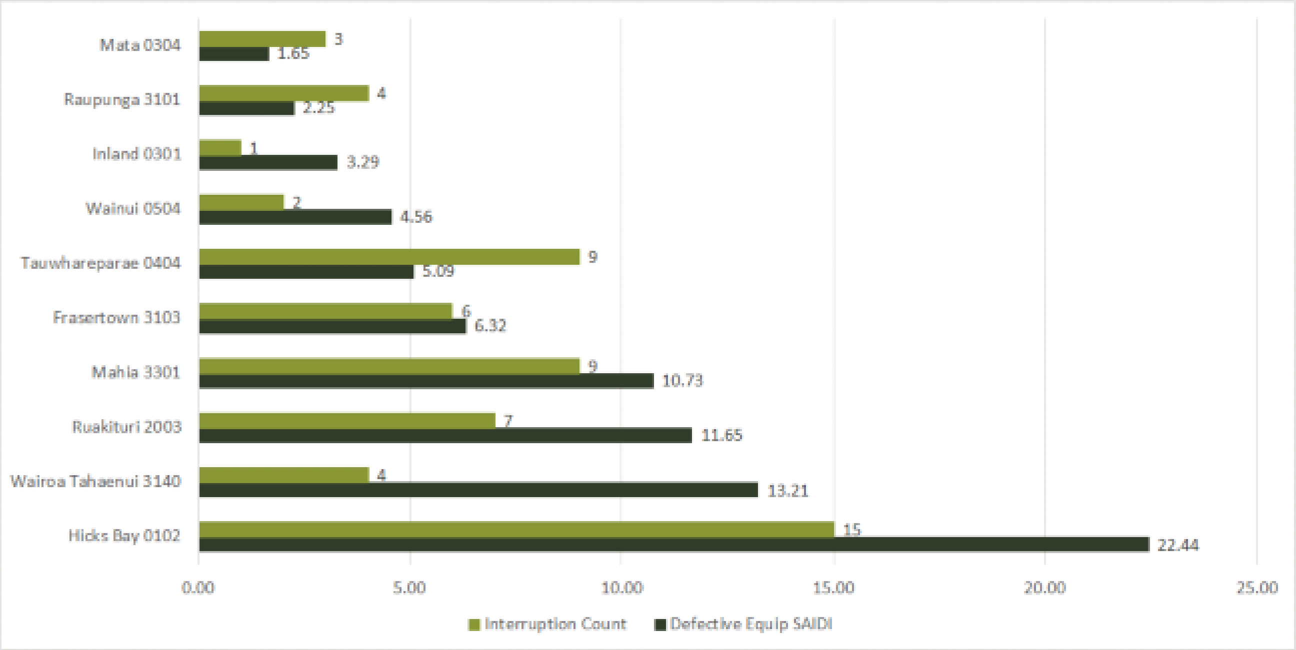
		H1	H2	H3	H4	H5	Total
Zone substation	22/33 kV Circuit Breaker (Indoor)	-	-	-	-	-	-
	22/33 kV Circuit Breaker (Outdoor)	-	-	-	-	1	1
	33 kV Switch (Ground Mounted)	-	-	-	-	-	-
	33 kV Switch (Pole Mounted)	-	-	-	-	2	2
	33 kV Ring Main Unit	-	-	-	-	-	-
	33/50/110 kV Switches (Pole Mounted)	7	25	1	35	112	180
	33/50/110 kV Fuses (Pole Mounted)	-	-	-	-	-	-
	33/50/110 kV Fuses Circuit Breaker (Pole Mounted)	-	-	-	-	-	-
	50/66/110 kV Circuit Breaker (Indoor)	-	-	-	-	-	-
	50/66/110 kV Circuit Breaker (Outdoor)	-	1	-	5	41	47
	3.3/6.6/11/22 kV Circuit Breaker (Ground Mounted)	-	11	5	17	74	107
	3.3/6.6/11/22 kV Circuit Breaker (Pole Mounted)	23	-	-	-	10	33
Distribution	3.3/6.6/11/22 kV Circuit Breaker (Pole Mounted) – reclosers and sectionalisers	2	1	2	3	36	44
	3.3/6.6/11/22 kV Circuit Breaker (Indoor)	-	1	-	12	2	15
	3.3/6.6/11/22 kV Switches and Fuses (Pole Mounted)	203	116	75	475	3,606	4,475
	3.3/6.6/11/22 kV Switches (Ground Mounted) – except Ring Main Units	1	-	2	6	69	78
	3.3/6.6/11/22 kV Ring Main Units	8	2	-	48	222	280
Total		244	157	85	601	4,175	**5,262**

7.3 The cause of the Unplanned Interruptions

7.3.1 Asset Health Review

Graph 33 shows the number of defective equipment interruptions (events) and the associated planned SAIDI by the ten (10) worst-performing feeders.

Graph 33: The number of interruptions caused by defective equipment and SAIDI by feeder



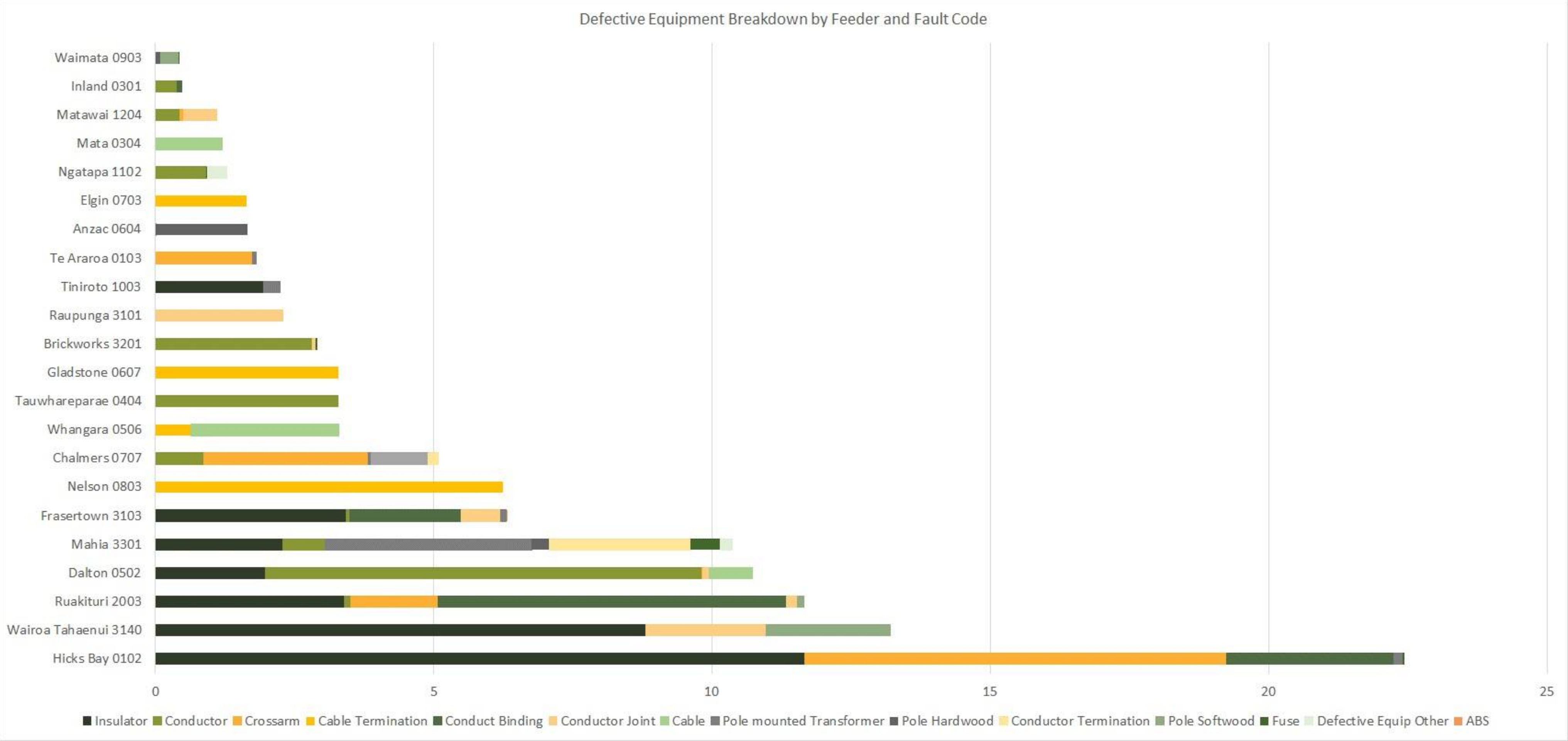
Graph 34 shows the main equipment involved for those interruptions caused by 'defective equipment' by the feeder. Insulators, conductors, conductor binding, and joint failure were the most frequent of the main equipment categories. This is largely due to the location of the faults in the network (i.e., distance and access constraints on specific feeders) and the challenge of locating faulty insulators.

Four (4) feeders accounted for the highest SAIDI (Frasertown, Ruakituri, Wairoa, and Hicks Bay); for these feeders, the highest contribution to SAID was from faults on insulators. This is not surprising as damaged insulators can be difficult to locate and, therefore, incur longer restoration times.

Three Feeders (Hicks Bay, Tauwhareparae, and Te Araroa) have significant contributions from cross-arm failures. One failure contributed 59% of the SAIDI and had not been inspected in recent years due to access issues caused by the remote location and overgrown forestry. The failure occurred prior to resolving the access issue.

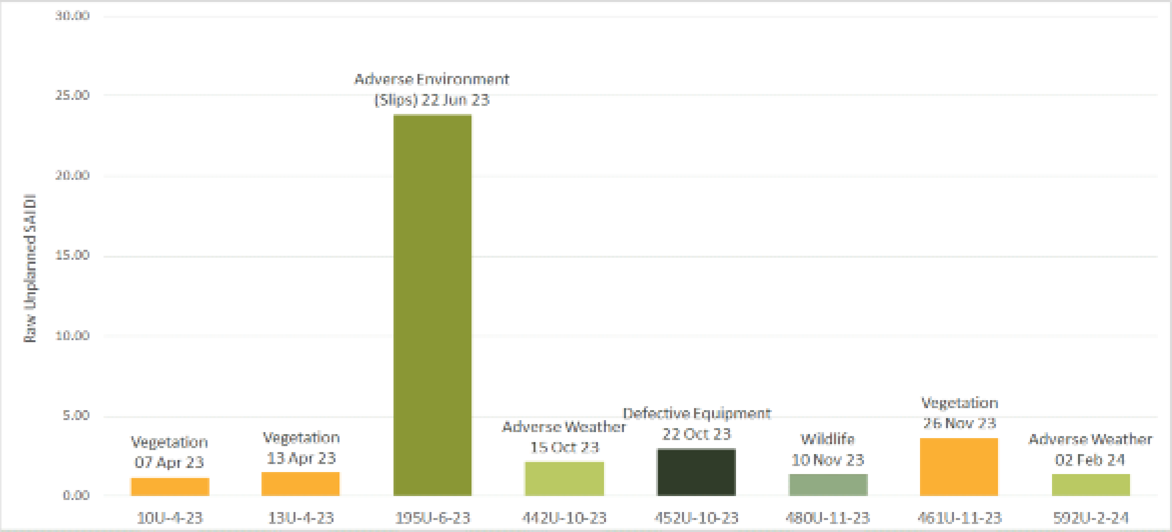
Eight (8) out of the worst ten (10) feeders significantly contributed to unplanned SAIDI caused by Conductor bindings, Terminations, Joints, or the Conductor itself failing.

Graph 34: Defective equipment breakdown by feeder and fault code

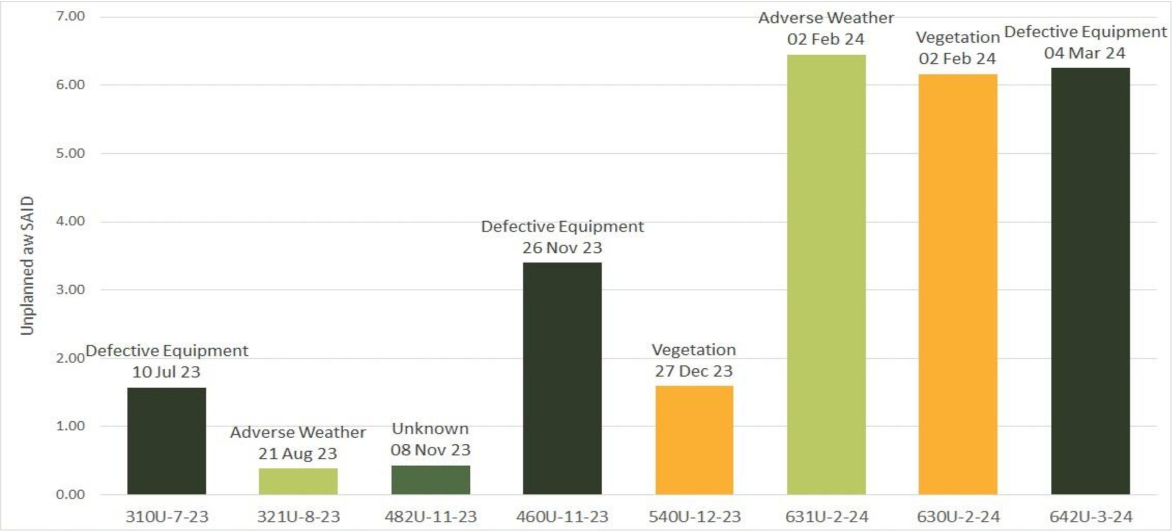


Graph 35 to Graph 37 show the SAIDI on our worst three performing feeders by interruption and by cause.

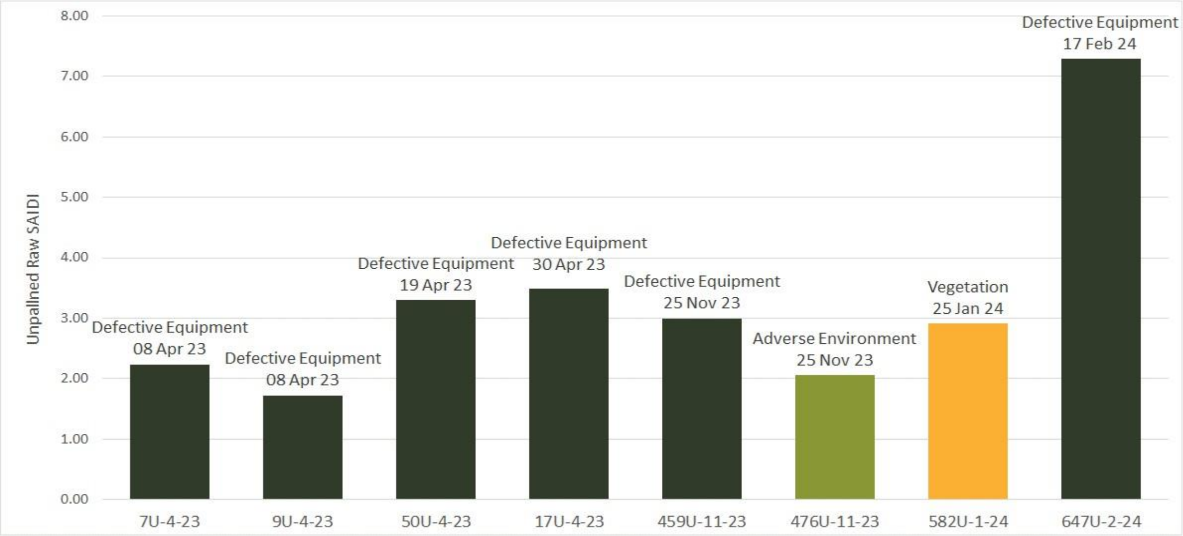
Graph 35: Interruption SAIDI by cause on the Tauwhareparae feeder



Graph 36: Interruptions SAIDI by cause on the Hicks Bay feeder



Graph 37: Interruptions SAIDI by cause on the Ruakituri feeder



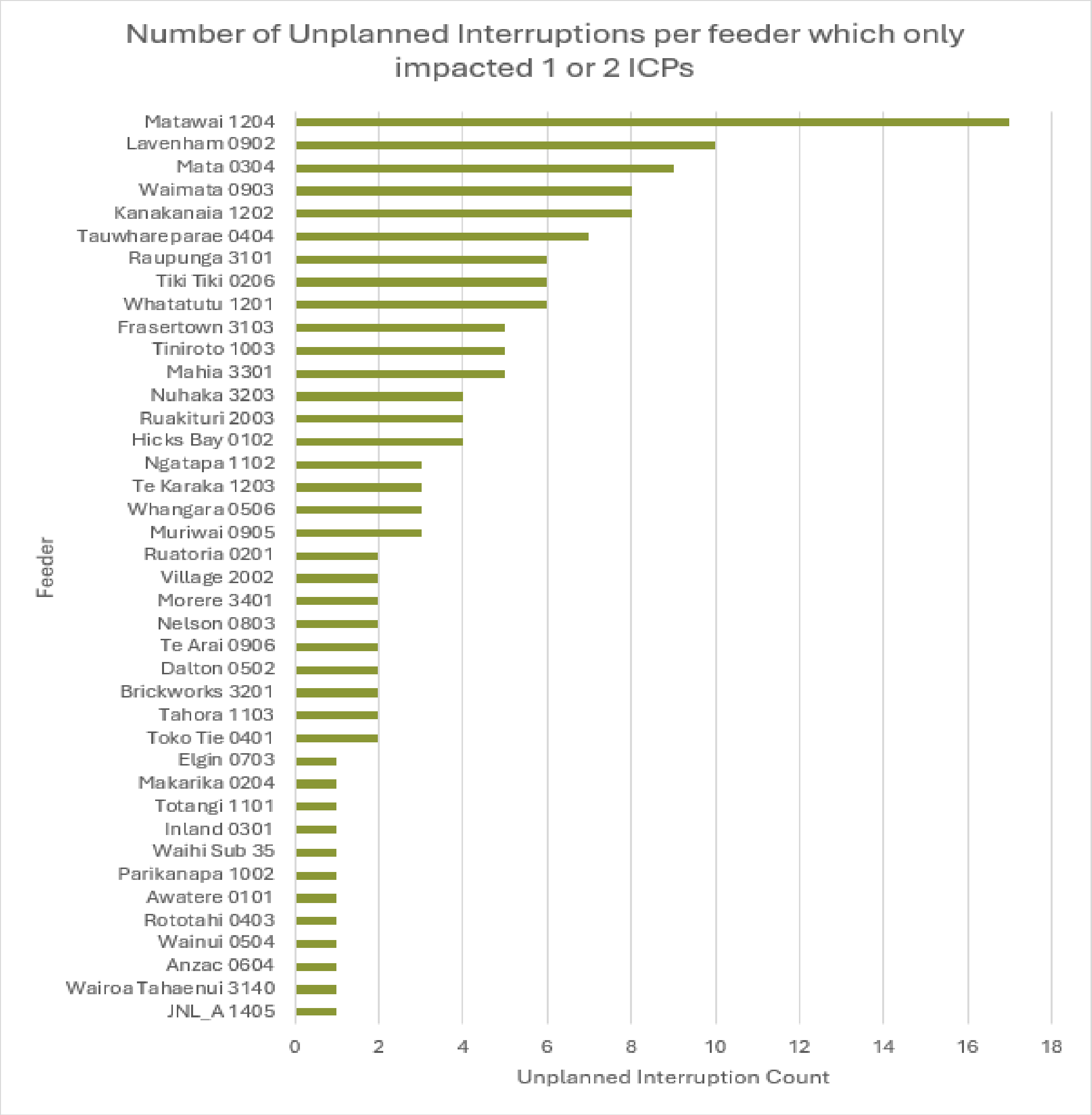
7.3.2 Our network characteristics impact performance

Interruptions impact 1 or 2 consumers accounted for 70.17 SAIDI minutes

Our electricity distribution network consists of long single feeders that reach remote and sparsely populated areas. Of the approximately 53,000 consumers we serve, around 7,000 live in rural areas and small settlements such as Te Karaka, Tolaga Bay, Tokomaru Bay, Ruatoria, Matawai and Mahia.

Of the total Unplanned Interruptions on our network during the assessment period, 102 interruptions disrupted supply to one consumer, accounting for 46.49 of our total SAIDI minutes, and 44 interruptions disrupted supply to two consumers, accounting for23.68 of our total SAIDI minutes. Graph 38 shows the number of unplanned interruptions that impacted one or two consumers.

Graph 38: Number of Unplanned Interruptions per feeder that impacted 1 or 2 consumers



We operate a large radial network with multiple feeders extending out to remote areas with inherent low security. To provide the necessary security to all of those feeders that would prevent prolonged outages becomes increasingly expensive. Strata Energy Consulting, in its 2013 report to the Commission following breaches of the SAIDI boundary levels during the 2011 and 2012 assessment periods, stated—

> 'Given the specific economic issues in the Gisborne region, ENL may consider it appropriate to constrain expenditure below the level needed to ensure network performance achieves the current SAIDI and SAIFI limits in some parts of their network. If ENL considers that the current SAIDI and SAIFI limits are overly stringent, it could apply to the Commission for a customised price-quality path. Alternatively, ENL may decide to lift expenditure above levels that can be sustained under its Default Price Path (DPP).
>
> Consumer consultation will be essential.[32].

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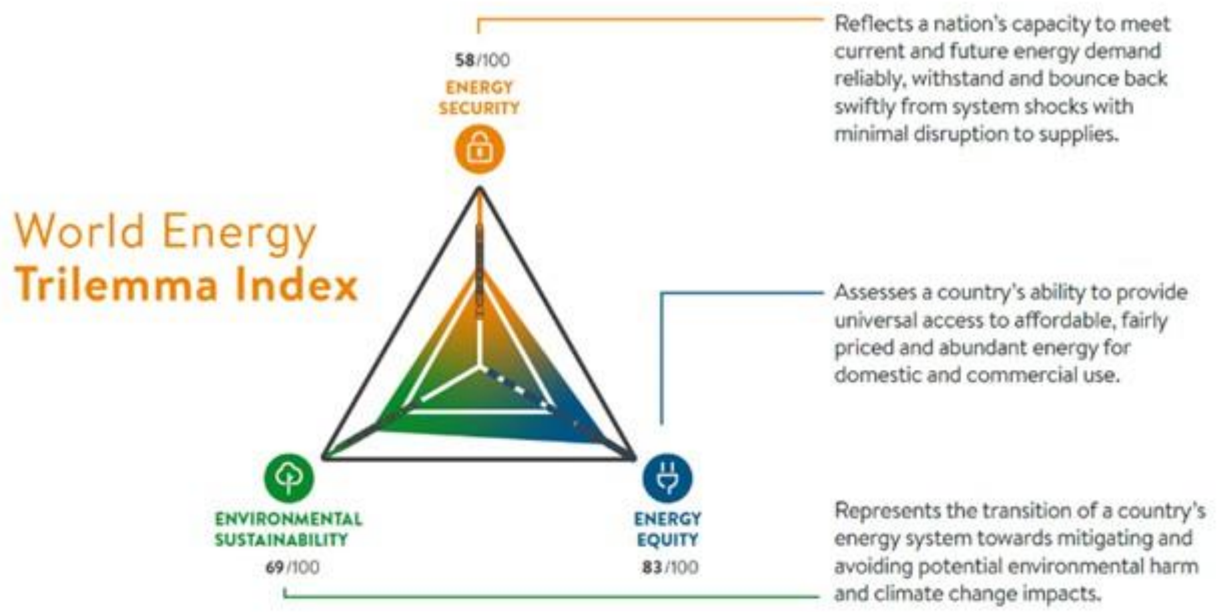
[32] Strata Energy Consulting, Report on the reliability performance of Eastland Networks Limited, Produced for the Commerce Commission, 9 July 2013, Paragraph 18.

This price-quality trade-off is not easy to make, as we are acutely aware of our consumers' dependence on a sustainable and reliable electricity supply that is also affordable. The trilemma (as shown in Figure 4) will become more intense as New Zealand delivers on its carbon-zero goals and electrifies the economy.

Figure 4: World Energy Trilemma Index



Location matters with roading not yet back to pre-cyclone condition

A contributing factor to the SAIDI minutes for these interruptions is the location of the feeders. The interruptions on some of these feeders occurred at night when, due to their remoteness, we will wait until morning to send out field teams to restore supply. We do this because of the access and safety concerns that the location of these feeders raises.

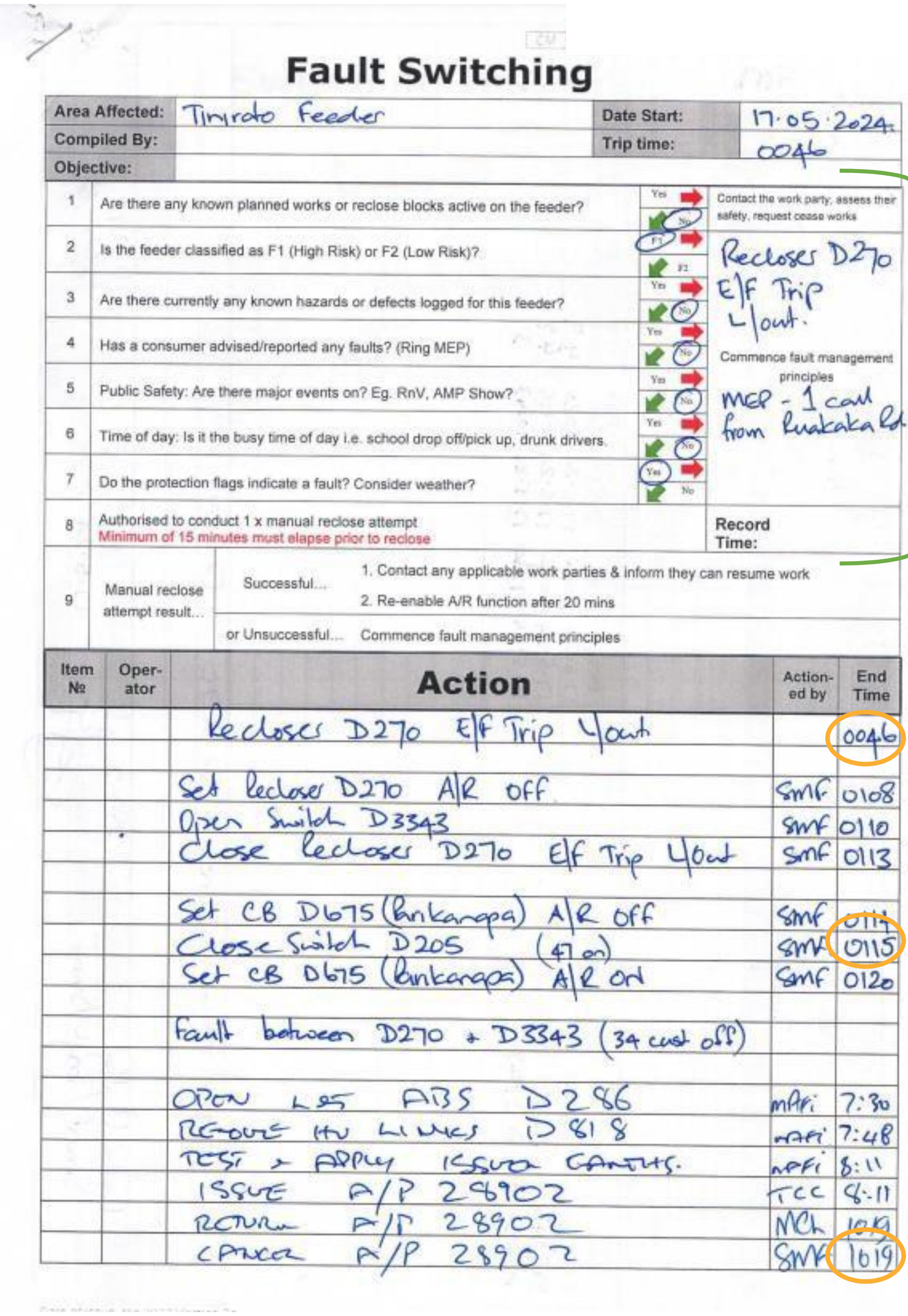
Table 34 lists the feeders that were subject to overnight SAIDI due to access or safety concerns because of the location of the feeder.

Table 34: Feeders subject to access or safety concerns resulting in overnight interruptions

Feeder	Interruption >3 hrs	SAIDI Impact
Tahora	2	14.26
Inland	3	0.07
Mata	3	2.12
Matawai	3	0.16
Raupunga	3	1.90
Ruakituri	5	12.58
Tauwhareparae	6	4.63
Tiniroto	7	3.06
Total	**32**	**38.78**

General driving conditions on most of the roads associated with the top 10 worst- performing feeders are in poor condition, which adds time for accessing/patrolling. We also don't send the fault crews out after 9 p.m. on some roads as they are far too dangerous (Mata, Tauwhareparae, Ruakituri, Waimata).

For example, the Fault Switching report for the Tiniroto Road interruption shows that reclosing restored 47 consumers at 1:15 a.m. Based on that risk assessment, 34 consumers remained off until 7:30 a.m., when it was considered safe for a first responder to be dispatched to the site to open the airbrake switch and work towards safely restoring supply. All consumer supplies were restored at 10:19 a.m.



Fault Switching

Area Affected:	Tinroto Feeder	**Date Start:**	17.05.2024.
Compiled By:		**Trip time:**	0046
Objective:			

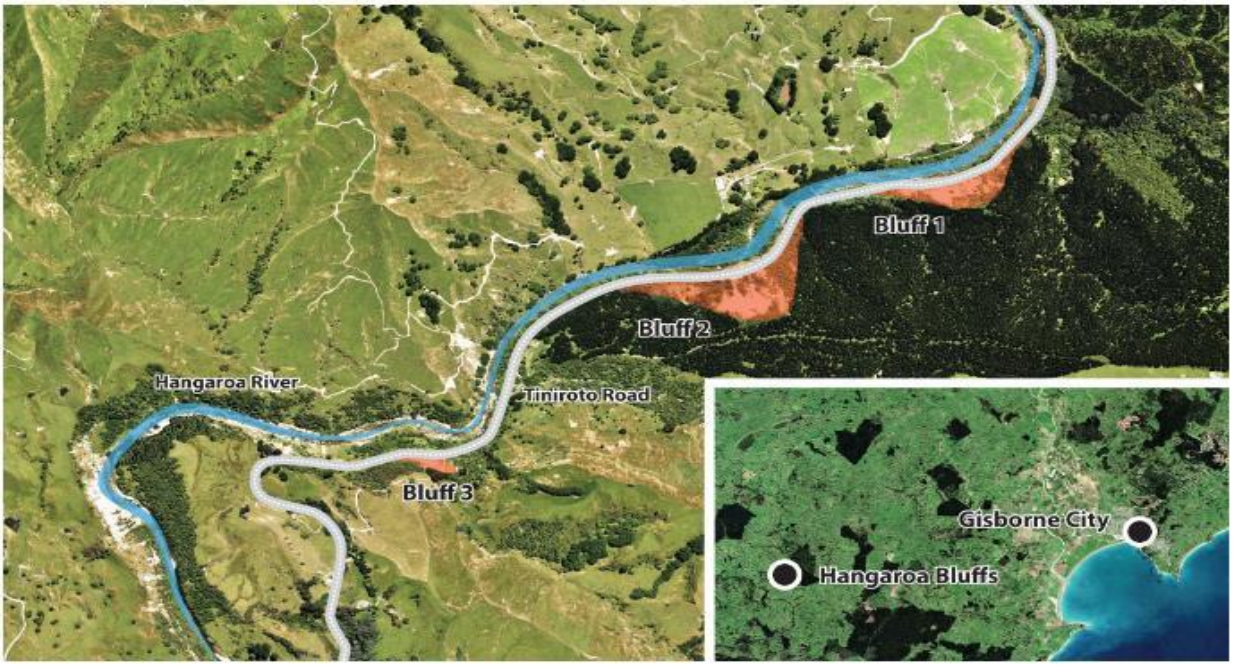
1	Are there any known planned works or reclose blocks active on the feeder?	Yes [✓ No]	Contact the work party, assess their safety, request cease works
2	Is the feeder classified as F1 (High Risk) or F2 (Low Risk)?	[✓ F1] F2	Recloser D270 E/F Trip L/out.
3	Are there currently any known hazards or defects logged for this feeder?	Yes [✓ No]	
4	Has a consumer advised/reported any faults? (Ring MEP)	Yes [✓ No]	Commence fault management principles
5	Public Safety: Are there major events on? Eg. RnV, AMP Show?	Yes [✓ No]	MEP - 1 call from Ruakaka Rd
6	Time of day: Is it the busy time of day i.e. school drop off/pick up, drunk drivers.	Yes [✓ No]	
7	Do the protection flags indicate a fault? Consider weather?	[✓ Yes] No	
8	Authorised to conduct 1 x manual reclose attempt Minimum of 15 minutes must elapse prior to reclose		**Record Time:**
9	Manual reclose attempt result...	Successful...	1. Contact any applicable work parties & inform they can resume work 2. Re-enable A/R function after 20 mins
		or Unsuccessful...	Commence fault management principles

Risk assessment

Item №	Operator	Action	Actioned by	End Time
		Recloser D270 E/F Trip L/out		0046
		Set Recloser D270 A/R off	SMF	0108
		Open Switch D3343	SMF	0110
		Close Recloser D270 E/F Trip L/Out	SMF	0113
		Set CB D675 (Pinkarapa) A/R off	SMF	0114
		Close Switch D205 (47 on)	SMF	0115
		Set CB D675 (Pinkarapa) A/R on	SMF	0120
		Fault between D270 + D3343 (34 cust off)		
		OPEN L25 ABS D286	mAri	7:30
		REROUTE HV LINKS D818	mAri	7:48
		TEST + APPLY ISSUER CONTROLS.	mAri	8:11
		ISSUE A/P 28902	TCC	8:11
		RETURN A/P 28902	MCh	1019
		CANCEL A/P 28902	SMF	1019

The Gisborne District Council has released information about local roading, including A resilient solution for Tiniroto Road, on its website—

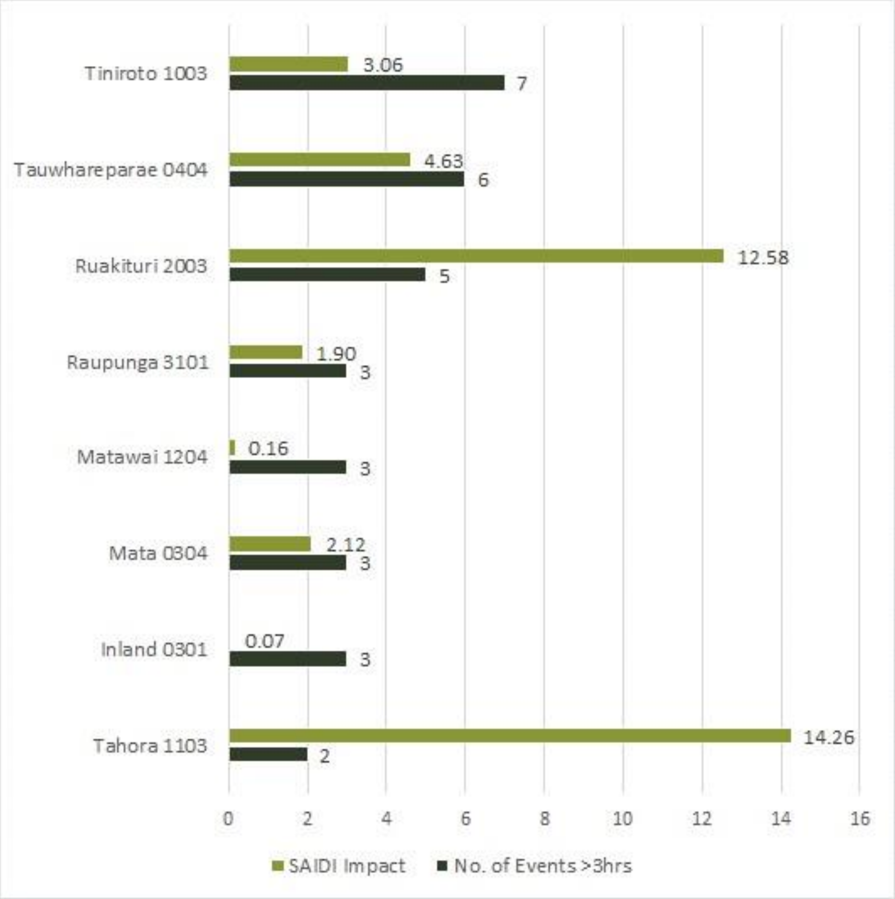
> ‘The Hangaroa Bluffs, on Tiniroto Road, suffered significant damage during Cyclone Gabrielle. 1400m of road was undermined with river protection works destroyed. The 2- lane road was scoured away to less than one lane in parts. It required repairs to the retaining wall structures and rock protection works. Following emergency works the road was reopened to single lane. However, following a further weather event, a geotechnical report identified imminent and extreme risk of rockfall and risk to life of falling material. This prompted Council to close the bluffs. It has been closed since August 2023.
>
> The Tiniroto, Ruakaka, Te Reinga and Ruakituri communities have needed to use either the Parikanapa Road, or travel State Highway 2 via Wairoa to get to Gisborne, adding significant travel time and expense to their commute.
>
> Tiniroto Road is considered an alternative route to State Highway 2 and a resilient roading solution is needed. The Government included funding for a resilient solution in the Cyclone Support Package that Council accepted in November 2023.
>
> Options being investigated include rebuilding the existing route or a new bypass of Bluffs 1 and 2 that crosses the Hangaroa River.



> Detailed assessments of these options will inform the decision. Once technical feasibility investigations are completed partner and community engagement will be sought prior to recommending the proposed solution to funders. The overall aim is to find the best outcome for the community and wider region.
>
> This is a major project expected to be completed within a 3-to-5-year period.’

Graph 39 shows the number of interruptions and SAIDI by feeder that occurred overnight and were greater than 3 hours in duration.

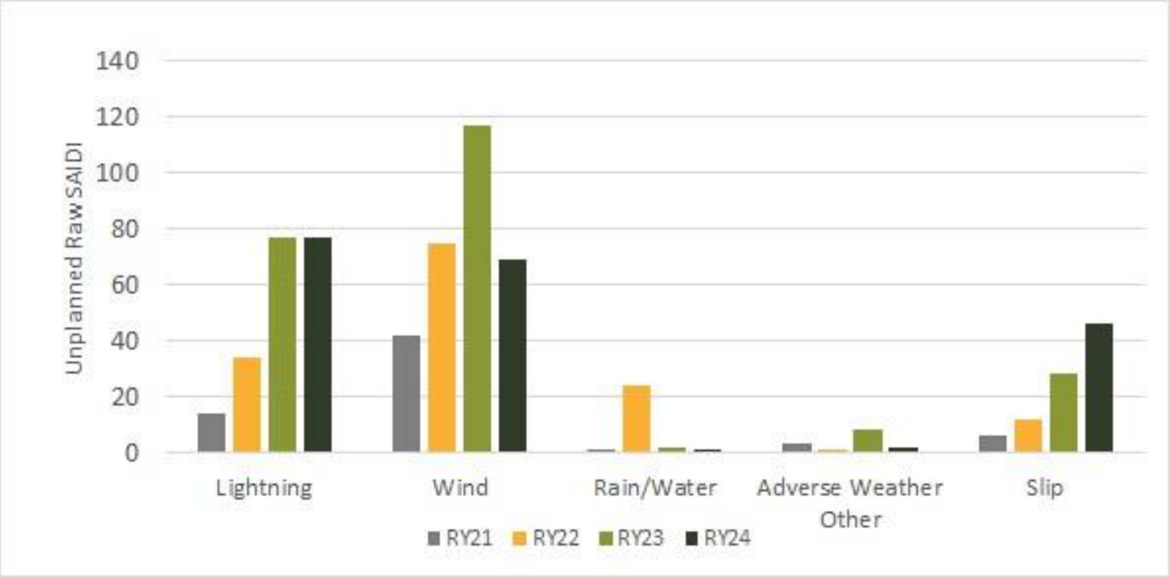
Graph 39: Overnight Interruptions by Feeder (SAIDI vs. Number of Interruptions >3hrs duration)



7.3.3 Four-year interruption trend

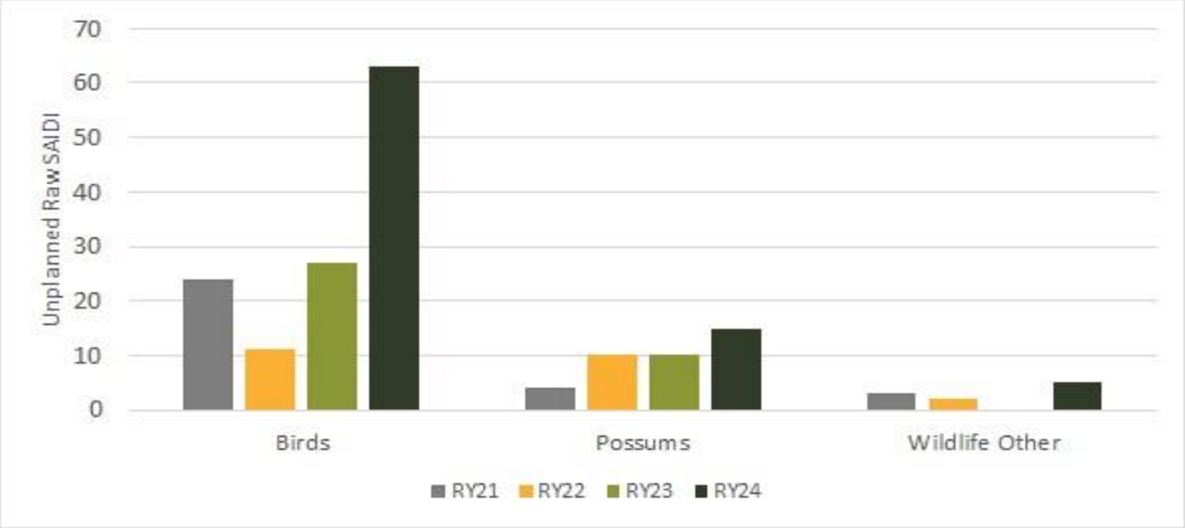
Graph 40 shows a step change in adverse weather and environmental events over the last three years, contributing significantly to interruptions and our SAIDI minutes in the assessment periods.

Graph 40: Four-year Adverse Weather and environmental events trends



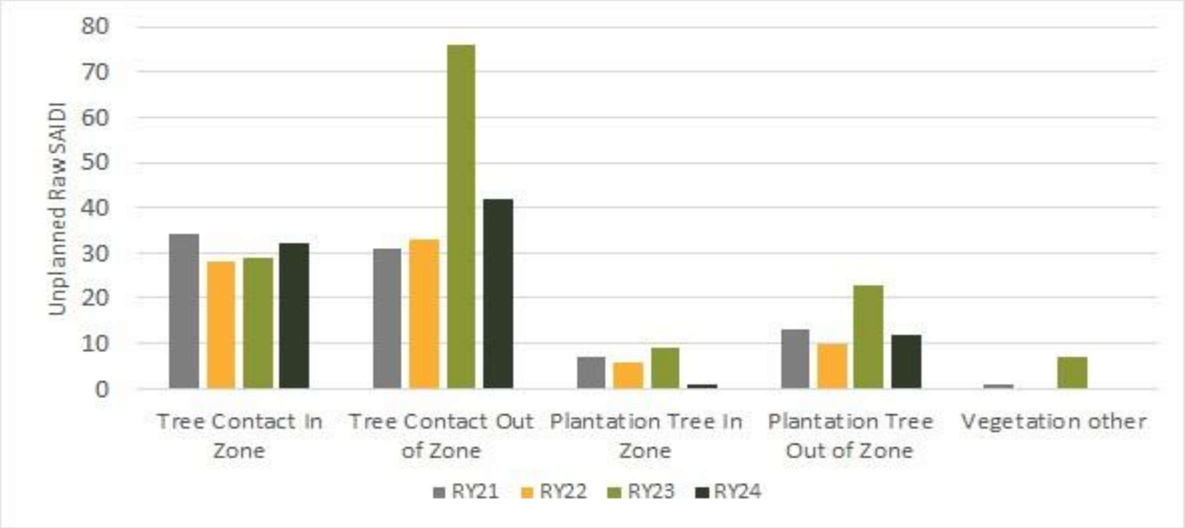
An increase in Adverse weather and environmental events has an impact on wildlife activity, as shown at Graph 41. Despite a significant 1080 drop in targeting possums, the interruptions caused by possums are on the increase.

Graph 41: Four-year Wildlife event trends



Graph 42 shows that interruptions from vegetation event trends are flat, except for out-of-zone tree contact. We discuss our Vegetation Management Strategy in more detail in section 7.5 (on page 78).

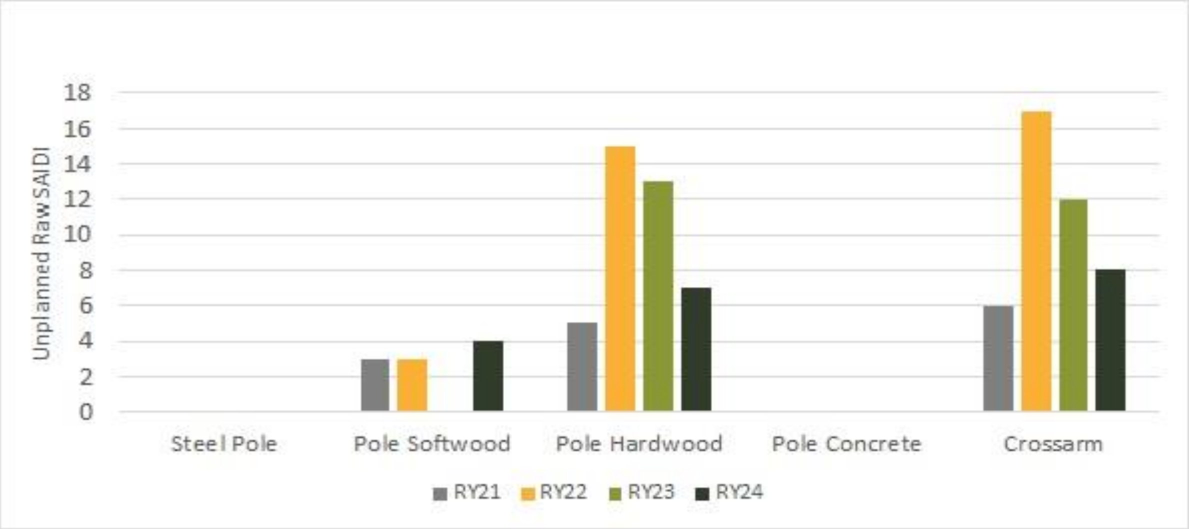
Graph 42: Four-year vegetation event trends



We have implemented an accelerated pole replacement strategy, which has a positive impact on reducing interruptions.

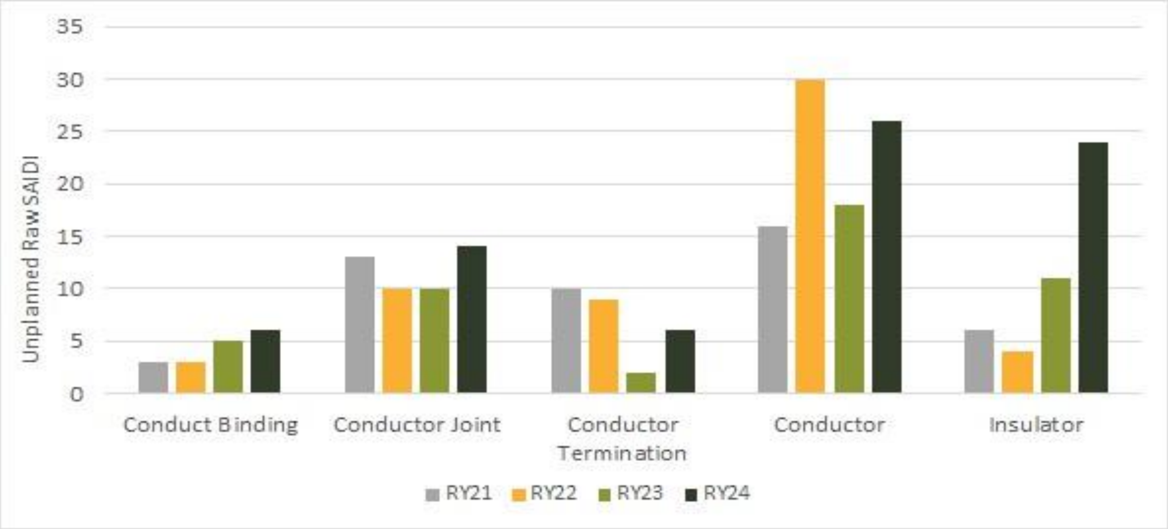
Graph 43 shows a significant drop in Hardwood pole and cross-arm failures over the last three years. Softwood poles remain an area of concern; we discuss our replacement and renewal program for softwood poles in more detail in section 7.2.3.

Graph 43: Four-year pole and cross-arm event trends



Conductors, associated bindings, joints/terminations, and insulators are of concern due to the number of events and the time it takes to locate faults, as shown in Graph 44.

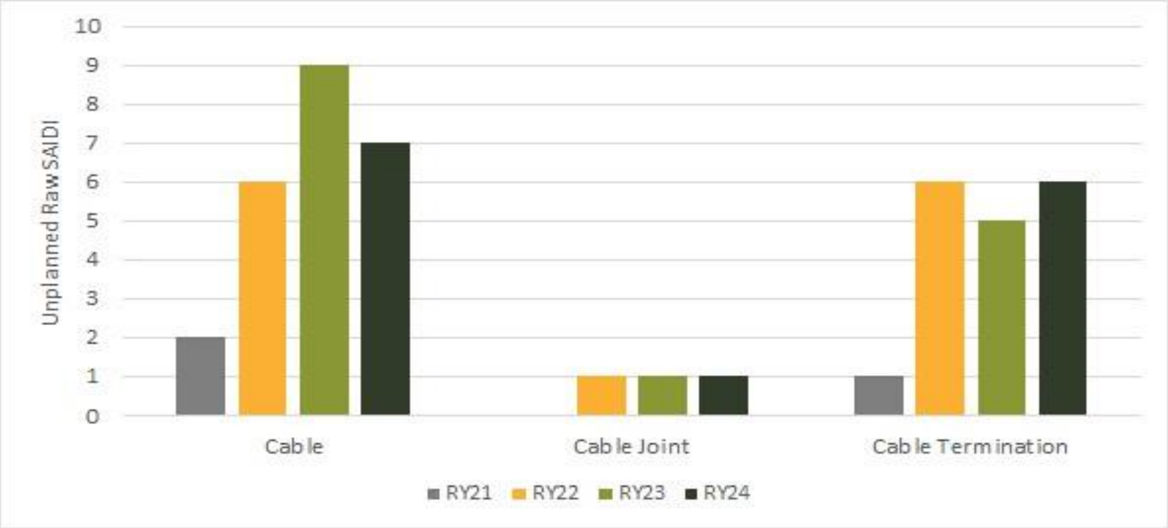
Graph 44: Four-year conductor and insulator event trends



The issue is magnified by the low number of reclosers and electronic sectionalisers to minimise the number of ICPs impacted. Several feeders have been considered too dangerous to diagnose after dark due to road conditions and/or the safety of walking the lines to find the fault in difficult terrain. This makes it even more important to invest in further Auto sectionalisation or sectionalisation, which can be controlled remotely to minimise the scale of the outage overnight.

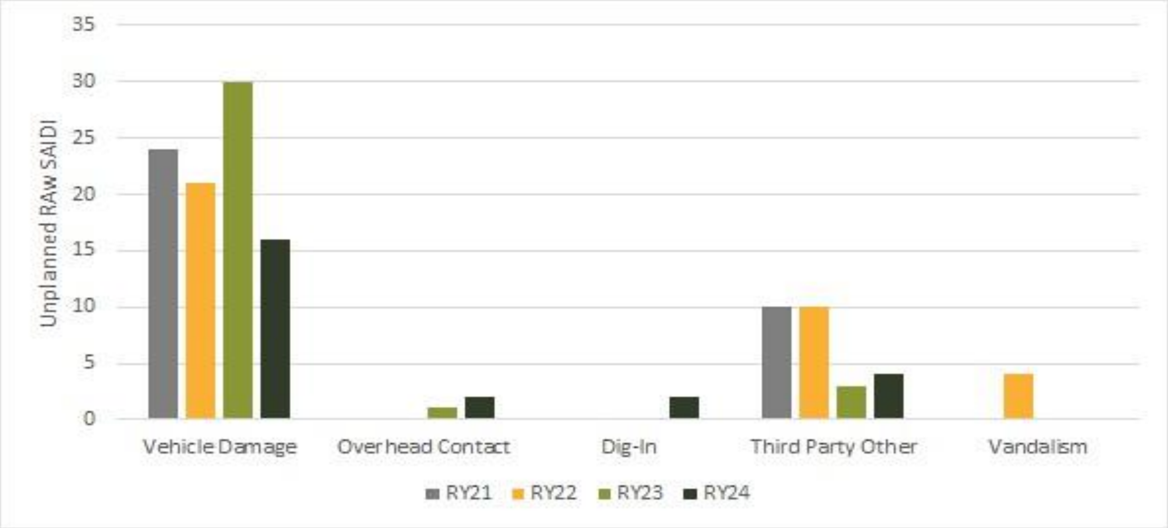
Graph 45 shows that cable-related unplanned SAIDI is on the increase. This is a concern as they are difficult to locate underground and often carry many more customers in concentrated areas.

Graph 45: Four-year cable event trends



Graph 46 shows third-party interference is trending in the right direction; however, the number of vehicle damage events is still concerning.

Graph 46: Four-year third-party interference event trends



We are reviewing the events to date to look for trends in the location of assets (e.g., specific roads) and their proximity to passing vehicles. Either asset relocations or barriers could be considered for assets that are deemed to be of higher risk.

7.4 Asset replacement and renewal

7.4.1 Progress on Asset Inspections

Table 35 shows the number of assets inspected (by asset class) since 01 April 2019, including those inspected to the new standards.

Table 35: Current percentage of asset condition data captured

Asset class	No. of assets in the fleet	Inspected since 1 April 2019	
Concrete poles	18,122	9,323	51%
Wood poles	17,016	8,956	53%
Distribution OH Open Wire Conductor	-	-	-
3.3/6.6/11/22 kV Switches and fuses (pole mounted)	4,413	2,562	58%
Pole mounted transformers	3,056	1,708	56%
3.3/6.6/11/22 kV Circuit Breakers (pole mounted)[33]	44	34	77%
Zone Substation Switchgear	148	87	59%
Ground Mounted Transformer	565	539	95%
3.3/6.6/11/22 kV Switch (ground mounted)	366	297	81%
Zone Substation Transformers	36	33	92%

7.4.2 Inspection and routine maintenance of zone substations

We have adopted the Transpower maintenance standards and schedules for Sub- transmission and zone substations. Ventia holds the contract to deliver the maintenance on our network. Sub-transmission follows a six (6) monthly cycle of inspection and maintenance. Inspection frequency is increased if degradation is found. Zone Substations follow a linear inspection programme, with each zone sub- inspected every four months, including—

- Preventative work on insulators to change type – prevent/minimise bird strikes.
- Review interphase spacers on subtransmission to avoid line clashes. Note loading can be an issue, so condition assessment is required.
- Electrical configuration changes on subtransmission minimise the impact of line-to-line clashes. The change means that if lines clash, they are in the same phase (red-red), which minimises the chance of protection tripping.
- Protection schemes can be changed for predicted weather events to avoid nuisance tripping.
- New discharge and thermal cameras were purchased to support early diagnosis of issues in switch yards.

We are reviewing the Wairoa network to improve resilience to N-1 configurations. The Gisborne bus has been reconfigured to provide a diverse route north to protect against lightning strikes, which has saved significant SAIDI and proven the business case for improved resilience to consumers in the Gisborne area.

7.4.3 Inspection and maintenance of our radial network

Historically, replacement and renewal on our radial network have been on a like-for- like replacement. Given the electrification of the economy being driven by decarbonisation, the approach is no longer appropriate, and we are changing our approach to take account of the:

- increased incidences of line clashes in high winds
- changes to feeder paths due to slips, forestry, and local economic realities and increased demand
- pole types vs. access, for example, access issues require us to increase the use of helicopters to transport poles, and this approach has a maximum weight consideration when choosing between softwood poles and steel /concrete poles, which may be more durable in the long term

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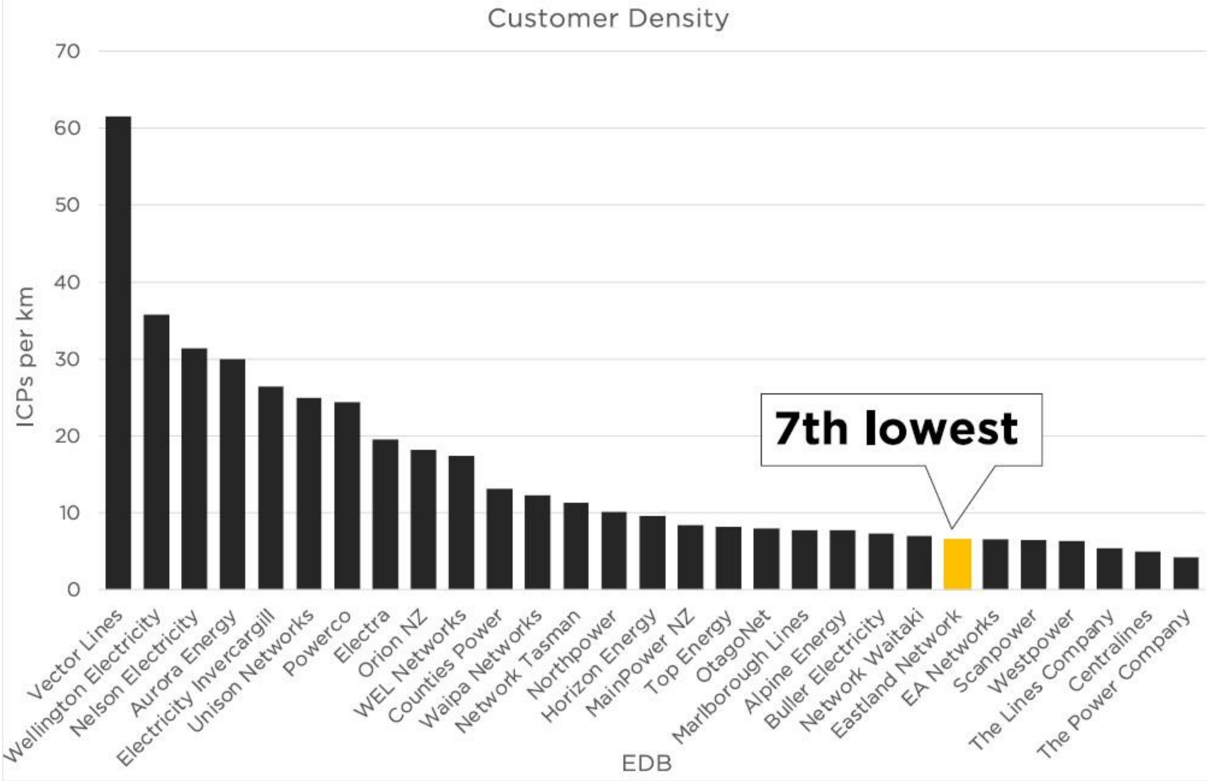
[33] Reclosers and Sectionalisers

- location of consumers and their expected service levels (Graph 47 shows that we have one of the lowest consumer densities of our peers)
- demand versus security of supply.

Graph 47: Firstlight Networks consumer density

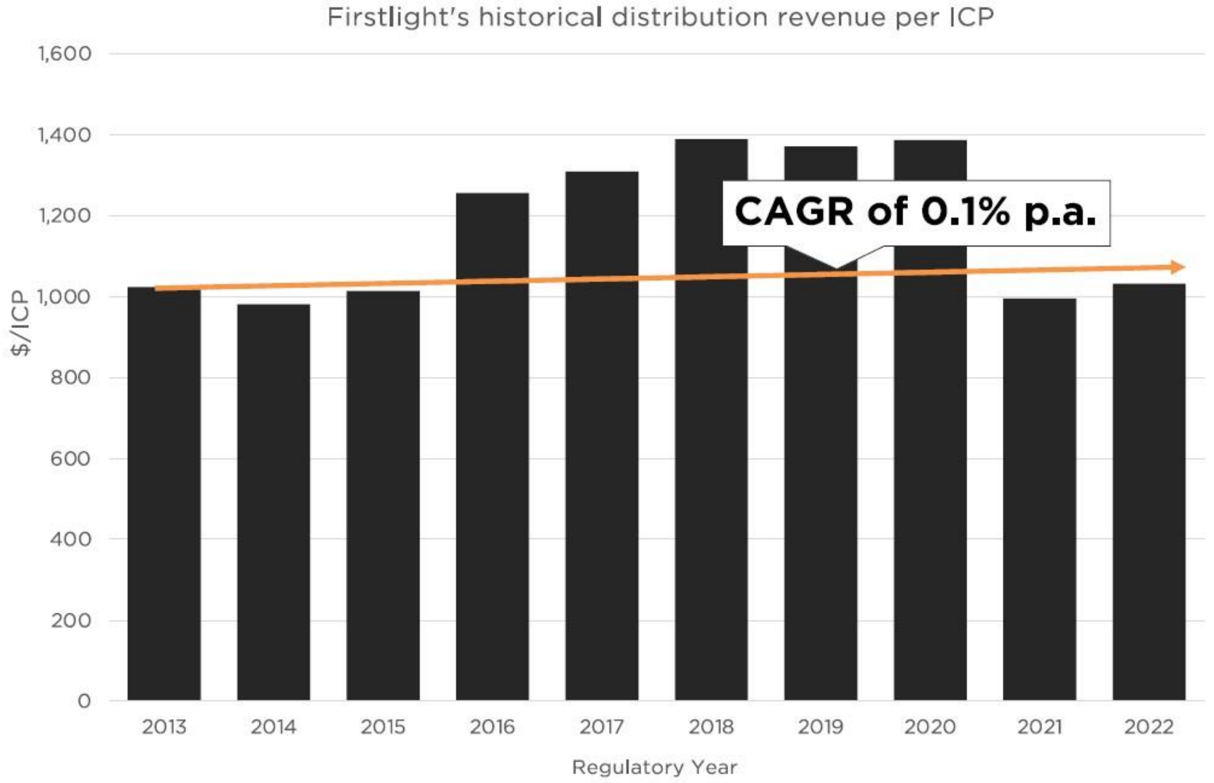


Our pole replacement programme is on target. However, given the number of urgent pole replacements, our targets may need to be revised.

With limited economic options to build N-1 resiliency for the security of supply (Graph 48 shows that we have, on average, over 10 years, a compound annual growth rate (CAGR) of 0.1% per annum); the next best option is to sectionalise the network and feeders as much as possible with electronically controlled (automatic or remotely operated) protection devices to minimise the size of manual switching zones and the number of customers impacted.

The challenge with increasing the protection devices is to carefully manage the necessary grading between devices to avoid unnecessary tripping of upstream devices.

Graph 48: Firstlight Networks regulated returns over 10 years



7.5 Vegetation management

In response to the vegetation-related outages following the extreme events of 2023 (e.g., cyclone Hale and Gabrielle), we progressed our Vegetation Management Strategy. Under our strategy, the Vegetation Team made a series of changes to its work, with the mission to reduce unplanned SAIDI and the financial impact of the work carried out.

7.5.1 Principles and Key Objectives

The team developed principles and key objectives that they would work under and deliver against. The team devised its key objectives to align its capabilities with the 'business as usual' work programme. Each objective has its own supporting and detailed strategy documents. Table 36 provides a summary of the key objectives of our Vegetation Management Strategy

Table 36: Key objectives of the Vegetation Management Strategy

Strategy Point	Description
Strategic Planning Reviews	Informed by monthly fault data, our works programme and financial data, the team meets monthly to assess the current patrolling strategy and decide if changes are needed. This ensures we are working in the right areas at the right time. Our network's needs are constantly evolving, so we will evolve with them.
Strategic Patrolling	Based on the strategic review sessions, we assess and confirm our patrolling plan monthly. This includes planning what and how we patrol, identifying what technology to use, and determining our stakeholder engagement approach. This ensures our patrolling plan ties back to SAIDI mitigation (i.e., reducing interruptions to our consumers).
Work Order Management	We use the Maximo work order system to coordinate vegetation management, aligning with best practices. Work orders capture the patrolling costs and the vegetation management needs identified during the patrols. Our contractors also use our work order management processes, which enable work orders to be issued to contractors as complete packages, resulting in productive efficiencies and lower costs to serve.
Budget Control	Using the work order management process, we can forecast the costs of vegetation management in future months. We can see completed work and conduct ongoing assessments as part of our monthly strategic reviews. This ensures that our vegetation management Strategy remains well-informed.
Contractor Managed	

Zones	Our monthly strategic review flags if there is the opportunity for maintenance and inspection to be contractor-managed while the contractor is doing work in that area of our network. This synergy results
Contractor Management	We have reviewed our current contractor strategy and optimised it to best suit our needs, creating a sound market architecture. This includes a framework for how work is distributed, faults are managed, rates, and contractor levels. We have also put *Annual Contestable Vegetation Management Service Agreements in* place for tier-two work.
Public Awareness Campaign	Working with the Clarus marcom team, we have completed a revised public awareness campaign. We have distributed flyers, calling cards, and on-site letter drops and released informative documents, videos, and social media campaigns. Our goal is to encourage public engagement as much as possible and understand their role in good vegetation management practices.
Forestry Management	We recognise that relationship building with key regional forestry management. We work with forestry to find an amicable solution to vegetation that poses a risk to our lines without unduly diminishing their returns.
Lidar mapping	We use LiDAR (Light Detection and Ranging) technology to gain insight into the current and future vegetation management needs on our network. LiDAR-equipped helicopters or drones can quickly scan large areas, capturing detailed elevation data and identifying vegetation patterns. We use the data collected by LiDAR to provide information on our vegetation management strategy and ensure it remains effective and appropriate throughout the assessment period.
Shared Knowledge	We are setting up regular group forums to share what we have learned with other network providers (e.g., Powerco, Horizon, and Unison). We gain from other EDBs sharing their strategy, processes, skills, and experiences, and we hope others will benefit from our sharing.

7.5.2 Assurance Plan

Our Assurance Plan gives us an overview of the activities we need to take to ensure that potential issues and/or positive outcomes are assured. Assurance activities include meetings, dashboards, presentations, and reports, all with key performance metrics and indicators reported monthly or quarterly, where appropriate. Our dashboards will leverage data available through our Tree App, SAIDI data tables and some manual entries.

To measure performance in the dashboards, we use leading and lagging measures as shown in Table 37.

Table 37: Leading and lagging measures used in our dashboard

Leading indicators	Lagging indicators
Strategic Patrol Meters Target Identified	Total trees – Verified and Un-Verified
Patrol Meters Completed/% of area patrolled vs target	Trees in Zone
Work Orders Raised	Notices issued – Outstanding response
Work In hand with Contractors	Actions Pending – Trims and Fells
Forward Log/Backlog	Trees Cut – Trimmed or Felled
Health of line patrolled (Vegetation)	Budget vs Actuals to date

7.5.3 Tree App

Our Tree App went live in early 2024, providing us with a more dynamic process. The Tree App enables us to overlay network data with aerial photos, making the location more exact, thereby improving the site and owner identification considerably easier.

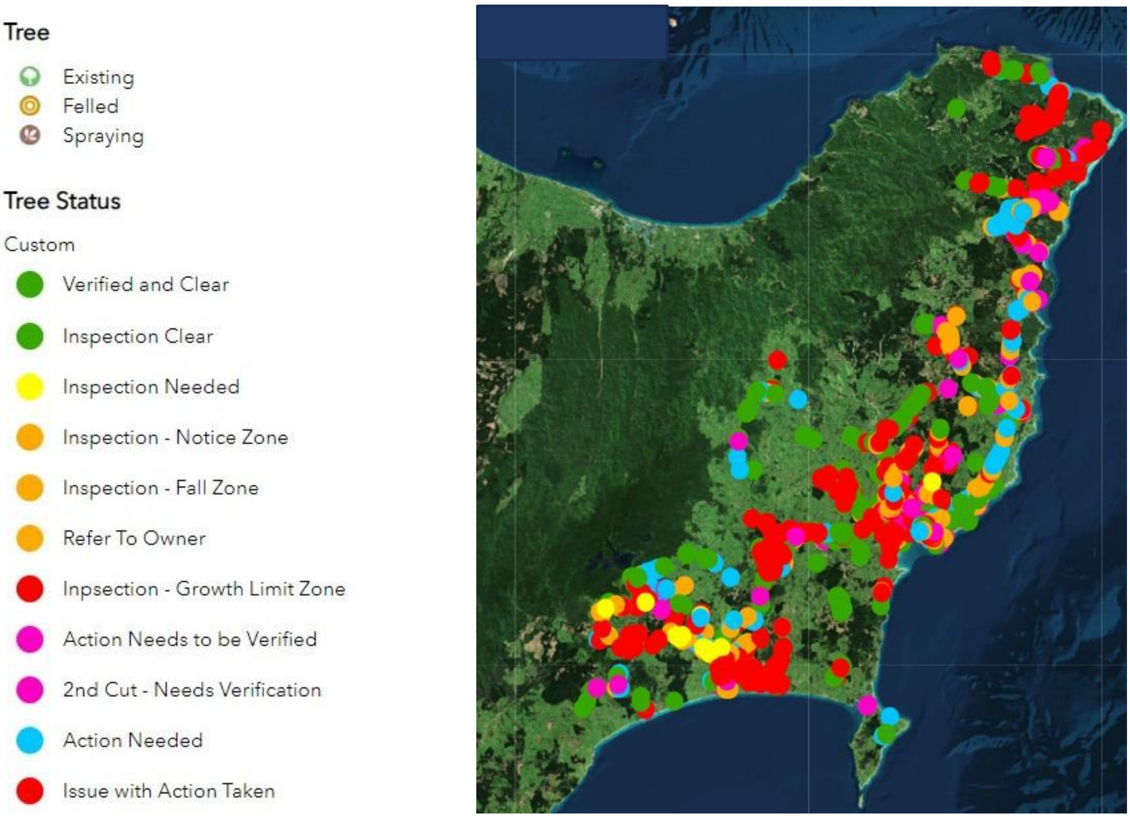
Maps can be taken into the field to instantaneously record inspections. This can be done to the tree site. Users can see when the last inspection was carried out, signalling whether the tree site needs to be inspected again. Having this real-time information avoids duplications found with the previous app.

Data captured in the field is sent back to the main map instantaneously (or once back in cell coverage for those areas without connectivity). All data for that tree, i.e., the landowner's contact details and photos, are attached to that tree site, providing vital information about the life cycle of the tree over time as the database gets more populated.

A traffic light system for the status of the tree instantly identifies what stage each site is at; recording actions against the tree allows for a clearer picture of what has occurred—its life cycle. We can identify where the tree was removed or areas that will require constant spraying by changing its underlying symbol, e.g., from yellow— inspection needed to red—inspection Growth Limit Zone, as shown in Screenshot 6.

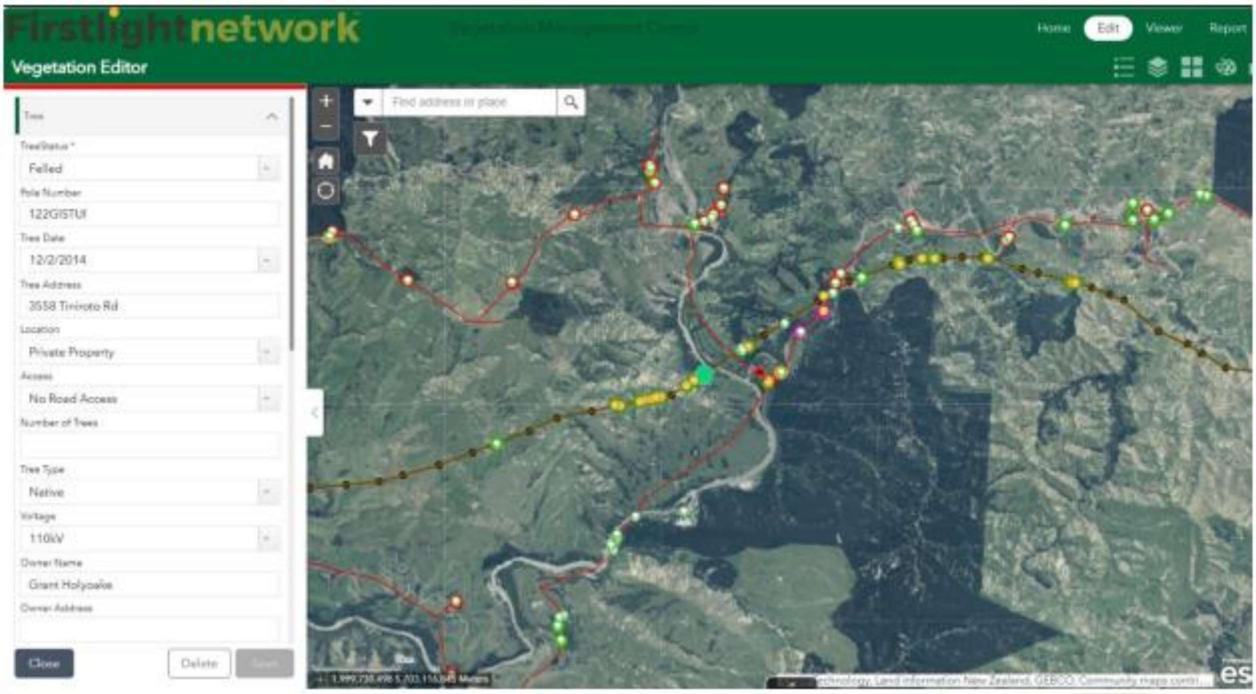
Our Tree App has brought efficiencies by removing previous confusion about where the site is and requiring us to print photos and maps for the contractors to pick up before going to the site. Work order numbers can be recorded on each site so they can be more efficiently tied back to work orders in Maximo. Data can be downloaded as a spreadsheet for filtering, record keeping, and monitoring when follow-ups are required.

Screenshot 6: Tree Fault Map during this assessment period



While in the field, contractors can record hazard warning notice cuts against trees requested by landowners, which reduces the number of sites having to be revisited for notices. Contractors have access to the same information we have, with all information about the tree loaded onto the tree site, as shown in Screenshot 7 and Screenshot 8.

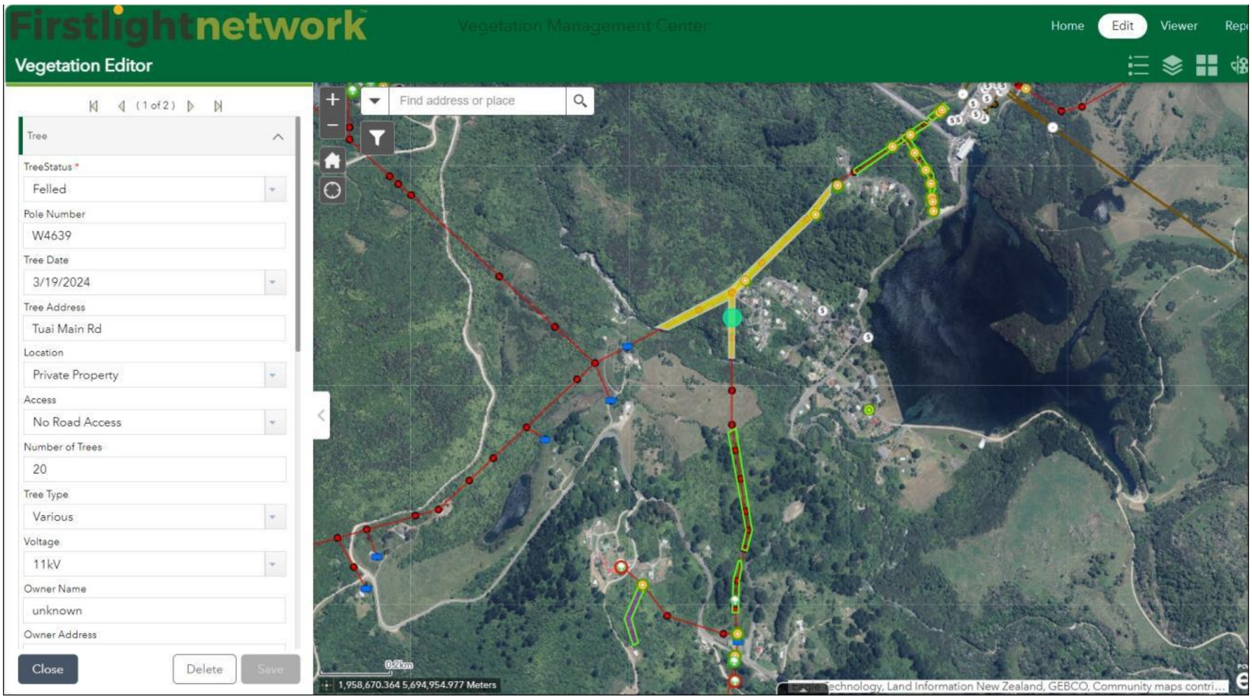
Screenshot 7: Maps of the 110kv lines in our Vegetation Management Centre



Tree

TreeStatus *: Felled
Pole Number: 122GISTUI
Tree Date: 12/2/2014
Tree Address: 3558 Tiniroto Rd
Location: Private Property
Access: No Road Access
Number of Trees:
Tree Type: Native
Voltage: 110kV
Owner Name: Grant Holyoake
Owner Address:

Screenshot 8: Map of the Village Feeder in our Vegetation Management Centre



TreeStatus *
Felled
Pole Number
W4639
Tree Date
3/19/2024
Tree Address
Tuai Main Rd
Location
Private Property
Access
No Road Access
Number of Trees
20
Tree Type
Various
Voltage
11kV
Owner Name
unknown
Owner Address

Attachments, photos, letters, consents, etc., loaded against the tree allow all data to be kept in one place. Our contractors have access to the location, photos, etc. and can load information directly when work is completed. Recording trees felled, trimmed and after-photos.

7.5.4 Strategic patrolling

Strategic patrolling ensures that the time we spend in the field patrolling aligns with the network's strategic needs, i.e., we are doing the right things at the right time.

Patrolling and the related work generated make up our 'Planned Work.' We will be able to identify how many meters, of which feeder, in what specific area of our network needs to be patrolled, and by when. Instead of patrolling entire feeders, we may choose to target specific sections of the line. Do we patrol for the furthest point back or from the tie-in out? All of this will be directly informed by the data and information we gain from our strategic reviews.

Our strategy enables us to track our progress and provide this information to wider business stakeholders.

Throughout, we will ask the following critical questions—

- Given the areas we have identified to patrol, what is the best methodology to do this?
- How many meters of line do we intend to patrol?
- How long do we think this should take?
- What technology might we need?

7.5.5 Contractor-managed zone

Due to terrain, access, and safety, some areas of our network have a high SAIDI impact when interruptions happen. Working with our control room, we have identified these areas A single contractor owns these specific zones, and under the contractor agreement, they are responsible for regular patrolling and reporting on the zones, entering any issues into our Tree App, and immediately notifying us of any high-risk areas. The Vegetation team assesses all inputs and converts them to work orders so that those contractors can carry out vegetation management as planned. KPIs have been established to monitor our contractors' performance across these zones.

7.5.6 Contractor management

Market Architecture is the framework we use to design how our contractors carry out work within their managed zones. It covers things like how many contractors we use, what type of work they do, how our fault responses are covered, and how we disburse our workload between those contractors we have engaged.

Contracts are established with the contractors that make up our Market Architecture. These contracts cover rates, resource availability, call-out rates, pre-qualifications, KPIs, and shared expectations and form the foundation for our contract relationships.

In RY24 Firstlight Network worked collaboratively with the Eastland Wood Council regarding management of out of zone trees. Forestry being our primary offender in this area. FNL has refined our approach to Electrical Hazard Management Plan (EHMP's) for planned out of zone works around FNL assets. This clarifies forestry companies and landowners involved, what their responsibilities and liabilities are. FNL held the first Eastern Vegetation Management Forum. A key outcome of this was a better developed 'Future Hazard Notice' form. This enables us to clearly inform the forest owners of any potential future hazards, giving them the chance to proactively remove them if they choose. FNL was also involved in early submissions for changes to be made to the Out of Zone tree regulations proposal from MBIE.

8. Intended reviews, analysis, and further investigations

8.1 Overview

Clause 12.4(g) requires us to provide an outline of any intended reviews, intended analysis, or intended investigation that would meet the categories specified in clause 12.4(c)-(f) that were planned but not yet completed.[34]

8.2 We have completed our reviews, analyses and investigations

We engaged PBA consulting to carry out an extensive review of our asset management. From this review, PBA made several recommendations with a view to improving fault response and, in time, reducing SAIDI.

PBA's findings recognise that a review of asset inspection is required. Such a review intends to look at the frequency of network coverage, using an approach based on risk and data captured during the inspections to benefit analysis.

Other key activities that are in progress include:

- The operations team is working on a vegetation strategy to reduce the network's exposure to vegetation damage. Aspects of this will take time before improvements are made.
- A key strategy to improve network reliability is the ongoing implementation of automation, increasing network security through the installation of sectionalisers to reduce the number of affected customers during fault conditions. A trial is planned for RY25 to install fault passage indicators, reducing the time needed to locate faults and resulting in quicker power restoration.
- The Clarus group is developing an upgrade path for our Computerised Maintenance Management System (CMMS), Maximo. This upgrade path will consider increased functionality, including the capture and storage of inspection data. This will provide improved visibility and control over maintenance activities, being one source of the truth.

A cross functional team was formed in November 2023 to address rising monthly SAIDI. PBA were engaged in December 2023 to provide analysis of the network performance and recommendations from the ongoing PBA analysis are being addressed by the team. The team will continue to address SAIDI to bring it back under control, recognising that the operating environment is worsening. The major actions being progressed are detailed in Table 38:

Table 38: Leading and lagging

Major actions	
Implementation of a new vegetation strategy, including improved inspection technology and contractor management.	Implementation in process
Accelerated sectionalising of the network - Commenced Dec 2023 eleven new sectionalisers installed and further six programmed to be installed September 2024	September 2024
Progress trial on fault passage indicators - Indicators received in July 2024 for install September 2024	September 2024
Swap out of oil filled ground mount swithes that cannot be operated under fault conditions to reduce impacted customers when diagnosing faults. Commenced April 2024. Four units Installed, further ten to be Installed	RY25
Widened resource pool for fault response to major ecvents. Feb 2024	Feb24
Review of asset inspection will commence RY25	RY25

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[34] As prescribed by clause 12.4(g) of the DPP Determination.

9. Director certification

9.1 Overview

Clause 12.4(h) requires a certificate in the form set out in Schedule 10, signed by at least one Director of Firstlight Network. Below we have provided the director certification in the form prescribed by the DPP Determination and signed by two directors of Firstlight Network.

9.2 Director certification unplanned interruption reporting

We Mark Adrian Ratcliffe and Fiona Ann Oliver, being directors of Firstlight Network, certify that, having made all reasonable enquiry, to the best of our knowledge and belief, the attached unplanned interruptions reporting of Firstlight Networks and related information, prepared for the purposes of the Electricity Distribution Services Default Price-Quality Path Determination 2020 has been prepared in accordance with all relevant requirements.

Mark Adrian Ratcliffe	Fiona Ann Oliver
14 August 2024	14 August 2024