Firstlightnetwork®

Unplanned Interruptions Report

for the assessment period ended 31 March 2025

Contents

1. Introduction

1.1 Purpose statement

This report has been prepared by Firstlight Network following its breach of its Quality Threshold during the 2025 Regulatory Year. Firstlight Network exceeded its unplanned SAIDI and unplanned SAIFI thresholds for the year ending on 31 March 2025[1]. Accordingly, we are providing the Commerce Commission with unplanned interruptions reporting[2] and have made the report publicly available on our website[3] at https://firstlightnetwork.co.nz/.

1.2 Who we are

Firstlight Network is the lines company that supplies electricity to consumers in the Tairāwhiti and Wairoa regions, shown in Figure 1. We own and maintain the distribution lines, poles, conductors and underground cabling that supply electricity to approximately 26,100 customers. We also own the region's high- voltage electricity transmission network (including the 110kV lines that connect the regions to the national grid). The Tairāwhiti and Wairoa regions are geographically isolated with challenging topography and limited access. The network area is predominantly rural with two urban centres covering an area of 12,000 square kilometres.

Firstlight Network is part of the wider Clarus Group. Clarus is one of New Zealand's largest energy groups with businesses that touch many aspects of the energy supply chain including Rockgas, Firstgas, Firstlight Network, First Renewables and Flexgas. Clarus acquired Firstlight Network, previously known as Eastland Network, from the Eastland Group on 31 March 2023.

Figure 1: Firstlight Network supply area

[1] Refer to clause 9.8(a) of the Commerce Commission, Electricity Distribution Services Default Price-Quality Path Determination 2020, consolidating all amendments as of 20 May 2020 (the DPP Determination).
[2] Refer to clause 12.3(a) of the DPP Determination
[3] We also provide the report to the Commerce Commission as required by clause 12.3(b) of the DPP Determination.

1.3 We are a regulated service provider

Firstlight Network is subject to price-quality regulation administered under Part 4 of the Commerce Act 1986. The Commerce Commission (the Commission) regulates the maximum annual revenue we can earn from our customers and the minimum quality of service we must deliver. Clause 9.7 of the DPP Determination requires non-exempt electricity distribution businesses (EDBs), within each assessment period[4] , to comply with the annual unplanned reliability assessment specified in clause 9.8 for that assessment period. To comply with the annual unplanned interruption reliability assessment, non-exempt EDBs must not exceed the unplanned SAIDI limit, or the unplanned SAIFI limit specified in paragraph (1) of Schedule 3.2 of the DPP Determination. For the assessment period that ended 31 March 2025, we exceeded our unplanned SAIDI and unplanned SAIFI limits. Our unplanned SAIDI and SAIFI performance, as reported in our RY 2025 Annual Compliance Statement, is shown in Table 1 and Table 2.

1.4 We exceeded our unplanned SAIDI & SAIFI limits during this assessment period

For this assessment period, we did not comply with clause 9.8(a) of the DPP Determination because we exceeded our unplanned SAIDI limit and our unplanned SAIFI limit. Accordingly, we must— (a) provide the Commission with the 'unplanned interruption reporting' specified in clause 12.4 of the DPP Determination within five months after the end of that assessment period; and (b) make the 'unplanned interruptions reporting' specified in clause 12.4 of the DPP Determination publicly available on our website while providing the report to the Commission. 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 2025. A copy of the report is available on our website at https://firstlightnetwork.co.nz/.

Table 1: Performance against the Unplanned SAIDI limit RY 2025

Unplanned interruptions quality standard RY 2025 - 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	261.36
Compliance result		Not Compliant

Table 2: performance against the Unplanned SAIFI limit RY25

Unplanned interruptions quality standard RY 2025 - 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	3.5086
Compliance result		Not Compliant

[4] The 12-month period between 1 April and 31 March.

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 sections:

- 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 and the two 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 internal investigations conducted during the assessment period.
- Section 7 — we discuss the findings of the analysis conducted in the assessment period and the two preceding assessment periods:
    - interaction with asset management policy and strategy
    - trends in asset conditions
    - causes of the unplanned interruptions
    - asset replacement and renewal
    - vegetation management.
- Section 8 — we provide an outline of our intended reviews, intended analysis and investigations that are under way but not yet completed.
- Section 9 — we include the signed Director certification in the form set out in Schedule 10 of the DPP Determination.

This Unplanned Interruptions Report is presented in narrative form consistent with Firstlight Network's previous similar reports even though it was compiled by an independent party. Firstlight Network engaged M W Consultants Ltd to compile this report using the same structure as previous like reports, and using the data and analysis undertaken by Firstlight Network's staff.

In a similar context, we have chosen to report using raw SAIDI and SAIFI unless otherwise stated because this presents our performance in a consistent and relatable manner. 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 and SAIFI better reflects the impact on consumers.

Refer to the glossary in section 10 Appendix 1 - Glossary for terms and definitions.

2. Causes of our non-compliance

2.1 Overview

Firstlight took ownership of the network in April 2023, just after Cyclone Gabrielle hit the East Coast. The network continued to suffer from ongoing weather events through the following year and worked to recover the damage experienced through those events. Through AP2025 and ongoing, we are continuing to look at the inherited Asset Management framework, increasing our understanding of the challenges the network faces, to identify, and implement focussed improvement.

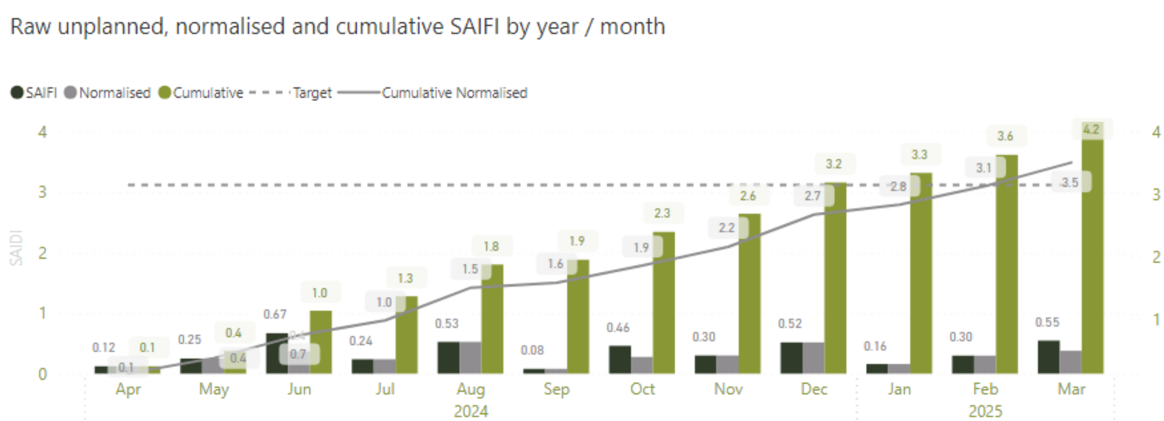
In this section, we report the reasons for not complying with our annual unplanned SAIDI limit and annual unplanned SAIFI limit and provide supporting evidence for those reasons.

During this assessment period, we exceeded our annual unplanned SAIDI limit by 41.9 SAIDI minutes normalised (or +19%) and we exceeded our SAIFI limit by 0.36 normalised (or 11%).

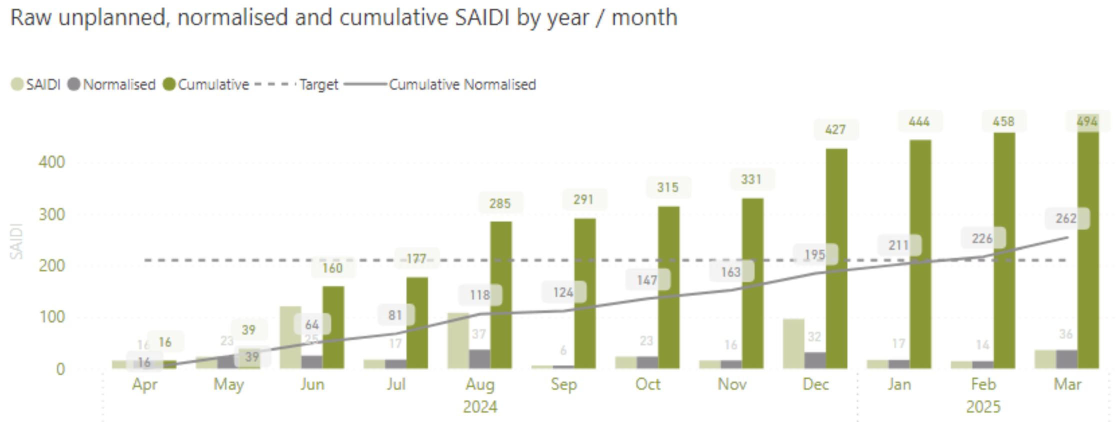
Graphs 1 and 2 show the actual (raw) and normalised monthly and cumulative SAIFI and SAIDI respectively against our unplanned limits. By February 2025, following normalisation, we had exceeded our annual unplanned SAIDI limit and we were close to breaching our annual unplanned SAIFI limit.

Normalisation occurred for SAIFI during June 2024, October 2024 and March 2025, and normalisation for SAIDI occurred during June 2024, August 2024 and December 2024. The major events are described in Section 5.

Graph 1: Unplanned SAIFI Performance for the assessment period



Graph 2: Unplanned SAIDI Performance for the assessment period

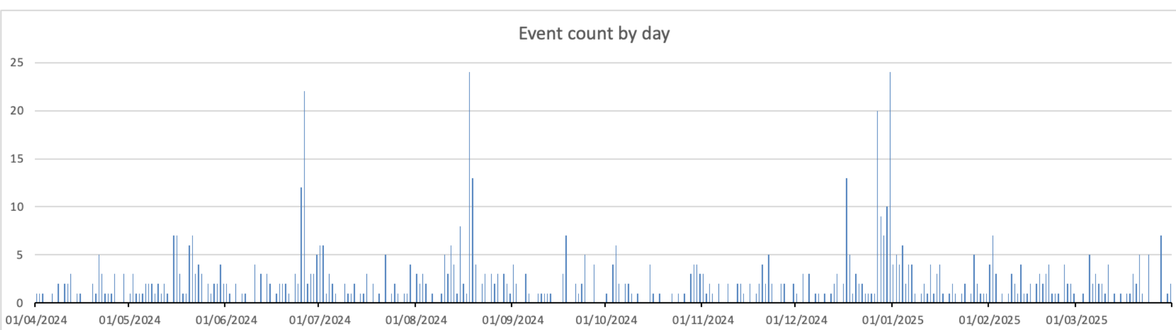


There was no single identifiable cause for Unplanned SAIDI and Unplanned SAIFI exceeding the limits in RY25. Key contributory factors included :

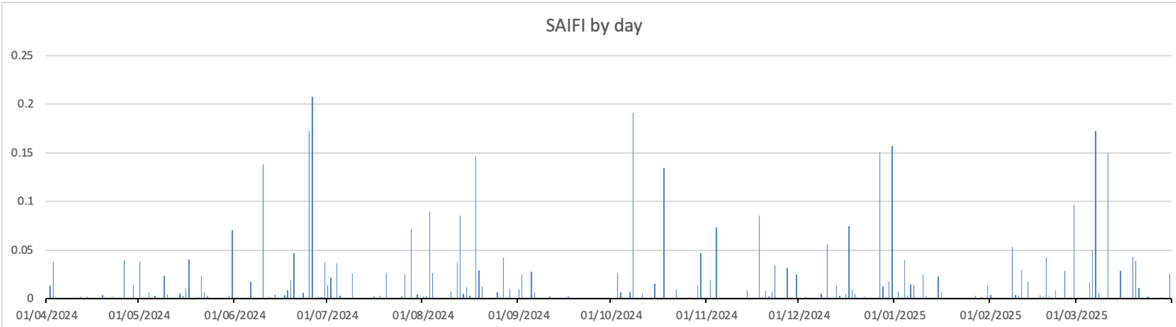
- Vegetation faults, particularly from out-of-zone trees;
- Faults due to defective equipment and unknown cause;
- Rising rate of interruptions but generally declining numbers of customers per interruption;
- During some months, weather has had a part to play;
- Some uncharacteristic interruptions on major distribution feeders and sub-transmission feeders that affected relatively large numbers of customers.

Graphs 3 and 5 show that major interruption events occurred near the end of June, in the middle of August and during the end of December. These major events are described in sections 5.4, 5.6 and 5.8 and were primarily the result of severe weather conditions. Analysis of interruption numbers is given in section 2.4. Heavy rain, wind and lightning occurred on 31 December causing a large number of interruptions but not enough SAIDI or SAIFI to prompt normalisation calculations.

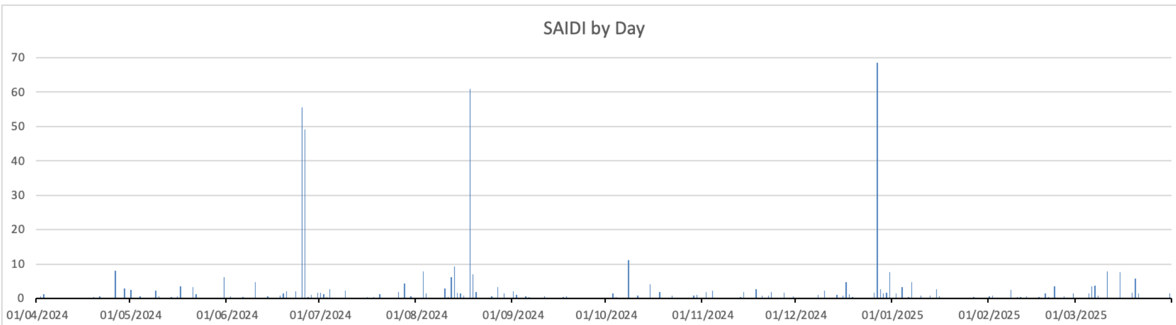
Graph 3: Fault Interruption event numbers by day



Graph 4: SAIFI by day



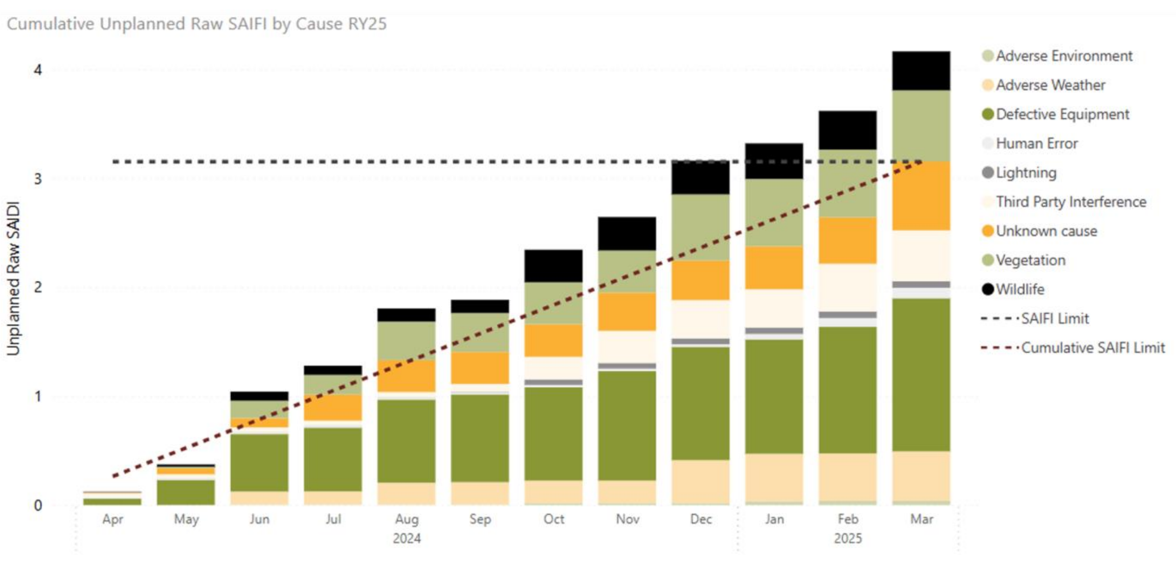
Graph 5: SAIDI by day



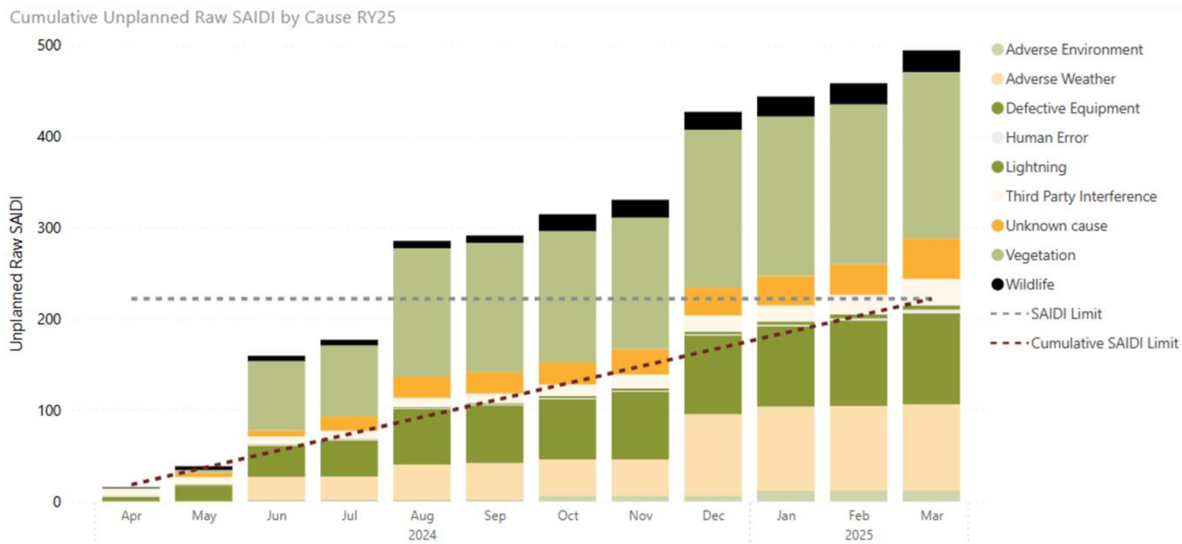
The picture for SAIFI (Graph 4) is rather more complicated. As outlined in section 2.4, events with a SAIFI greater than 0.01 have had a larger impact this year than in previous years. Summary information for the more significant SAIFI events from Graph 4 and indexes to the event descriptions given in this report can be found in Appendix 2. These SAIFI events were predominantly a result of adverse weather and vegetation.

As shown in Graphs 6 and 7, SAIDI and SAIFI during the RY 2025 assessment period had multiple causes, with the main drivers of SAIFI being defective equipment, vegetation and faults of unknown cause. The main drivers of SAIDI were vegetation, defective equipment and adverse weather.

Graph 6: Breakdown of Unplanned Raw SAIFI by Cause RY 2025



Graph 7: Cumulative Unplanned Raw SAIDI by Cause RY 2025



The following sections provide analysis of each of these factors.

2.2 Vegetation was a major contributor of SAIDI

Vegetation was the leading cause of unplanned SAIDI during this assessment period, contributing a total of 182.55 SAIDI minutes as detailed in Table 3.

Out-of-zone trees were the primary contributor, accounting for 165.2 minutes (91%) of vegetation-related SAIDI. Of this, 46.93 minutes (26%) were caused by plantation trees.

In-zone trees accounted for 17. minutes (9%). The remaining SAIDI from vegetation reflects broader network impacts, often from trees outside defined vegetation management zones.

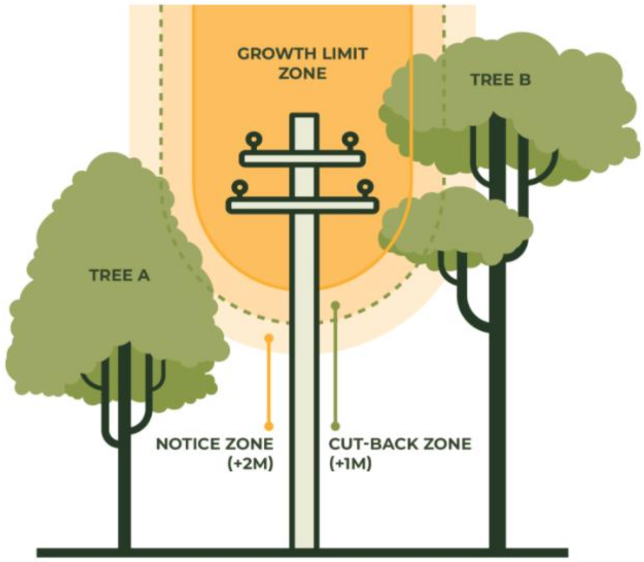
There has been a notable reduction of in-zone faults compared with RY2024 (was 32.17 SAIDI mins), attributed to improved internal vegetation management.

Table 3: Breakdown of vegetation-related interruptions

Vegetation category	Unplanned SAIDI	Percentage of vegetation interruptions
Tree Contact In-zone	16.87	9%
Tree Contact Out-of-zone	118.30	65%
Plantation Tree In-zone	0.45	0.2%
Plantation Tree Out-of-zone	46.93	26%
Vegetation other	0.00	0.0%
Total	**182.55**	**100%**

However, out-of-zone trees, particularly non-plantation trees, continue to cause significant disruptions. These trees typically fall from outside the Growth Limit Zone (GLZ) and notice zones — areas where line owners have no legal authority to enforce trimming (refer to Figure 2).

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



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) (refer to Figure 2) 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 apart from commercial plantations, it is unusual for a tree owner not to grant a request to trim a tree within the notice zone.

As described in section 7.7.1, the tree regulations have been amended to introduce a "clear to the sky" buffer zone that prohibits vegetation from overhanging power lines by one metre around the Growth Limit Zone (see photograph 1). This regulation change brings some possible benefits during rain events, because moisture weighs down branches that can cause out-of-zone trees to become in-zone. This occurred on the 50 kV Kaiti feeder on 31 December 2024, in which a rain laden poplar (now removed) contacted the line during a lightning storm adding 0.127 SAIFI and 3.7 SAIDI minutes.

We have a proactive vegetation strategy that supports us in actively maintaining vegetation within the notice zone (discussed further in the section 7.7), thereby reducing interruptions caused by trees within the GLZ. More vegetation-related interruptions were caused by trees outside the Notice Zone than inside because extreme winds pushed out-of-zone trees to fall into our lines and cause extensive damage.

We have consistently maintained in-zone clearances over the last five years. Encouragingly, we have been making useful headway in gaining customer and forestry support for the management of out-of-zone trees. We have also been negotiating with forestry companies to extend the clearance corridors for the most critical feeders, particularly as new land blocks are being replanted.

We convene an Eastern Vegetation Management group forum to work with other EDB's on collective solutions to improve vegetation management outcomes. A new future Hazards Notice has been developed, providing improved information on landowners' risks and obligation.

Photograph 1: Example of a tree trimmed to a 'clear to the sky' policy

The commercial drivers of plantation ownership bring a difficult dimension to the management of trees around electricity lines because hazard notices can be rejected or ignored.

Our network, built in the 1950s and 60s, is a largely rural network originally designed and constructed to deliver electricity to extensive beef and sheep farms. In the 1980s, particularly after Cyclone Bola, farms were converted to forestry, typically 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 traversing mostly open farmland to running through the middle of large forestry plantations. It has also brought changes to the rural economy, described further in Sections 7.5 and 7.6.

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 can be over 30 meters tall. High winds combined with the wet conditions can result in several interruptions when plantation trees contacted our lines or fall through our lines.

2.3 Defective Equipment was a Major Contributor of SAIFI

As shown in Graph 6, defective equipment and faults of unknown cause were major contributors to the RY2025 SAIFI result and less so, but still significant, to the RY2025 SAIDI result.

Table 4 shows a breakdown of defective equipment interruptions and associated SAIFI and SAIDI by asset type and asset component for RY 2025 compared with those of RY2021 to RY2024.

Table 5 shows how the asset type and asset component failures for this RY2025 assessment period compared with the averages for RY2021 to RY2024. The following asset types were the main contributors to interruptions, SAIFI and SAIDI during the assessment period:

- Insulators and lightning arresters were involved with 13 more interruptions, 0.32 more SAIFI and 12.42 more SAIDI minutes than the previous four-year average.
- Zone substation equipment failures were a relatively significant cause of SAIFI (0.185) during the assessment period. Interruptions involving Port and Patutahi substations are described in Section 7.5.
- Seven ground mounted switchgear failures occurred during the assessment period causing 5.25 SAIDI minutes and 0.127 SAIFI. This is compared with one failure in 2022.

- Cable termination and conductor termination failures (seven more and four more respectively than the averages from the previous four years) caused the addition of 2.3 SAIDI and 0.068 SAIFI above previous years.
- Hardwood poles were involved in five more interruptions than the average from the previous four years, with SAIDI and SAIFI impacts of 18.63 minutes and 0.075 more than the previous averages respectively.
- Cross arms and conductor binders were involved in more interruptions than the average for the previous four years while their SAIDI and SAIFI impacts were lower than the four-year average.

On the upside, there were fewer interruptions caused by conductor clashes and conductor sleeve failures.

The SAIFI attributable to insulators goes close to explaining the limit exceedance. During the current assessment period, the lightning arrester category was added to distinguish conventional pole insulators from the lightning arresters that have been used as stand-off insulators during the previous 30 years and have been failing. The insulator comparisons however need to be weighed against the large numbers of insulator caused interruptions in RY2024 (23), which caused 34 SAIDI minutes and 0.379 SAIFI, and would have included lightning arrester stand offs.

Analysis of the age of failed hardwood poles, insulators and crossarms (taking install dates of pole as age of all items) in RY 2025, the following quantities were greater than 50 years of age

Eleven of fifteen hardwood poles

Seven of fifteen cross arms

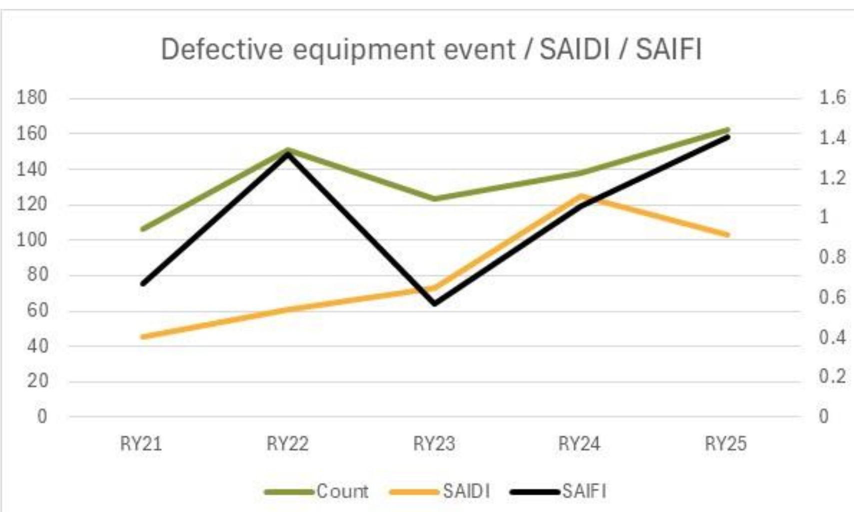
Seven of seventeen

A significant population of failure of these items have an age impact.

2.3.1 General Defective Reliability Trends

During the period from RY2021 to RY2025, interruption numbers and SAIDI have shown a gradual upward trend, while SAIFI has been variable. Graph 8 shows variations in defective equipment interruption numbers, SAIFI and SAIDI across the period. Notably the interruptions and SAIFI dipped in RY2023, possibly because of masking from the impacts of Hale and Gabrielle.

Graph 8: Trends in defective equipment interruptions, SAIFI and SAIDI



Spanning the previous five years, insulators, cross arms, conductors and conductor joints have been major contributors to Firstlight's SAIFI results. A cross-functional team is working on several activities focussed on improving pole and pole top attachment performance from inspection improvement through to a focussed replacement programme. The pole replacement programme (incorporating new cross arms and insulators) is being maintained at an increased rate including an increased focus on pole maintenance activity.

Table 4: Comparative defective equipment reliability effects by asset type across the previous five assessment periods.

Defective Equipment	2020-21			2021-22			2022-23			2023-24			2024-25		
	No. of	SAIDI	SAIFI	No. of	SAIDI	SAIFI	No. of	SAIDI	SAIFI	No. of	SAIDI	SAIFI	No. of	SAIDI	SAIFI
Conductor	16	7.97	0.040	30	12.60	0.110	18	7.51	0.058	25	18.71	0.123	13	3.61	0.044
Pole mounted Transformer	15	2.39	0.091	18	2.08	0.023	14	1.53	0.014	15	4.58	0.013	13	1.83	0.010
Conductor Joint	13.0	14.55	0.186	10.0	3.92	0.067	10.0	22.77	0.062	14.0	6.56	0.148	8	2.54	0.046
Fuse	11	1.60	0.019	11	1.74	0.020	15	0.72	0.012	8	0.65	0.013	14	0.74	0.006
Insulator	6	1.20	0.021	4	10.47	0.084	11	5.32	0.015	23	34.63	0.379	17	14.73	0.299
Lightning Arrestor													7	10.60	0.145
Crossarm	6	1.13	0.005	17	4.88	0.388	12	11.36	0.185	8	14.06	0.037	15	5.58	0.072
Pole Hardwood	5	0.52	0.008	15	3.88	0.068	13	5.17	0.023	7	3.79	0.007	15	21.97	0.101
Conductor Termination	10	0.74	0.026	9	1.31	0.019	2	0.28	0.013	6	4.50	0.081	11	1.95	0.051
Cable	2	0.04	0.000	6	4.73	0.137	9	7.67	0.116	7	5.95	0.060	3	3.28	0.129
Zone Sub Equipment	3	3.37	0.140	6	4.08	0.077	0	0	0.000	0	0	0.000	3	11.63	0.185
Cable Termination	1	0.03	0.000	6	1.63	0.039	5	4.34	0.031	6	11.82	0.108	12	6.47	0.096
Conduct Binding	3	1.95	0.011	3	0.40	0.008	5	4.50	0.015	6	11.39	0.015	10	3.20	0.014
Defective Equip Other	0	0.00	0.000	5	2.30	0.081	4	1.55	0.013	3	0.57	0.012	1	0.13	0.000
Pole Softwood	3	4.13	0.038	3	0.80	0.005	0	0	0.000	4	3.06	0.052	0	0.00	0.000
Pole Mounted Switch gear	6	3.36	0.043	3	0.22	0.011	1	0.02	0.004	2	0.06	0.001	2	0.93	0.015
Ground Mounted TX	3	1.10	0.030	4	1.18	0.013	0	0	0.000	1	4.20	0.003	3	0.97	0.003
Air Brake Switch (ABS)	3	0.92	0.016	0	0.00	0.000	2	0.27	0.017	2	0.20	0.004	4	0.98	0.027
Cable Joint	0	0	0	1	4.42	0.055	1	0.05	0.000	1	0.24	0.003	0	0.00	0.000
Switch gear	0	0	0	0	0	0.116	1	0.01	0.000	0	0	0	7	5.25	0.127
Steel Pole	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Pole Concrete	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0	0	0	0	0	0	3	3.1	0
Generator	0	0	0	0	0	0	0	0	0	0	0	0	1	3.097	0.036
Total	106	45.00	0.674	151	60.62	1.321	123	73.09	0.578	138	124.98	1.059	162	102.59	1.406

Table 5: Comparison of defective equipment reliability in RY2025 with previous years by asset type

2024-25			Average 2020-2024			Diff from Avg		
No. of	SAIDI	SAIFI	No. of	SAIDI	SAIFI.	No. of	SAIDI	SAIFI.
13	3.61	0.044	22.25	11.70	0.083	-9.25	-8.09	-0.039
13	1.83	0.010	15.50	2.64	0.035	-2.50	-0.81	-0.025
8	2.54	0.046	11.75	11.95	0.116	-3.75	-9.41	-0.070
14	0.74	0.006	11.25	1.18	0.016	2.75	-0.44	-0.010
17	14.73	0.299	11.00	12.91	0.125	13.00	12.42	0.319
7	10.60	0.145	N/A	N/A	N/A			
15	5.58	0.072	10.75	7.86	0.154	4.25	-2.28	-0.082
15	21.97	0.101	10.00	3.34	0.027	5.00	18.63	0.075
11	1.95	0.051	6.75	1.71	0.035	4.25	0.24	0.016
3	3.28	0.129	6.00	4.60	0.078	-3.00	-1.32	0.051
3	11.63	0.185	2.25	1.86	0.054	0.75	9.77	0.131
12	6.47	0.096	4.50	4.46	0.045	7.50	2.01	0.052
10	3.20	0.014	4.25	4.56	0.012	5.75	-1.36	0.002
1	0.13	0.000	3.00	1.10	0.027	-2.00	-0.97	-0.027
0	0.00	0.000	2.50	2.00	0.024	-2.50	-2.00	-0.024
2	0.93	0.015	3.00	0.92	0.015	-1.00	0.01	0.000
3	0.97	0.003	2.00	1.62	0.012	1.00	-0.65	-0.009
4	0.98	0.027	1.75	0.35	0.009	2.25	0.63	0.018
0	0.00	0.000	0.75	1.18	0.015	-0.75	-1.18	-0.015
7	5.25	0.127	0.25	0.00	0.029	6.75	5.25	0.098
0	0	0	0.00	0.00	0.000	0.00	0.00	0.000
0	0	0	0.00	0.00	0.000	0.00	0.00	0.000
3	3.1	0	0.00	0.00	0.000	3.00	3.10	0.000
1	3.097	0.036	0.00	0.00	0.000	1.00	3.10	0.036

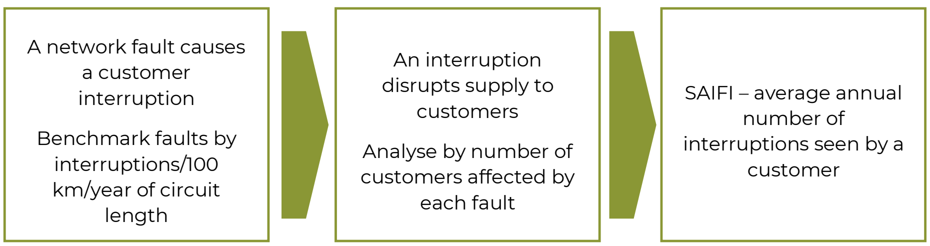
(1) Lightning arresters are a new asset category introduced at the beginning of the assessment period, previous interruptions ascribed to insulators.

2.4 Rising interruption numbers

When the previous ten years of interruptions are analysed, there has been a gradually rising number of interruptions, particularly in the previous five years, while SAIFI has not been affected as markedly. The analysis that follows (Figure 3) considers:

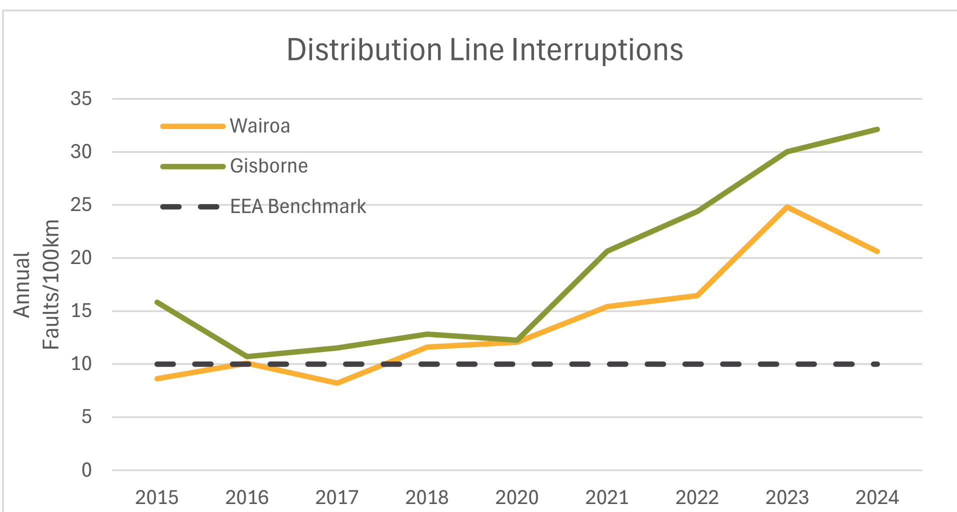
1. The number of interruptions across the network, benchmarked by the number of interruptions per unit length of circuit (interruptions per 100km) for each type of circuit (λ_i the fault rate for location i)
2. The numbers of customers affected by each interruption (n_i the number of customers affect by the fault at location i). This is calculated from SAIFI * N/interruptions, where N is the total number of customers that Firstlight serves.
3. SAIFI is proportional to the product of the number of interruptions and the average number of customers affected by each interruption, that is SAIFI = $\Sigma(\lambda_i n_i)/N$.

Figure 3: Relationship between Supply Interruptions and SAIFI

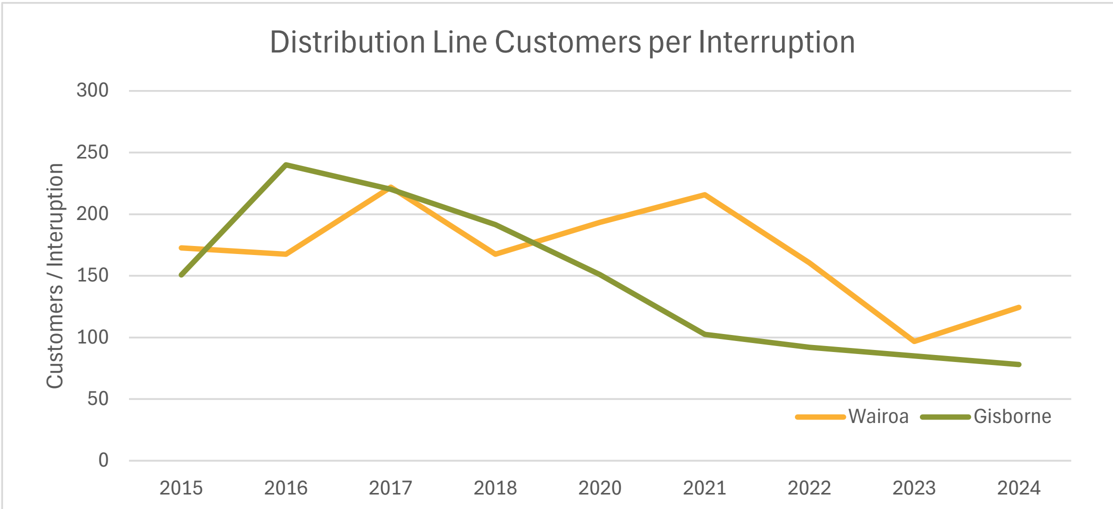


Faults numbers on distribution lines have risen over the previous ten-year period in both Gisborne and Wairoa networks, as shown in Graph 9. Their number exceeds the benchmark levels in Appendix A3 of the EEA's Security of Supply Guideline. Conversely the numbers of customers affected by each interruption has reduced in both Gisborne and Wairoa networks (Graph 10), leading to relatively stable SAIFI in Gisborne and a gradually increasing SAIFI in Wairoa (Graph 11).

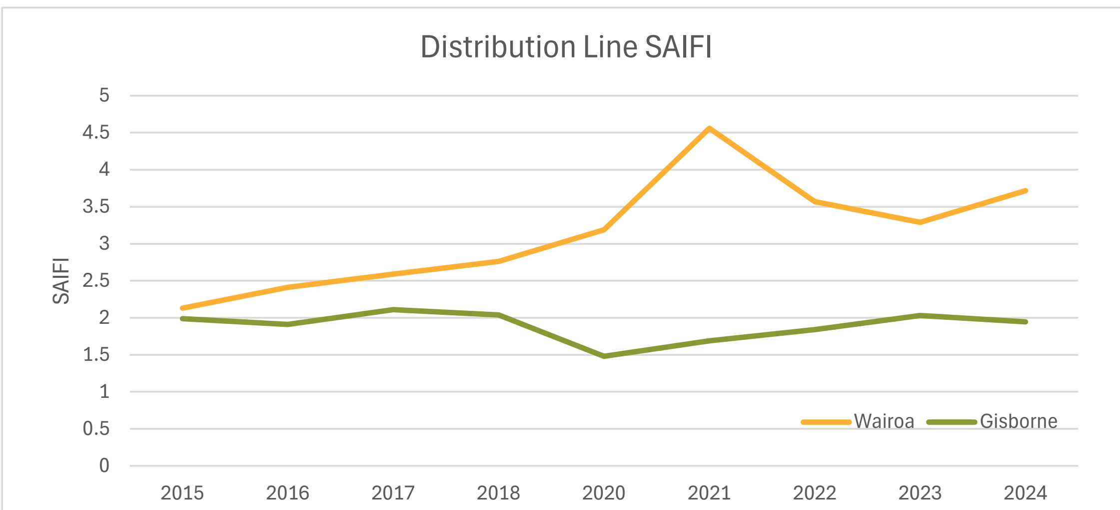
Graph 9: Historical Distribution Line Interruptions per 100km circuit length (from Information Disclosures)



Graph 10: Historical Distribution Line Customer Numbers per interruption (calculated from Information Disclosures)

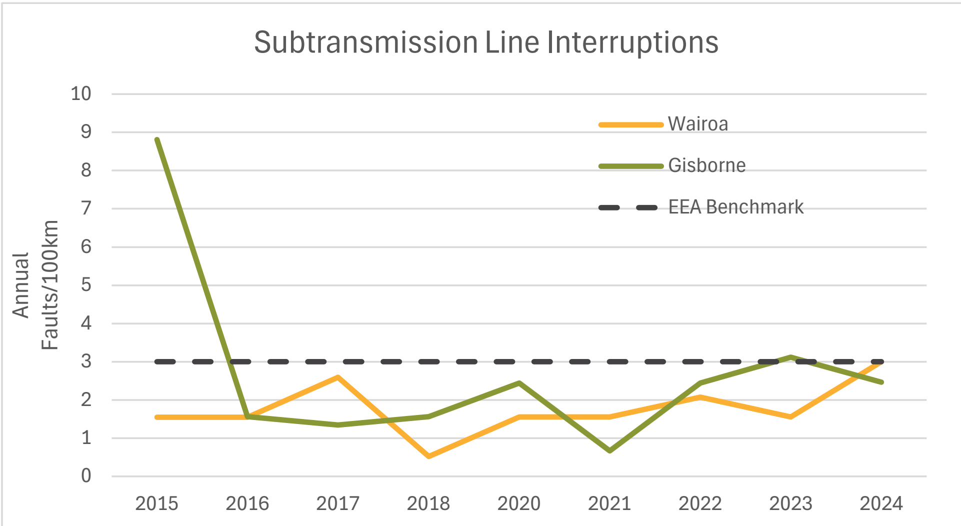


Graph 11: Historical Distribution Line SAIFI (from Information Disclosures)

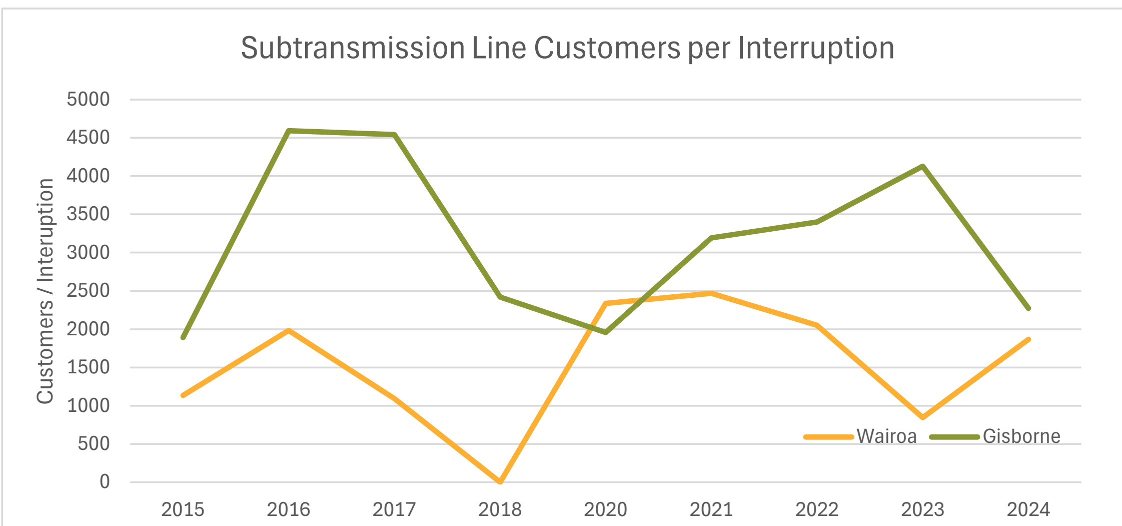


Fault numbers on subtransmission lines have remained relatively steady in both Gisborne and Wairoa networks, and their fault rate per 100 km of circuit length is lower than the benchmark levels in the EEA Security of Supply Guide (Graph 12). However, the numbers of customers affected by each fault has varied significantly across the ten-year period (Graph 13), leading to SAIFI levels that have varied significantly (Graph 14).

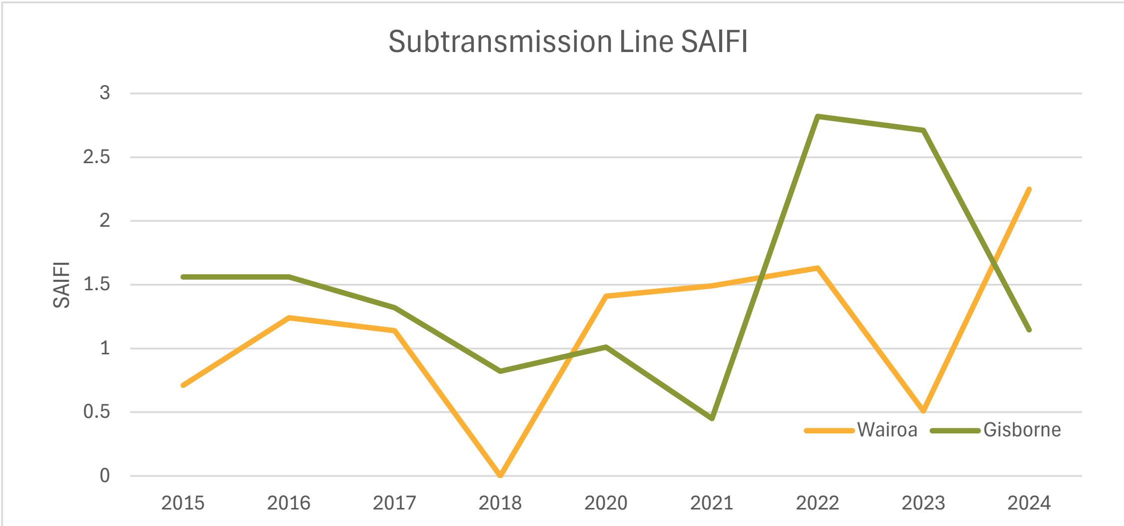
Graph 12: Historical Subtransmission Line Interruptions per 100km circuit length (from Information Disclosures)



Graph 13: Historical Subtransmission Line Customer Numbers per interruption (calculated from Information Disclosures)



Graph 14: Historical Subtransmission Line SAIFI (from Information Disclosures)



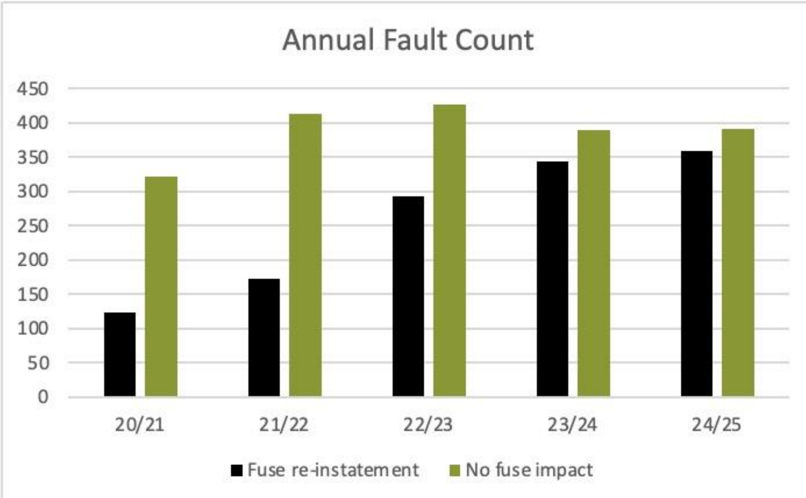
2.4.1 Impact of faults requiring fuse reinstatement

One of the likely reasons for the observed increase in fault rates on the distribution network is that maintenance and renewal activities have focused on subtransmission, the main rural feeder backbones and urban feeders. A "harden the backbone" strategy is commonly applied by many other distributors and is one of the recommendations presented in Section 4.5.3, Table 11. It is possible that some of the rural spur line faults are repeat faults of unknown cause involving tree contact, conductor clashing or cracked insulators.

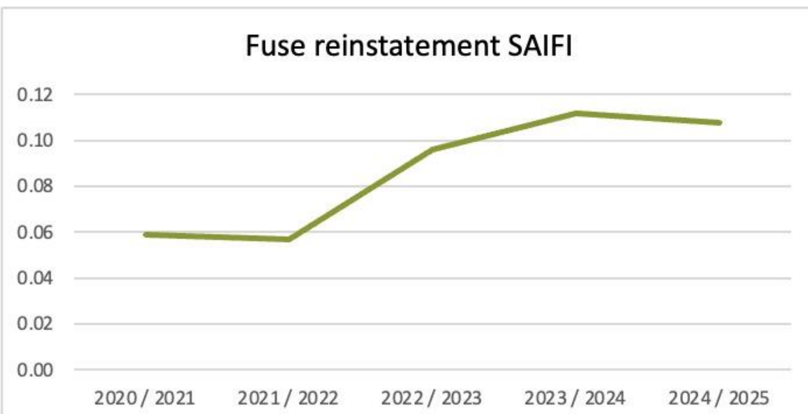
This hypothesis is backed up by the increasing count of "fuse faults". Fuse faults is a term used to describe faults that occur on feeder laterals and spurs that are protected from the main feeder by drop out fuses. Graph 15 shows that HV fuse replacement faults on lateral feeder spurs (black bars) have been increasing in number while fault rates not involving fuses (green bars) have remained relatively steady. The SAIFI and SAIDI impacts from the fuse faults on the feeder lateral spurs have been correspondingly increasing (Graphs 16 and 17). In RY2025 SAIDI was around 19 minutes higher than it was in RY2021 and SAIFI was around 0.05 higher over the same period.

A further possible (but less likely) reason for the increasing fault rate stems from ongoing operational improvements where historically, fault staff had been able to undertake drop out fuse replacements under delegation from the control room. Some of the historical faulted spur lines restored by HV drop out fuse replacement might not have been recorded amongst fault statistics. However, a change to improve fuse fault recording is understood to have been made at least seven years ago which is reflected in Graph 15.

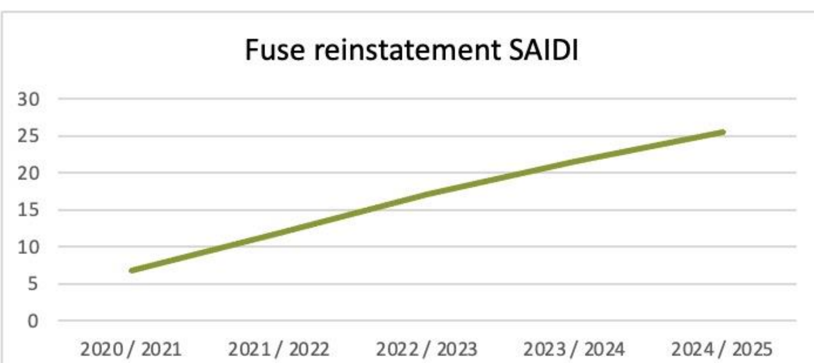
Graph 15: Fuse fault interruption numbers and corresponding SAIFI and SAIDI



Graph 16: Fuse Fault SAIFI



Graph 17: Fuse Fault SAIDI

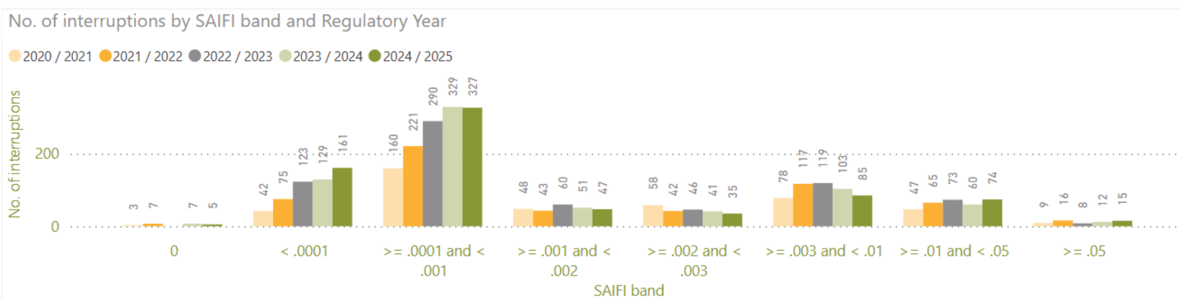


Graph 18 shows the number of interruptions by bands of SAIFI across the previous five years. The number of interruptions whose SAIFI impact is less than 0.001 has been growing over time. On Firstlight's network, SAIFI of 0.001 equates to around 26 customers. Meanwhile, Graph 19 shows that despite the growing numbers of interruptions on feeder spurs with fewer than 26 customers, the impact on total SAIFI resulting from these interruptions is quite minor at around 0.07 SAIFI (comprising 0.127 in RY2025 minus 0.059 in RY2021)[5]. These observations are well aligned with the growing numbers of fuse faults on lateral feeder spurs whose overall SAIFI impact was similarly minor at approximately 0.11 (or only 3.5% of the SAIFI limit).

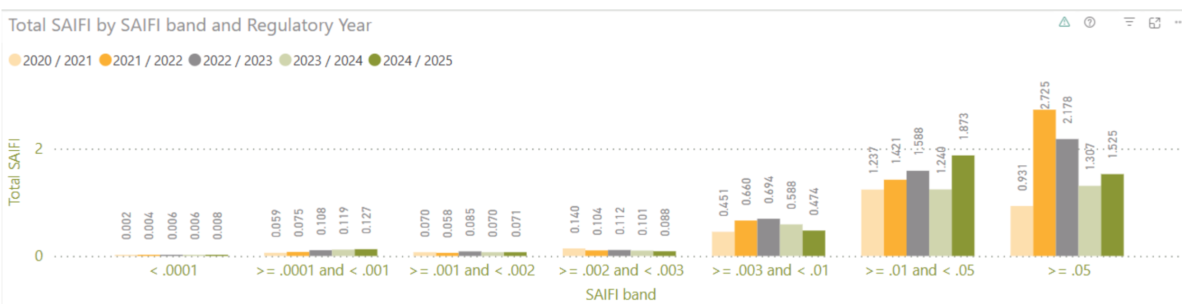
The numbers of interruptions where SAIFI impact was greater than 0.01 (equivalent to 260 customers) is relatively consistent with previous years. However, the SAIFI associated with medium sized interruptions (SAIFI between 0.01 and 0.05 for each interruption, that is, between 260 and 1300 customers per interruption) was greater in the assessment period than any of the previous four years. There were 75 interruptions whose SAIFI per interruption was between 0.01 and 0.05 SAIFI, and 15 interruptions whose SAIFI was 0.05 or above. These interruptions were responsible for 1.873 and 1.525 SAIFI respectively and therefore they had much more effect on Firstlight exceeding its SAIFI limit. Graph 20 shows that these faults were responsible for adding 24 more SAIDI than during RY2024.

The conclusion is that it was not the growing numbers of fuse faults that was the determinant of SAIFI exceeding its limit. Rather it was a smaller number of middle-sized interruptions, not large enough to trigger normalisation, that was the determinant behind Firstlight exceeding its SAIFI limit. These interruptions could have been more significant if it had not been for the automation implementation and switch replacement programmes that are in progress. We describe the causes of some of the middle-sized interruptions in sections 2.7 and 7.5.

Graph 18: Comparison of interruption numbers by SAIFI across regulatory years

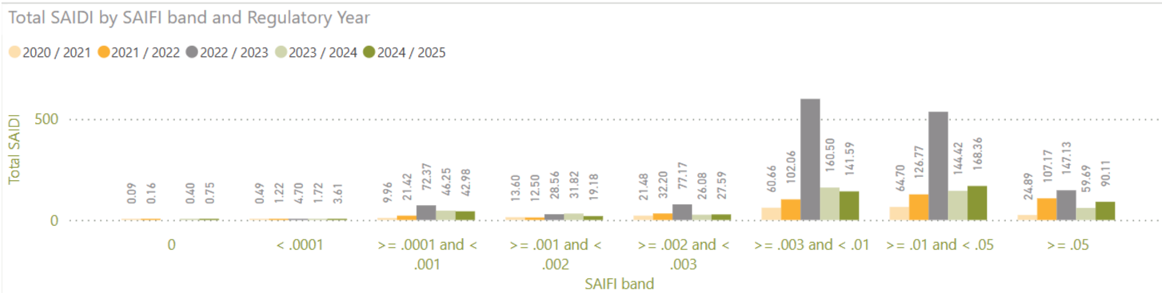


Graph 19: Comparison of SAIFI by SAIFI band across regulatory years



[5] The addition of 19 SAIDI minutes and 0.07 SAIFI since RY2021 because of fuse faults implies a CAIDI of around 4.5 hours, which seems reasonable for remote rural operations.

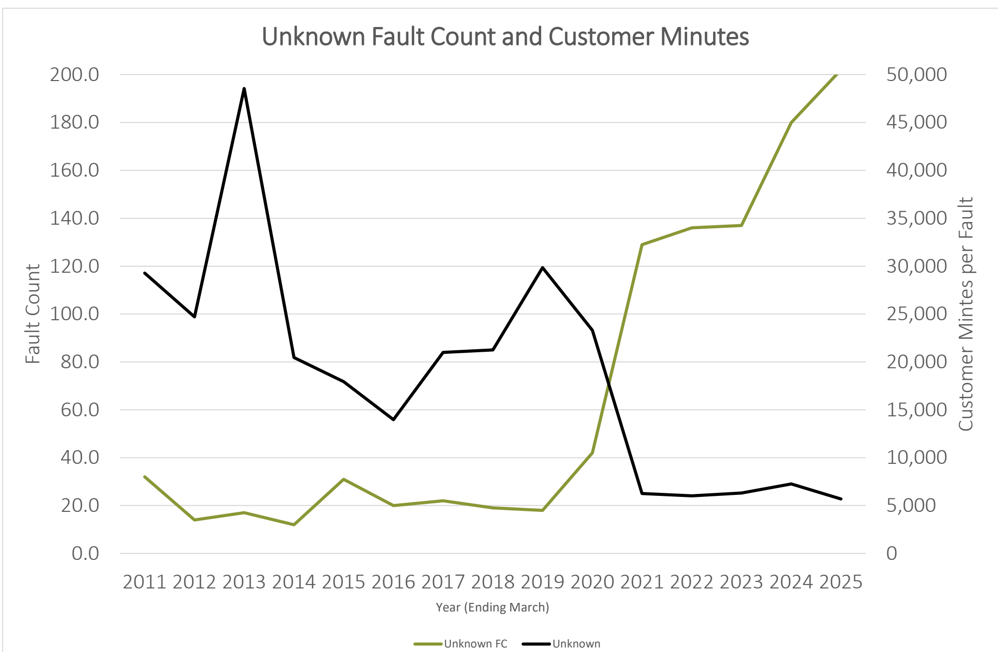
Graph 20: Comparison of SAIDI by SAIFI band across regulatory years



2.4.2 Trends in Faults of Unknown Cause

A similar growing fault rate with decreasing customer minutes per fault is seen with faults of unknown cause (Graph 21). The faults of unknown cause tend to be transient in nature, that is, a fault develops and operates the feeder protection, but the cause of the fault later disappears. Examples of such faults include temporary tree contact or cracked insulators.

Graph 21: Historical Fault count and impact from Faults of Unknown Cause

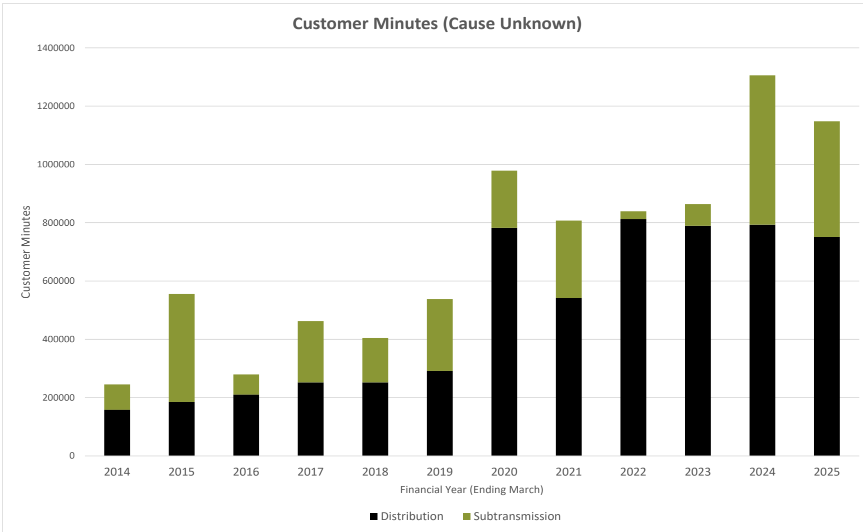


Some unknown cause faults have impacted subtransmission assets, which bring high consequences because of the number of customers affected, sometimes resulting in several substations tripping. These included:

- The Gisborne Hexton 50kV line on 11 March 2025 – after patrolling the line twice with no cause found, a decision was made to re-liven the circuit, which successfully stayed in service. The outage added 5.5 SAIDI minutes and 0.134 SAIFI.
- The 50 kV line supplying Makaraka tripped on 28 July 2024 with an earth fault on the centre phase. After patrolling no cause of fault was found and the line was successfully re-livened. The outage caused 4.3 SAIDI minutes and 0.072 SAIFI.

We have developed our patrolling regimes with an initial visual inspection before re-livening and then a more comprehensive foot patrol inspection to ascertain the root cause. With these procedures in place, if an obvious cause cannot be found, these interruptions are classified as unknown. We expect that continued monitoring and maintenance work on sub-transmission assets will improve Unknown fault cause performance. Graph 22 shows the relative customer minutes ascribed to subtransmission and distribution interruptions of unknown cause.

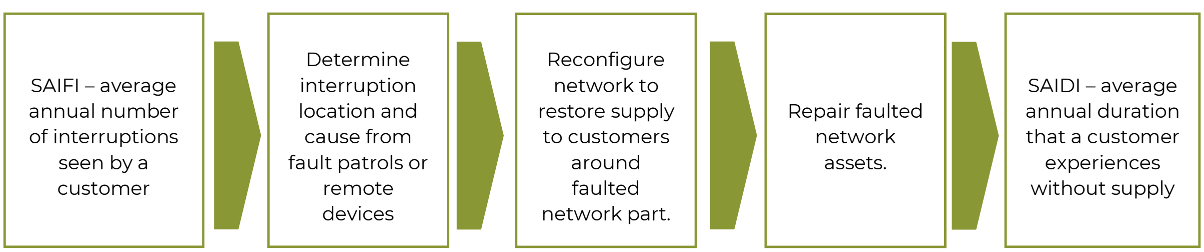
Graph 22: Relative customer minutes for Unknown Cause Interruptions



2.4.3 Trends in SAIFI and SAIDI

SAIDI is related to SAIFI by the duration that interruptions take to restore. Supply restoration generally involves three parts – identifying the location and cause of the interruption, undertaking switching to restore customers and undertaking the fault repair (Figure 4).

Figure 4: Relationship between SAIFI and SAIDI



Graphs 23 to 27 are scatter plots of SAIDI against SAIFI where each dot represents an interruption. Because of the spread of interruption impacts, the graphs are presented in logarithmic scales. Interruptions above the trend line indicate a relatively long restoration time while interruptions below the trend line indicate a shorter restoration time. The vertical and horizontal median lines indicate the mid points of the interruptions by SAIFI and SAIDI respectively.

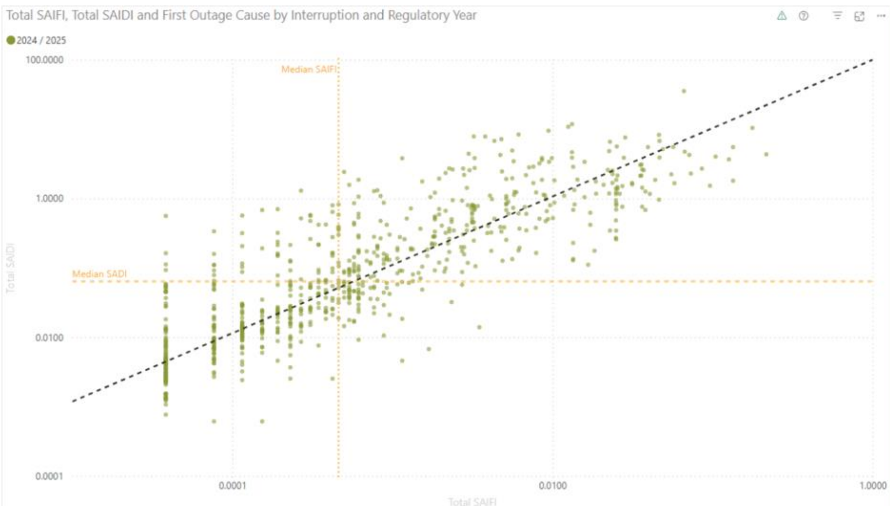
From these graphs, it is apparent that:

- The slopes of the trend lines in these graphs have varied by year but there is no real trend with their movement[6];
- The median SAIFI for each interruption has decreased each year, indicating that as time has progressed, the interruptions are affecting fewer customers (the median interruption in RY2025 affected 12 customers, while in RY 2021 the median affected 32 customers);

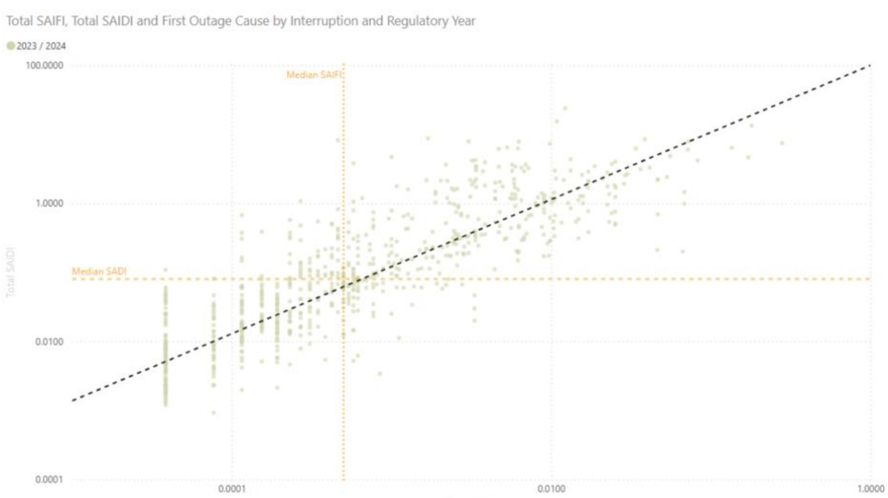
[6] Because their axes have logarithmic scales, it is not valid to infer the CAIDI from the trend lines. However indications of restoration time can be taken from the respective SAIFI values when the trend lines pass SAIDI =1 and SAIDI = 0.01.

- The median SAIDI for each interruption has decreased in each year after RY2023, as the respective SAIFI per interruption has reduced (in RY2023, the median SAIDI was 0.1 minute while in RY 2025 it was 0.06 minute);
- Several interruptions have occurred with a SAIFI of 0.025 in RY2025 and in RY2024, indicating the likelihood of multiple faults of the same feeder;
- Several interruptions occurred with SAIFI of 0.0031 and SAIDI of between 0.45 and 0.8 minutes. This is equivalent to 80 customers having outage times of between 150 and 270 minutes. Further analysis indicated that the Tiniroto feeder recloser D270 operated multiple times for various reasons while the impact was not enough for the feeder to enter the worst performing list.;
- The relative number of interruptions affecting only one customer has increased as time has progressed.

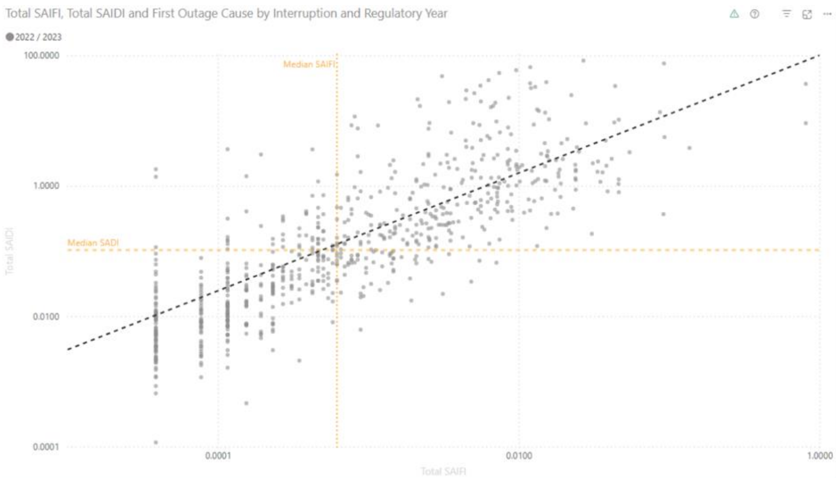
Graph 23: Scatterplot of the SAIDI of each interruption against its SAIFI for RY2025



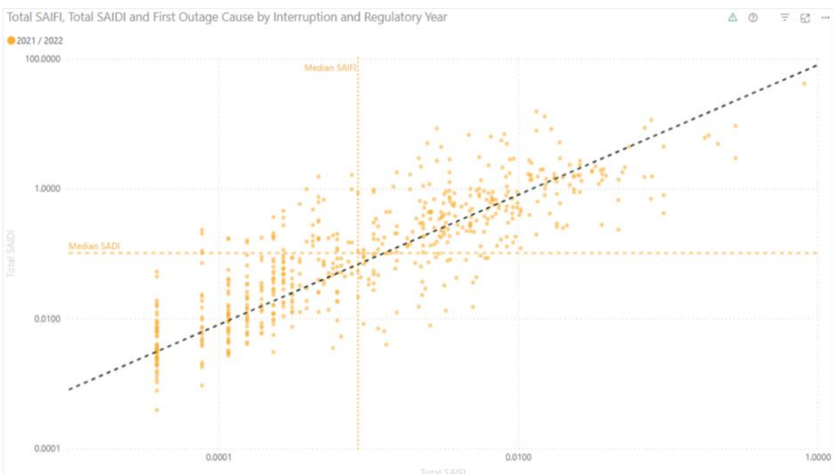
Graph 24: Scatterplot of the SAIDI of each interruption against its SAIFI for RY2024



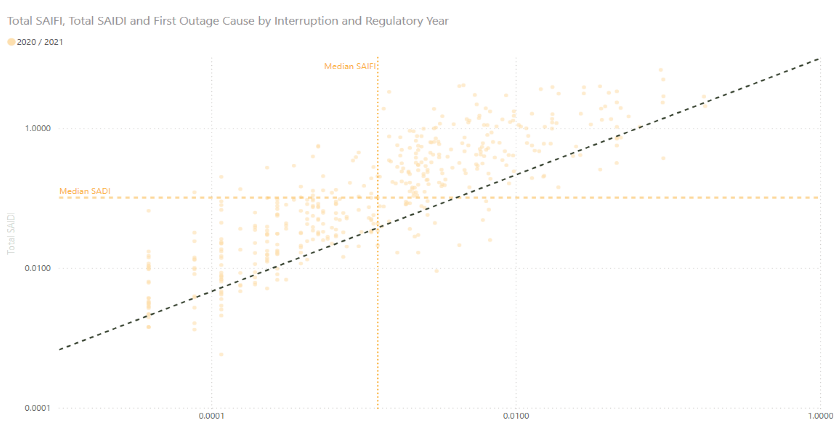
Graph 25: Scatterplot of the SAIDI of each interruption against its SAIFI for RY2023



Graph 26: Scatterplot of the SAIDI of each interruption against its SAIFI for RY2022



Graph 27: Scatterplot of the SAIDI of each interruption against its SAIFI for RY2021



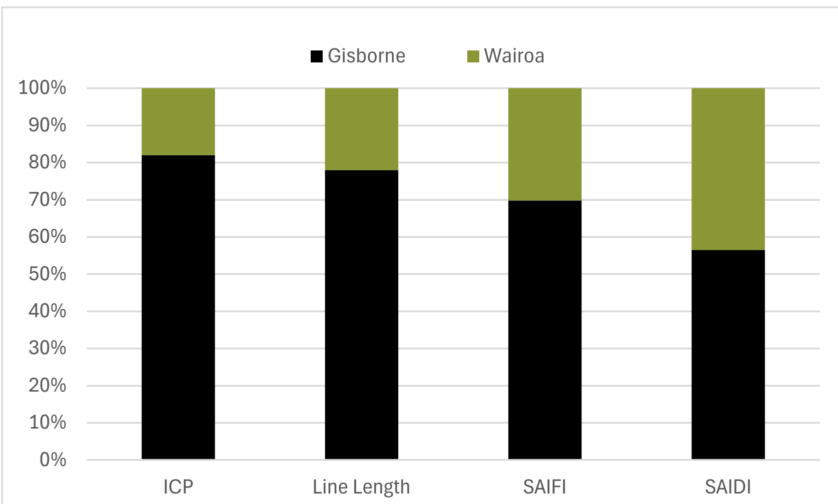
To sum up:

1. Based on historical disclosure statistics, there has been a noticeable increase in the number of interruptions during the last five assessment periods. The additional interruptions have been caused by faults on remote fused feeder spurs and from faults of unknown cause. On average, each interruption has been affecting a small number of customers each time. However, a small number of unknown cause interruptions on subtransmission circuits have been problematic as Firstlight has endeavoured to balance supply restoration with assuring public safety.
2. The impact on SAIFI from an increasing number of "fuse faults" has been relatively minor (0.07 SAIFI, which is somewhat akin to the SAIFI during a relatively bad reliability day). Meanwhile the SAIDI impact has been rather more significant at 19 minutes.
3. Interruptions causing more than 0.003 SAIFI (i.e. more than 78 customers) appear to have had a more significant impact on the total SAIFI, indicating that several significant interruptions occurred that were not normalised. Some of these are described further in Section 2.7.

2.4.4 Regional Variations in SAIFI and SAIDI

Graph 28 shows that the Wairoa region is more heavily represented in SAIDI and SAIFI than the Gisborne region when its underlying customer numbers and line lengths are considered. 43% of Firstlight's SAIDI came from the Wairoa region, but it only has 18% of Firstlight's customer numbers. The comparison highlights a lack of backfeed capability between feeders and sectionalisation capability within feeders. A review of Wairoa's network security is under way in which options are being developed to improve resilience (further described in Section 8.4), and the protection settings at Wairoa substation are being reviewed.

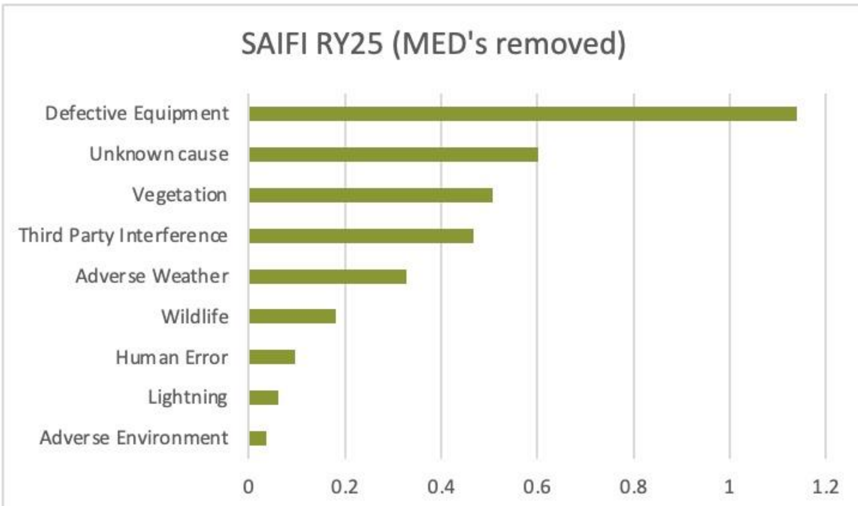
Graph 28: Regional comparison of reliability against line length and customers served



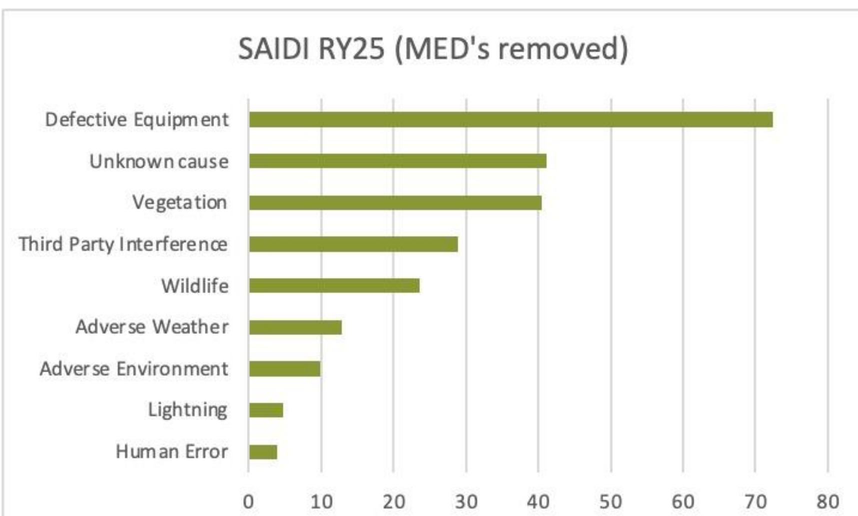
2.5 Analysis with Major Event Days removed

The causes of adverse reliability change when major event days are removed from analysis. Graphs 29 and 30 show that the leading causes of SAIFI and SAIDI were defective equipment and faults of unknown cause, with vegetation a third cause. It is notable that the order of the top four causes of Defective Equipment, Unknown Cause, Vegetation and Third-Party Interference are the same in both SAIFI and SAIDI graphs. Based on this analysis, much of the vegetation related SAIDI was associated with the major weather events.

Graph 29: RY 2025 SAIFI presented by cause with Major Event Days removed

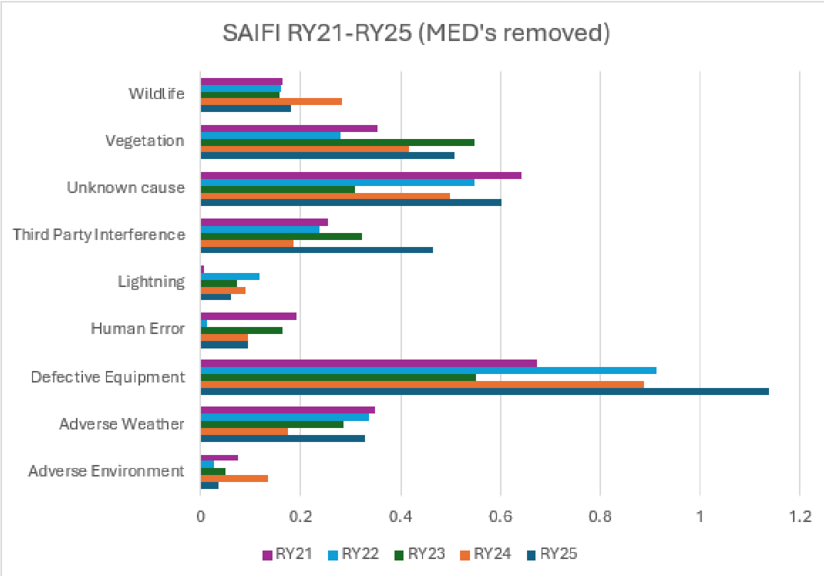


Graph 30: RY 2025 SAIDI presented by cause with Major Event Days removed

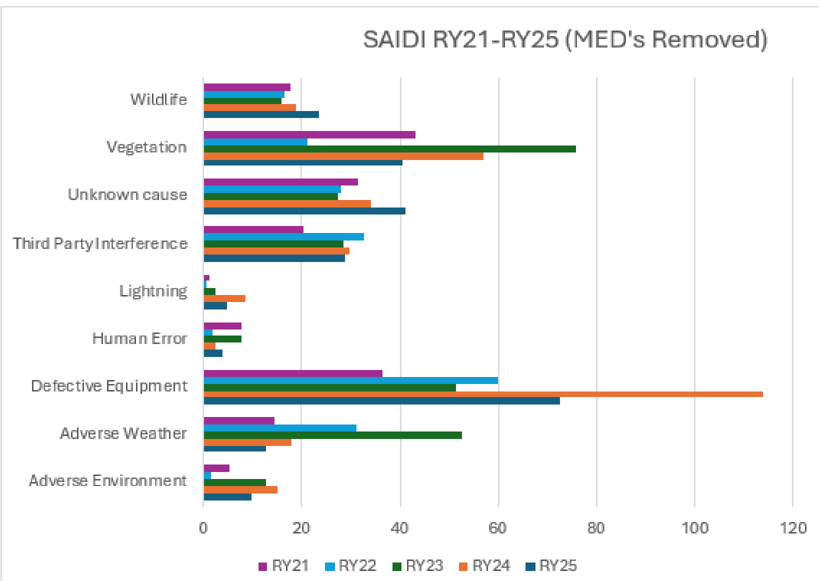


Graphs 31 and 32 show the causes of SAIFI and SAIDI with Major event Days removed for the assessment period against previous years.

Graph 31: Comparison of SAIFI without MEDs by cause with previous assessment periods



Graph 32: Comparison of SAIDI without MEDs by cause with previous assessment periods



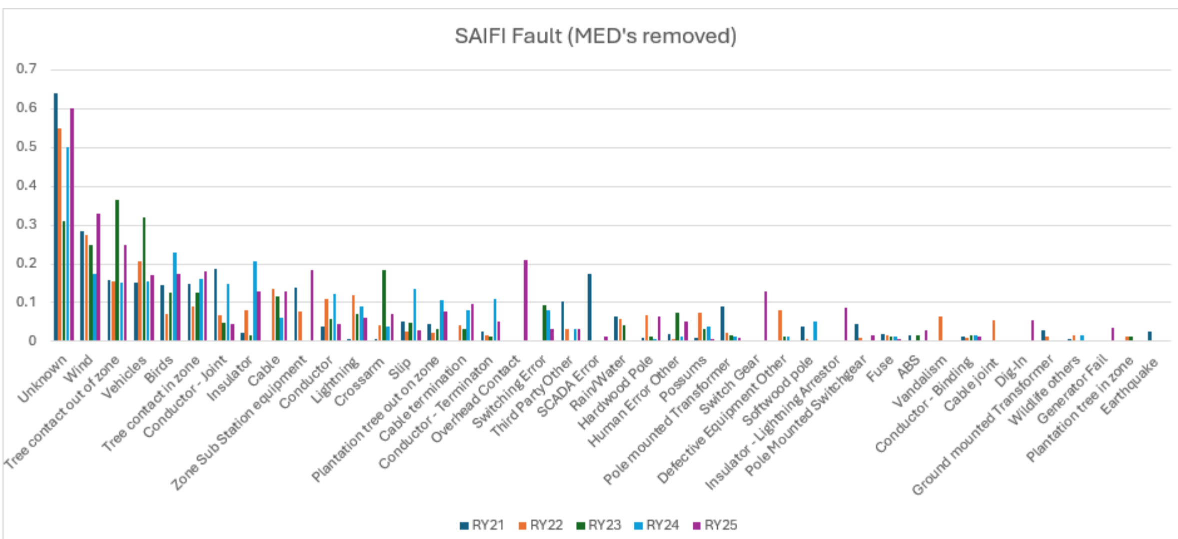
The SAIFI resulting from defective equipment and third-party interference is higher than it was during the previous five-year period. SAIFI from vegetation and faults of unknown cause, while significant to the total, has a less significant change compared with previous years.

The SAIDI related to unknown cause faults and wildlife are higher than previous years, but their overall impact is quite small. Defective equipment SAIDI is less this assessment period than it was during the previous period, but still relatively significant. Otherwise, the SAIDI results are consistent with previous years.

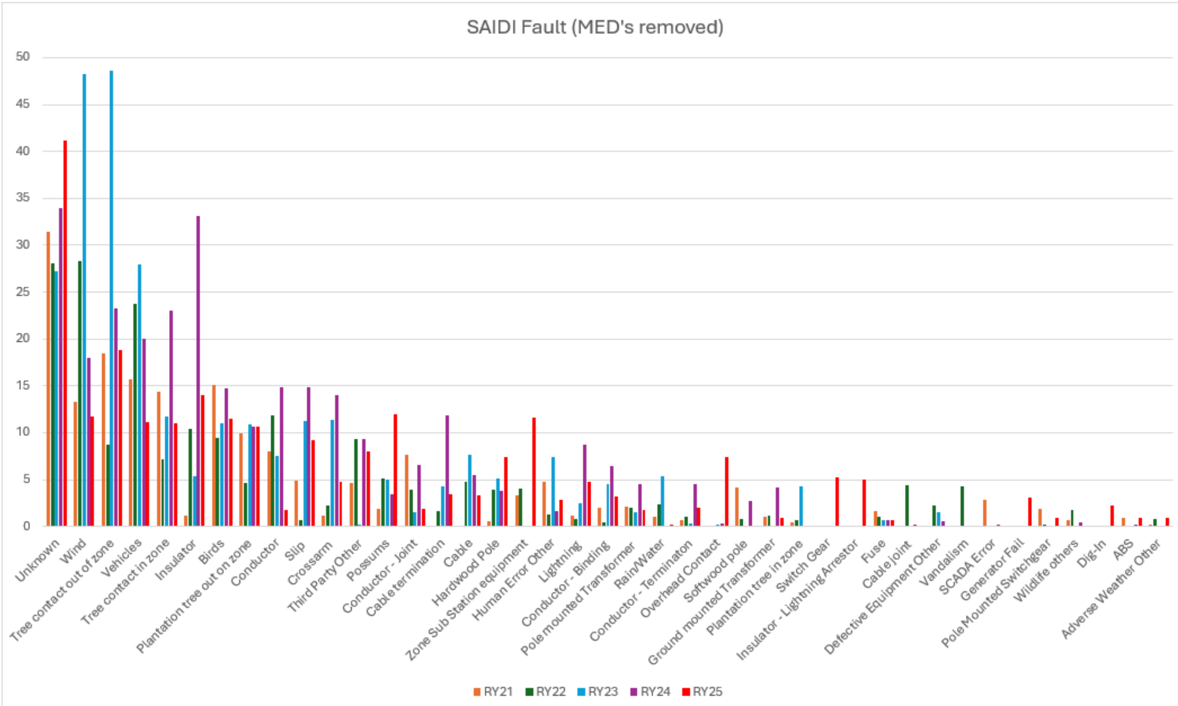
Graphs 33 and 34 show SAIFI and SAIDI breakdowns of fault causes by asset component. During the assessment period:

- Faults of unknown causes incurred more SAIFI than the previous two years but similar amounts as RY 2021 and RY 2022. Yet the SAIDI related to faults of unknown cause during the assessment period was higher than in the previous years.
- SAIFI associated with wind was higher than any year from the previous five, probably because of the prevailing southerly weather patterns. Conversely SAIDI for wind-based faults was the lowest of any of the previous years.
- Overhead contact brought just over 0.2 SAIFI during the year. There has been no overhead contact recorded in the previous four years.
- Zone substation equipment has incurred almost 0.2 SAIFI and around 12 SAIDI minutes. The SAIFI for zone substation equipment is significant because of its high magnitude.
- The SAIFI associated with Insulators is on a par with that of RY 2024. During the assessment year, lightning arresters and insulator faults began to be recorded separately. The SAIDI for insulators and lightning arresters is lower than in RY 2024 but higher than other years.
- Possums had a very low impact on SAIFI but a relatively high impact on SAIDI, largely because the major event on the Makaraka feeder on 7 October 2024 (SAIFI of 0.1921) which involved a possum, was normalised for SAIFI but not for SAIDI.

Graph 33: Comparison of SAIFI without MEDs by asset component with previous years



Graph 34: Comparison of SAIDI without MEDs by asset component with previous years

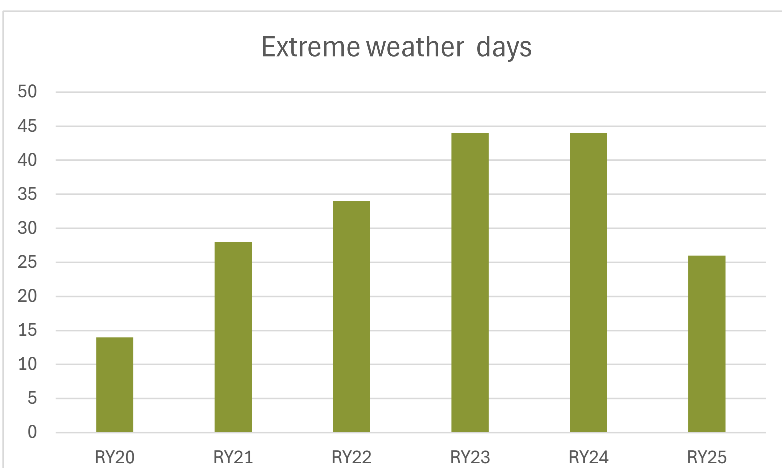


The conclusion is that defective equipment has a greater impact on us exceeding our SAIFI and SAIDI limits than vegetation, even if the SAIDI levels associated with vegetation were higher than those associated with defective equipment.

2.6 Weather Patterns Played a Role

Weather played a role in the reliability statistics despite more settled weather during the assessment period. Graph 35 shows we experienced 26 days of extreme weather in RY2025. This is lower than the 44 days experienced in each of RY2023 and RY2024, but like the annual average of 25 days between RY2020 and RY2022.

Graph 35: Extreme weather days over this assessment period, including the previous five periods



While the weather patterns were rather more settled during RY2025 than previous years, major weather events did still occur. For example, December 2024 was an unusually wet month for the Tairāwhiti region. More than a month's worth of rain fell on Boxing Day in Gisborne in what was a record for the wettest December since records began in 1937. NZ Herald reported that while Gisborne had the best weather in the country on Christmas Day, a day later it was enduring conditions among the worst as a wet deluge arrived from the north, followed by a dose from the south with dangerous high wind leaving sections of State Highway 2 impassable[7].

The National Institute of Water and Atmospheric Research (NIWA) annual climate summary said that Gisborne experienced long dry spells and record winds throughout 2024, followed by the second wettest December since 1905, while Mahia had the wettest December since records began there in 1990. Wairoa received the third highest daily rainfall since 1967[8].

Strong wind events occurred in June and August that caused significant increases to Firstlight's reliability statistics. From each weather event, it took several days to recover, and for one faulted pole, almost three weeks to repair.

2.6.1 Weather trends

Wind gusts and rainfall[9] were more extreme during the previous two or three years than they were during remainder of the previous ten years. Graphs 36, 37 present wind data from the previous ten years, namely, numbers of wind gusts above 80 km/hr, numbers of wind gusts above 100 km/hr. Even though 2024 was somewhat more settled than the year immediately preceding it, there were more wind gusts in comparison with the previous ten years, particularly when compared with the period from 2018 to 2020, which the data shows were relatively settled years. Graph 38 presents average monthly rainfall over the past ten regulatory years from different weather stations across Firstlight Network's footprint. RY 2022 to RY 2025 had large amounts of rainfall when compared with previous years.

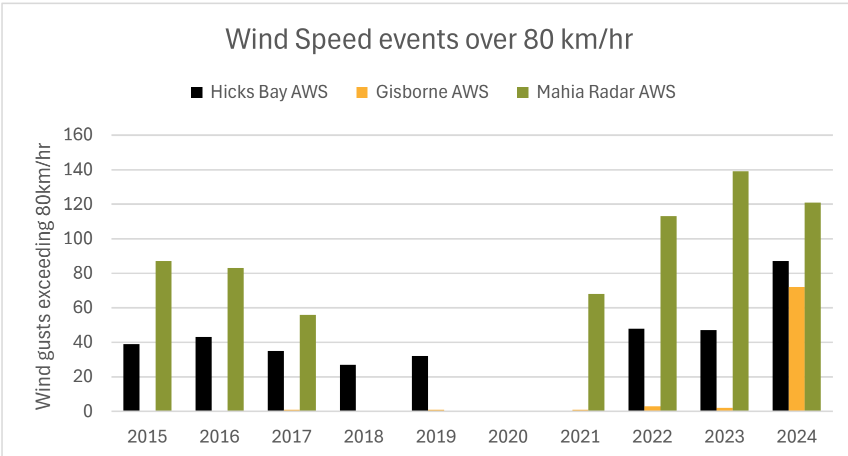
Wind and rain are usually adverse to supply reliability. Wind gusts pick up debris like branches and roofing iron that blow into lines causing faults or asset damage, and gusting winds cause wear on line components that cause bringing about failure if the asset is aged. Following rain events, saturated soils cause slips that affect pole and tower foundations and tree stability. Slips and floods will adversely affect access for response efforts. Damp tree branches conductors can sag into line conductors.

[7] NZ Herald, "Record December rain, high wind damages highway in Gisborne", 27 December 2024, retrieved 13 June 2025 from https://www.nzherald.co.nz/nz/record-december-rain-high-wind-damages-highway-in-gisborne/4URIRNH7T5BF7HCKVKSIXUNLEI/

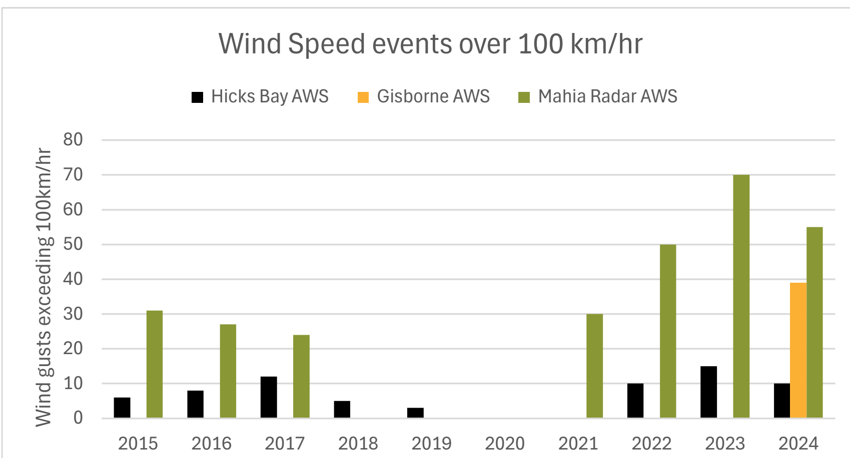
[8] NZ Herald, "Gisborne's 2024 weather in review: Niwa releases annual climate report', 8 January 2025, retrieved 13 June 2025 from https://www.nzherald.co.nz/gisborne-herald/news/gisbornes-2024-weather-in-review-niwa-releases-annual-climate-report/63CHQSUQ4ZE7VMMHETRK6AP7RI/

[9] Source - https://energy.metconnect.co.nz

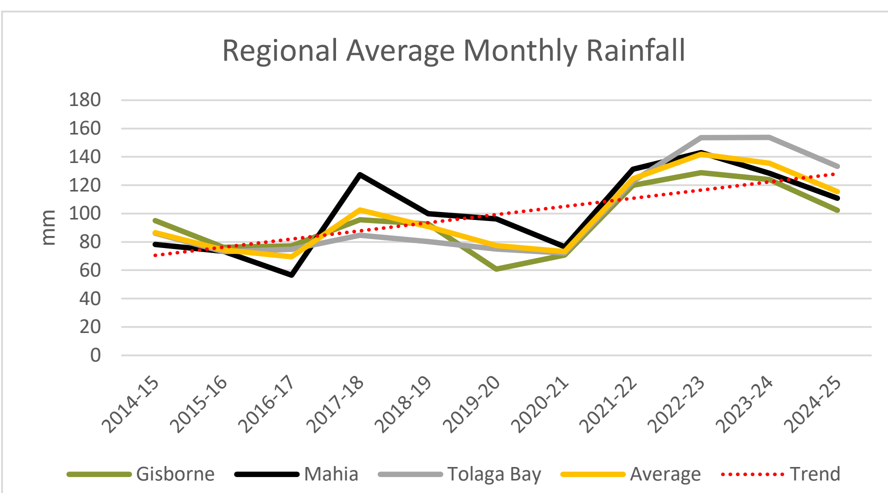
Graph 36: Wind speed events over 80km/h



Graph 37: Wind speed events over 100km/h



Graph 38: Average monthly rainfall by Regulatory year



2.6.2 Low Security Levels in Rural Network

Firstlight operates a large radial network with multiple feeders extending into remote areas with inherently low levels of security. The remote feeders cover long distances and their conductors are necessarily light. If feeders are interconnected, their operation can be affected by voltage constraints. The costs associated with constructing additional circuits to increase security levels on these remote feeders tend to be prohibitive, which is why Firstlight has adopted other solutions, principally mobile generation to mitigate the impact of supply interruptions.

The limited security inherent in the rural networks is an important factor because it has an amplifying effect on network performance during times of adverse weather. Firstly, customers must wait for the fault to be repaired before supply can be restored. Secondly, if there are multiple faults needing repair, the repair must be prioritised with a limited field workforce, which yields longer average restoration times.

2.6.3 Post Extreme Weather Asset Performance

Equipment failure was a material contributor to unplanned SAIFI and SAIDI during RY2025. We believe that the more adverse operating environment from the previous two years has contributed to equipment failure, particularly on hardwood poles because of the effect of high winds and saturated ground.

2.6.4 Risk Based Manual Reclosing

Time to restore is impacted by public safety considerations, particularly during weather events. In July 2021, we introduced a risk-based fault restoration process, which often necessitates patrolling a line to determine the fault cause before manually reclosing. While this adds time for restoration, the approach aligns with the Electricity Engineers Association guidelines and is consistent with safe industry practice.

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

As alluded in Sections 2.3 and 2.4 multiple events occurred during the assessment period that did not quite reach the boundary value threshold. As described in Section 5.2, the event that occurred in June was of a magnitude that allowed normalisation of both SAIFI and SAIDI. In the other events, either SAIDI or SAIFI was normalised but not both, and this led to large additions of respective SAIFI or SAIDI.

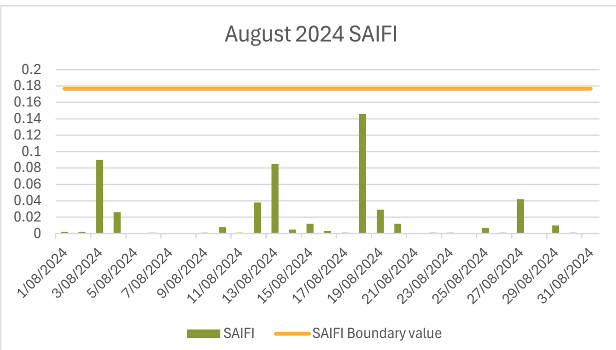
The following are descriptions of some significant interruptions that adversely affected Firstlight's SAIDI and SAIFI totals but were not of a magnitude enough to invoke the boundary value calculations.

During August, two strong wind events happened that triggered SAIDI boundary value calculations (described in sections 5.5 and 5.6), on 13 August and 18 August. Graph 39 shows that the SAIFI ascribed to these two events was 0.085 and 0.146 respectively.

On 27 August, work was scheduled to shut down the transformer at Blacks Pad substation for maintenance with supply fed from the site's diesel generator. After the generator had been synchronised and was taking load, the generator's frequency dropped enough for it to trip. This happened twice and the work had to be completed with the customers shut down.

Graph 39 shows an additional event occurred on 3 August that added 0.09 SAIFI. This event involved the Gladstone Rd feeder which is an urban feeder with a high customer count. It had tripped on overcurrent but no cause of fault was found, and restoration had been delayed by a switching error and the introduction of new fault location equipment.

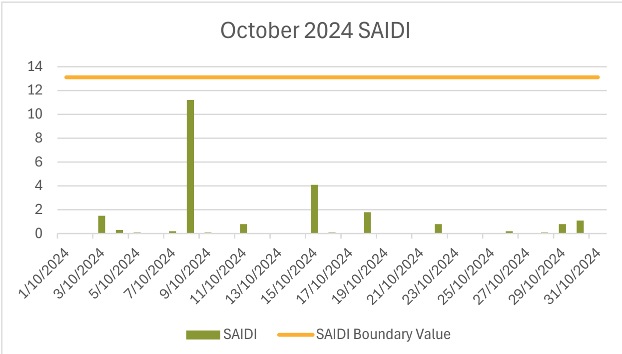
Graph 39: Daily SAIFI during August 2024



On 7 October 2024, a major interruption occurred due to an opossum contacting 50kV subtransmission. The event was widespread enough to allow SAIFI normalisation, but it also brought the addition of 11.2 SAIDI minutes, which was insufficient to prompt boundary value calculations.

Later events occurred on 15 October on the Raupunga feeder when successive conductor clashes during southerly wind conditions caused a recloser to trip multiple times adding 4.1 SAIDI minutes (refer to Graph 40). The offending clashing span took almost 24 hours to find. The centre phase of the delta constructed span had sagged more than the other phases and it was clashing with other phases from the swirling winds. The span traversed forestry terrain that had recently been harvested. The Raupunga feeder is an extensive rural feeder.

Graph 40: Daily SAIDI during October 2024

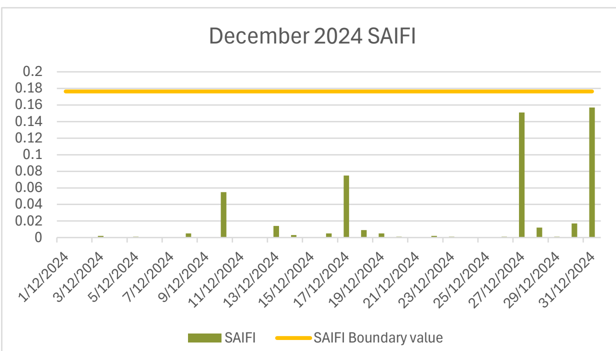


On 17 December 2024 Stormy weather affected various feeders with 0.075 SAIFI and 4.7 SAIDI minutes.

On 27 December 2024, strong winds followed record rainfall that caused a major SAIDI event described in Section 5.8. This event caused the addition of 0.151 to SAIFI, insufficient to trigger the SAIFI boundary value calculations.

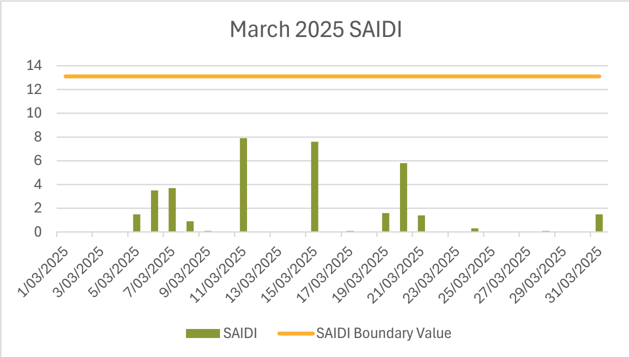
On 31 December 2024, other events caused a further 0.157 in SAIFI to be added (refer to Graph 41) when vegetation contact caused an outage on the Kaiti 50 kV feeder and multiple conductor clashes occurred on the Brickworks feeder near Wairoa Beach during strong southerly winds. Further investigation revealed a long aerial span with small clearance between conductors and mitigation work was completed on 12 March.

Graph 41: Daily SAIFI during December 2024



The SAIDI impact of the events involving Mahia on 6 and 7 March brought a total of 3.5 and 3.7 SAIDI minutes. These were largely mitigated by the Mahia generator and were not as significant as the events that occurred on 11 March and 15 March, bringing 7.9 and 7.6 SAIDI minutes respectively (Graph 42). The event on 15 March is described in Section 7.5.

Graph 42: Daily SAIDI during March 2025



2.8 Safety of our staff and contractors

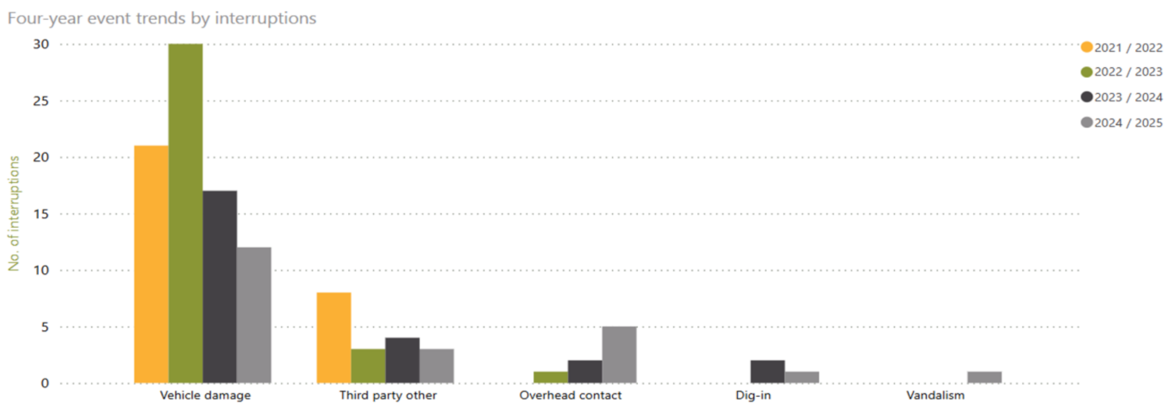
Ensuring the safety and well-being of field crews is our top priority, especially during fault response after dark or in adverse weather and environmental conditions in remote or rural areas of our network. As a precaution, we refrain from sending first responders out after dark where we deem it unsafe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

The impact of our decision has had a somewhat adverse effect on SAIDI compared with what we have incurred in earlier assessment years. It has also presented difficulties when we have mobilised resources to remote locations like Tokomaru Bay and Tiki Tiki as advance preparation in response to impending weather events when advance weather warning conditions arise and road closures become imminent. However, this can be supported through engaging our Tier 2 network approved contractors to support network recovery through fault prioritization and allocation of work to support FNL's primary fault response contractor.

2.9 Third-party interference remains a contributing factor

Third Party Interference SAIFI in RY2025 was like that of RY2024, with a slight increase in fault count and similar SAIDI totals, although Graph 43 shows that there were some differences in cause.

Graph 43: Four-year trend in Third Party Interference interruptions



Some of the major contributors to Third Party Interference reliability included:

- A felled tree on private property that fell in the wrong direction through the Gisborne Hexton 50kV line on 18 October 2024, causing 1.8 SAIDI and 0.134 SAIFI.

- Damage to a pole on the 50kV line that supplies Patutahi and passes through a cropping paddock. A cutting disk on a tractor had damaged the wood pole midway up and the pole failed shortly afterwards (18 November 2024) causing 2.7 SAIDI and 0.086 SAIFI.
- On the Mahia feeder, a felled tree fell through a section of line on the Mahia feeder and we were requested to isolate supply for safety reasons during a large bush fire. These two faults totalled 11 SAIDI and both impacted the Mahia feeder (refer to Section 7.5).

Table 6 shows a comparative summary of Third Party Interference interruptions by feeder. The Waimata feeder continues to show high fault count with a feeder length of 134km, parts of which traverse state highways bringing and increased probability for impact. Work continues to investigate safety options to reduce car vs pole incidents, with local council and roading authority collaboration imperative for achieving safe outcomes.

Table 6: Third Party Interference Interruption Counts

Feeder	2018	2019	2020	2021	2022	2023	2024	2025	Total	Next to Highway
0102 Hicks Bay			4	1	2		1		8	Y
0206 Tikitiki	1	1			1	1		1	5	Y
0804 Haisman		2							2	Y
0902 Lavenham	2		1	3	2	1	1	2	12	Y
0903 Waimata	5	1			1	6	2	5	20	Partly
0905 Muriwai	2	4		2		3	2	1	14	Y
1201 Whatatutu		2		1		2		1	6	N
1204 Matawai	2			3			1		6	Y
3301 Mahia	2			1	2			2	7	Y
Total	14	10	5	11	8	13	7	12	80	

3. Interruption data

3.1 Overview

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

- the start date (dd/mm/yyyy) of the Class C interruption
- the start time (hh:mm am/pm) of the Class C interruption
- the end date (dd/mm/yyyy) of the Class C interruption
- the end time (hh:mm am/pm) of the Class C interruption
- SAIDI value of the Class C interruption
- SAIFI value of the Class C interruption
- the cause.

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.

4. Independent review findings

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

4.1 Summary of the independent reports undertaken this assessment period

Firstlight's focus during the RY2025 assessment period has been to continue implementing the recommendations from previous independent reviews from RY2024. New external or independent reports were therefore not prepared for Firstlight during the assessment period. Correspondingly, Firstlight is building its Strategic Reliability Management Plan during the assessment period, which draws together its multiple reliability management and improvement initiatives together into one plan for greater cross organisational coordination and reportability for the Chief Operating Officer. The Strategic Reliability Management Plan is described further in Section 8 of this report and in Section 5 of Firstlight's 2025 Asset Management Plan Update.

In our RY2024 Unplanned Interruptions Report, we described the findings of a range of independent reviews done by PBA. These reviews came within three overall categories:

- Unplanned interruption Review, analysing the unplanned SAIDI performance between 1 April 2023 and November 2023 to find any insights based on data reviewed, recommend a hierarchy of solutions to address network challenges and recommend deeper analysis to help understand the root causes. PBA's reviews and findings are described in Section 4.2.
- Specific analysis of a sample of feeders focusing on methods for identifying and prioritising preventive measures to reduce unplanned interruptions. This set of reviews is described in Section 4.3.
- Analysis of asset information and data management considering the asset classes used by Firstlight, data quality attributes, processes for asset inspections, asset condition data, operational renewal decision making and presenting a view on the overall network condition. This review is described in Section 4.4.

Then in our Unplanned Interruptions Report for the RY2023 assessment period, 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 aerial 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).

This section updates and builds on these independent reviews that were described in the Unplanned Interruptions Reports of RY2023 and RY2024.

4.2 Unplanned interruption review by PBA

During the middle of the previous assessment period (December 2023), we engaged PBA Consulting to prepare independent reports to better understand our underlying reliability performance given that it was becoming likely that we would exceed our unplanned SAIDI limit. PBA accordingly prepared reports during RY2024 covering their analysis of general network and non-network measures for reducing unplanned interruptions. PBA made several network and non-network continuous improvement action recommendations. PBA did not do any analysis of reliability during the year being reported (RY2025).

4.2.1 Network Recommendations

PBA recommended that we should undertake several network actions, including:

- Study the network load flow/fault levels in more detail using network modelling software. The results would support the selection and configuration of protection devices and schemes to enable faster restoration times, and serve as a check for voltage levels within the network aiding future load predictions.
- Carry out a risk-based review and prioritisation of asset maintenance and renewal programmes. Based on this, focus asset replacements on their criticality to the supply performance. A specific asset fleet strategy is required for insulators, which could be developed in consultation with other distributors to gather lessons learned.
- Support faster restoration times:
  - Review the application of network protection devices on each feeder; review the settings within reclosers and sectionalisers and review the sizes of dropout fuses; add fuse savers to further improve the sectionalisation of circuits, thereby supporting faster restoration times.
  - Establish a rigorous Reliability Safety Environment Capex programme using fault location and SAIDI heat maps focusing on worst performing feeders. Possible initiatives include fitting interphase line spacers, possum guards, extra reclosers & sectionalisers, drop out fuses and fuse savers.
  - Study the root causes of the performance of worst-performing feeders and implement solutions that address the root causes.
- Upgrade network assets to augment the network for increased back up capability (enhance security of supply).

Based on these reports, we accelerated our programme to install additional reclosers and sectionalisers, install fault locators and replace the oil switches that involve operational risks during fault switching. We describe the statuses of these programmes in Table 7.

We have been updating our fleet strategies, and insulators are being incorporated into the overhead structure asset class strategy. The new inspection application improves the effectiveness of data collection and processing for assets attached to the structures.

4.2.2 Non-network Recommendations

PBA recommended that we undertake several non-network actions, including:

- Accelerate plans to embed Clarus's risk management framework operationally and within staff thinking.
- Accelerate plans to improve our Asset Management System (risk-based prioritisation of standards, processes, and procedures), including contractor proficiency.
- 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. The report provided a method to identify and prioritise preventive measures to reduce unplanned interruptions in future assessment periods.
- Security of Supply: Review the levels set considering the Energy Trilemma, as discussed in the Asset Management Strategy in section 7.2 (and in chapter 7 of the Firstlight Networks Asset Management Plan 2023), then analyse gaps and prepare project scopes.
- Invest in vegetation surveys to support risk assessment, notification process, and OPEX funding to address the scale of the issues faced.
- Prioritise aligning processes to asset management standards (such as ISO 55001 or the International Infrastructure Management Manual).

The actions we are undertaking to fulfil these recommendations are further described in section 7.

4.2.3 Improvement Action Plan

The ongoing actions to address PBA's recommendations are summarised in Table 7. The SRMP includes the actions recommended by PBA that we are planning to implement. After receiving PBA's reports, we found that some of the recommendations had already been completed by the engineering teams. undertook their work, also includes recommendations from Energia and actions identified from internal analysis. A cross functional team has been established to implement the initiatives.

Table 7: Summary of Improvement Actions recommended by PBA

Actions in response to PBA recommendations		
Recommendation	**Action**	**Target/ Status**
Load flow/fault levels study	Conduct study	RY 2025 – RY 2026
Risk-based review and prioritization of asset maintenance	Conduct review.	Overhead asset inspections being scheduled on a risk basis - Implemented Focussing on pole management, data management and re-categorising inspections to ensure highest risk poles are addressed first – Ongoing Insulators and cross arms incorporated in the overhead structure strategy - Updated strategy and inspection standard released May 25.
Review of network protection devices	A full review was carried out previously for automation and has informed the sectionalisers and automation programmes.	Completed.
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	Possum guards are now carried by inspectors and applied to distribution poles when missing. Possum guards are now being installed on 50kV lines. Ongoing
Reliability Safety Environment Capex programme	Accelerate rural automation programme, implementing sectionalisers, reducing affected customers on outage	Twenty-two sectionalisers have been implemented since August 2023. Install remaining identified automation improvements by end of RY 2026. Yet to assess the value provided by FuseSavers.
Reliability Safety Environment Capex programme	Replace selected ground mounted oil switches that will provide biggest impact during fault switching	Four units installed RY 2024, ten units in RY 2025, eight of these to reduce switch numbers in series to reduce interruption areas during fault finding. A further ten will be installed by end of RY 2026.
Reliability Safety Environment Capex programme	Maintain an accelerated pole replacement programme replacing wooden poles where access allows, mainly with concrete, providing increased	Ongoing. DPP4 programmes are front loaded with pole replacement. Cross functional team driving improvement initiative in pole management – ongoing

Actions in response to PBA recommendations		
Recommendation	**Action**	**Target/ Status**
	strength and less susceptible to deterioration	Re-inspection programme in progress for higher risk poles. 70% complete. New inspection app for pole and pole top to improve condition information process and align with EEA guidelines. Complete App will be extended to further assets in RY 2026
Remove hazards	Harden the network: various actions	Overhead design standards are under review. Replacing wooden poles with concrete poles where access allows.
Shorten restoration tail	Accelerate rural automation programme, implementing sectionalisers, reducing affected customers on outage	Twenty-two sectionalisers have been implemented since August 2023. Install remaining identified automation improvements by end of RY 2026. Yet to assess the value provided by FuseSavers.
Shorten restoration tail	Run pilot on fault passage indicators, reducing time in identifying physical fault location	Installation of ten pilot units complete – Jan 2024. Fifteen sites identified for installation during RY 2026.
Clarus risk management framework	Implement asset risk tool and process	Clarus risk systems are in place, identified specific asset risks are now documented and assessed in risk register. Independent climate change risk review is underway – due complete 2025
Improve Asset Management System	Improve standards, processes and procedures	RY 2025 – RY 2026 Review of Asset class strategies and inspection standards - Oct 2025. Implement performance reporting tool allowing quicker analysis and improved transparency across the business - complete Improvement programs for data accuracy - ongoing, MSA contracts reviewed. Quality management system aligning with Clarus system. RY 2026
Implement special projects to reduce risk	Review and manage projects	Automation programme, fault indicators, oil switch replacement, and replacement of unreliable lightning arresters -detailed previously. Installation of generator on Raupunga feeder – RY2026 Wairoa network is undergoing a security optioneering study (refer section 8.4).
Vegetation survey to support risk assessment	Implement new vegetation strategy	Initiated RY 2025 and is ongoing

The savings in SAIDI resulting from installing the sectionalisers have been analysed and are presented in Section 6.3. Having the SAIDI savings despite the increasing defective equipment interruption numbers indicates that the network's resilience is improving.

The MSA review is described further in section 6.7.

4.3 Worst-performing feeder analysis

Following the reports described in Section 4.2, PBA provided a deeper analysis of the worst-performing feeders using unplanned interruption data from the control room and geographic information system (GIS) asset records to further understand the causes and gave recommendations to manage and improve performance. This analysis recommended methods for identifying and prioritising preventative measures to reduce unplanned interruptions in future assessment periods.

We have adopted this method of analysis, and two worst performing feeders lists are presented for the assessment period in Tables 8 and 9 for SAIFI worst performers and SAIDI worst performers respectively. It is notable that the feeders in these two lists are different except for the Mahia 3301 and Waimata 0903 feeders.

Table 8: SAIFI Worst performing feeders' statistics

Causes have been ranked by the SAIFI impact.

Feeder	Unplanned SAIFI	No. 1 Cause	No. 2 Cause	No. 3 Cause	Comments
Mahia 3301	0.496	Defective Equipment	Unknown cause	Adverse Weather	Long remote feeder to patrol
Wairoa Tahaenui 3140	0.379	Adverse Weather	Defective Equipment	-	Difficult terrain to patrol
GIS-Hexton 50kV 0851	0.269	Unknown cause	Third party interference	-	Very long feeder to patrol
GIS-Mak 50kV	0.178	Wildlife	-	-	Urban 50kV feeder – heightened public safety risk
GIS-Tolaga 50kV	0.175	Unknown cause	Defective Equipment	Wildlife	
Waimata 0903	0.165	Vegetation	Unknown cause	Defective Equipment	
Crawford 1504	0.165	Defective Equipment	Wildlife	-	
Aberdeen 0609	0.152	Defective Equipment	Third party interference	-	
Borough One 3204	0.130	Defective Equipment	Adverse Weather	Lightning	
GIS-Kaiti 50kV	0.127	Vegetation	-	-	

Table 9: SAIDI Worst performing feeders' statistics

Causes have been ranked by SAIDI impact.

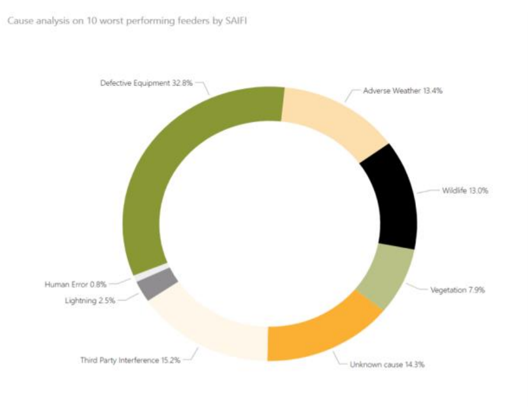
Feeder	Unplanned SAIDI	No. 1 Cause	No. 2 Cause	No. 3 Cause	Comments
Mahia 3301	70.6	Defective Equipment	Unknown cause	Adverse Weather	Long remote feeder to patrol

Feeder	Unplanned SAIDI	No. 1 Cause	No. 2 Cause	No. 3 Cause	Comments
Raupunga 3101	33.5	Unknown cause	Vegetation	Defective Equipment	Very long feeder to patrol
Frasertown 3103	26.7	Unknown cause	Vegetation	Defective Equipment	
Ruakituri 2003	23.8	Unknown cause	Adverse Weather	Defective Equipment	Difficult terrain to patrol
Tiki Tiki 0206	20.4	Lightning	Vegetation	Defective Equipment	
Mata 0304	19.3	Vegetation	Unknown cause	Defective Equipment	Forestry road, dangerous to patrol after dark
Waimata 0903	17.4	Vegetation	Unknown cause	Defective Equipment	
Dalton 0502	14.9	Unknown cause	Vegetation	Adverse Weather	
Rototahi 0403	14.5	Vegetation	Defective Equipment	Adverse Weather	
Inland 0301	14.2	Vegetation	Wildlife	Unknown cause	Very difficult terrain to patrol

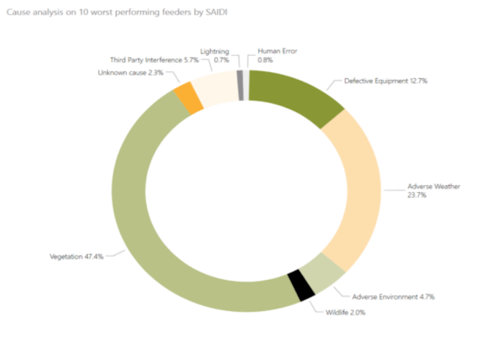
4.3.1 Common causes of interruptions on worst performing feeders

At the time it was done, PBA's analysis indicated that adverse weather combined with an adverse environment, primarily slips, was the largest contributor to interruptions on our worst-performing feeders. Graphs 44 and 45 show more complex trends were at play during the assessment period. While vegetation and adverse weather were the dominant causes in the SAIDI worst performing feeder list (together comprising 71%), these causes comprised only 21% of the SAIFI worst performing feeders, indicating that vegetation and adverse weather interruptions took a relatively long duration to clear. Conversely, defective equipment, third party interference, wildlife and unknown causes together comprised 75% of worst performing feeder SAIFI but only 23% of SAIDI, indicating that these causes had widespread affect but customers were able to have their supply restored relatively quickly.

Graph 44: SAIFI Worst performing feeder interruption causes

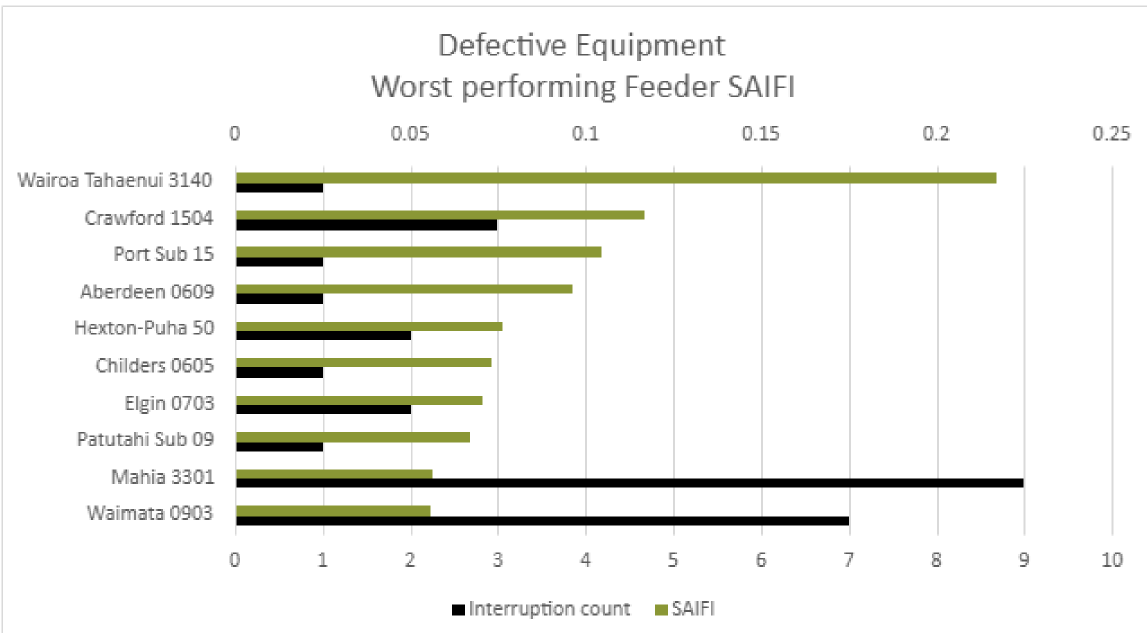


Graph 45: SAIDI Worst performing feeder interruption causes

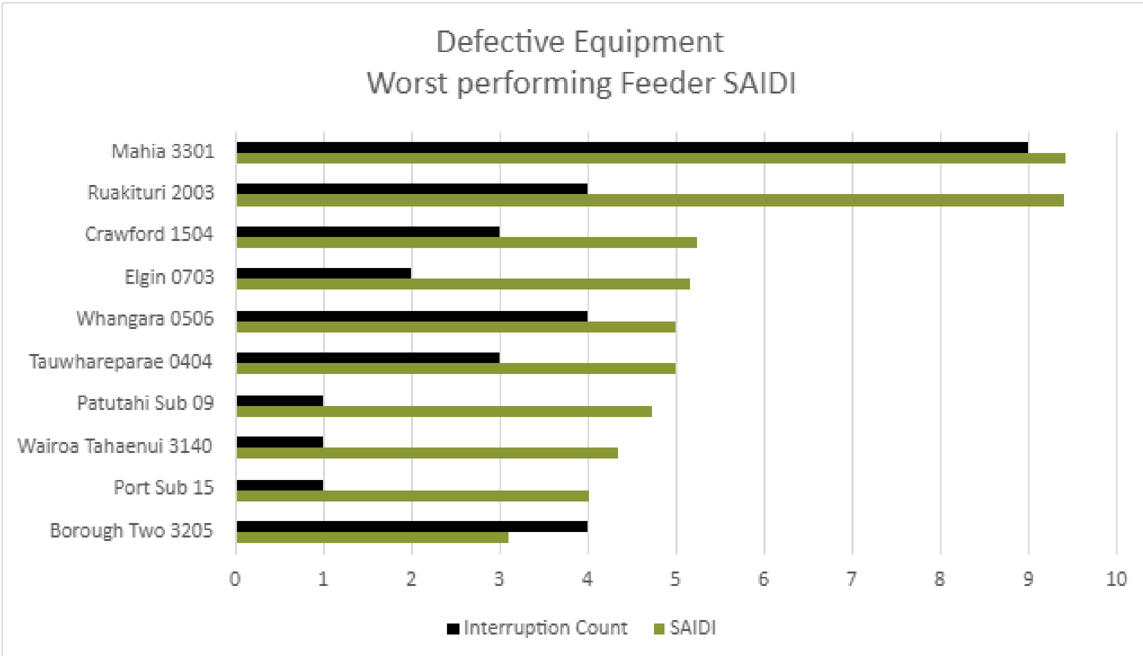


Graphs 46 and 47 show the ten feeders most impacted by defective equipment related interruptions by SAIFI and SAIDI respectively. These graphs highlight the impacts caused by interruptions on the Mahia and Wairoa Tahaenui feeders, where multiple interruptions were caused by conductor clashes during southerly winds.

Graph 46: Worst performing feeders by Defective Equipment SAIFI



Graph 47: Worst performing feeders by Defective Equipment SAIDI



PBA found that many unplanned interruptions caused by defective equipment had been related to overhead conductors and supporting assets. PBA commented "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."

PBA recommended that we should build a conductor inspection programme around the following:

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

Single-strand steel conductors have been among the assets with the lowest health in the conductor asset class due to their age and likelihood of failure under wind loading and corrosive coastal environments. Conversely, feeder spurs with these types of conductors tend to supply only few customers so that when they fail, their criticality tends to be low. 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.

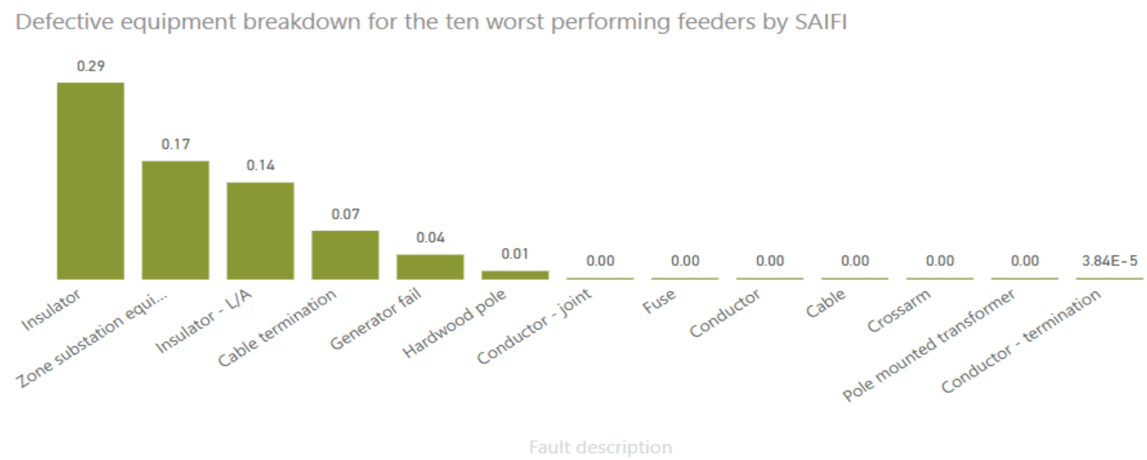
The new asset inspection app incorporates conductor as part of the structure inspection although conductor assessment is still mostly visual. As detailed in Section 7.3, Firstlight has been starting to take samples of conductor for testing.

Firstlight has been briefing fault staff about the using the correct binders and sleeves for repairing lines with these conductors. Firstlight has also commenced a programme to gather samples of aged line conductors and to test their tensile strength and brittleness (wrap testing).

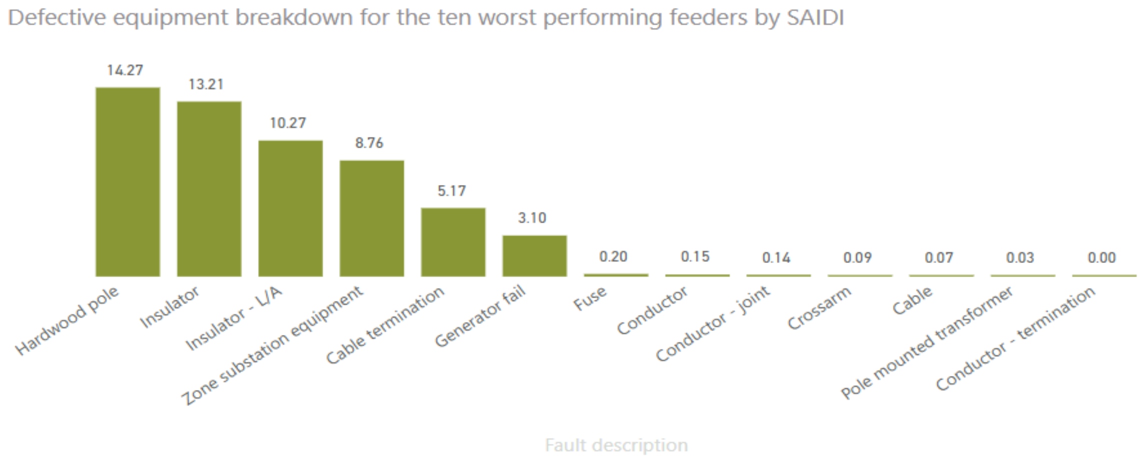
The most significant of the worst performing feeders are in rural or remote areas with difficult topography.

For this assessment period, a somewhat different picture has emerged. Graphs 48 and 49 show that while insulators and poles were major contributors to worst performing feeder interruptions, zone substation equipment, cable terminations and failures of generators were also contributors to SAIDI and SAIFI, while conductor faults did not feature significantly at all.

Graph 48: Cause of defective equipment interruptions for worst SAIFI performing feeders



Graph 49: Cause of defective equipment interruptions for worst SAIDI performing feeders



Note: Insulator – L/A refers to the type of stand-off insulators that also fulfil a lightning arrester function.

4.4 Asset information review

Following their initial report, PBA conducted an on-site review of available records and documentation to further understand our approach to asset management. PBA focused on our asset records considering asset classes and data attributes, the asset inspection processes, asset condition and health and operational renewal decision making.

4.4.1 Asset records are available and complete

During the previous five years, we maintained asset records for the following asset classes:

- Wood and concrete pole
- 110kV Steel structure
- Overhead line conductor
- Cable
- Power transformer
- Zone substation switchgear
- Ground mounted switchgear, ring main unit (RMU)
- Ground mounted transformer
- Overhead transformer
- Recloser, sectionaliser, load break switch
- Zone substation
- Protection relay
- SCADA
- Communication
- Generator
- Drop out fuse, link, air break switch (ABS), earth switch
- Other network asset

However, as described in section 8.5, we are now in the process of updating our asset class strategies and the asset classes will have a different structure.

We asked PBA to review our asset data and determine if any data was missing and if there was anything we were 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, 110kV)[10]
    - medium voltage (11kV) subclass
- Surge arrestors/lightning protection
- Monitoring equipment
- Voltage regulators.

Firstlight plans to include cross arms as a separate asset class when IBM Maximo is next updated. Treating crossarms as a child asset class to poles will enable crossarms to have their own condition records and their replacement to be capitalised, in alignment with our peer EDBs. It will enable the potential for reliability trend analysis and design such as wind zones, conductor configuration (phase spacing, flat vs delta) and circuit configuration (spacing of underbuilt circuits).

With cross arms having their own asset class, it is unlikely that treating the distribution insulators as separate assets will provide enough benefits to be worth the additional information complexity.

PBA thought that surge arrestors and lightning protection could take an asset class of their own to ensure they are monitored and managed appropriately with their own testing, maintenance, and renewal programme. Likewise, monitoring equipment such as Power Quality, Voltage, line-fault indicators, etc., should also be treated as their own asset class to ensure they are monitored and managed appropriately with their own testing, maintenance, and renewal programme.

PBA recommended that we should take an active role in the development of a Common Information Model for Asset Management by the Electricity Engineers Association (EEA) and its Asset Information Forum in collaboration with other EDBs and Transpower.

Firstlight is actively engaged with the Electricity Engineers Association (EEA) supporting our development of:

1. Asset Management CIM: We are aligning internal asset metadata and attribute models with ISO 55013 to enable best-practice asset data governance and sector-wide comparability.
2. Electrical CIM (IEC 61970-301): This model is foundational for our ADMS readiness and we will monitor developments and needs for alignment.

Firstlight recently engaged the services of Asset Dynamics to provide recommendations to the EAMS Location/Asset Hierarchy and Asset Data Information requirements. The recommendations were reviewed and validated against operational and regulatory needs. The recommendations are inclusive to support our transition into the new EAMS environment, scheduled for go-live in September 2025.

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 Enterprise Asset Management System (EAMS) 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 had electronic inspection records in the digital systems (Maximo, GIS, Access Database).
- Gaps in condition assessment details impacted our ability to prioritise asset renewals.
- An estimated 40,000 conductor spans and 11,600 poles required 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 were 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.

[10] Sub-transmission insulators are already captured.

The missing transformer asset attributes have all been corrected.

We are inspecting the asset base with the new mobile application to increase the coverage of electronic data. While we are planning to keep the paper inspection records, we are not planning to load these electronically because the conversion would be too complex. Instead, we plan to enhance our coverage of asset inspections using the new application. This will yield consistent and reportable data. We have also commenced a programme of conductor testing to gradually build up a profile of the determinants of conductor aging by type and location.

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.

The new pole inspection application described in Section 7.3 is already improving the accuracy of the condition data and improves the analysis of pole top equipment condition data.

We have implemented a targeted inspection programme for the re-inspection of the tagged poles. Following this we plan to move to inspect aged poles that have no electronic inspection results. Over the coming assessment periods, we intend to continue developing our targeting of inspections as asset risk profiles dictate, noting that there is a trade-off between the benefits from targeting and the greater administration complexity.

4.4.4 Asset Health Assessment aligns with good industry practice

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

- the standardised method from the British DNO 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 was joined with the Esri data for built and natural environment information using an open data kit (ODK).
- the collective was fed into the DNO formula resulting in a deterioration value and a health value (H5 to H1).

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

We are investigating pivot from Distributed Network Operator (DNO) model to a Replacement Expenditure (REPEX) model. REPEX is a framework used in electricity distribution to forecast capital expenditure with an increased focus on reliability and safety while optimising present value economic costs. It presents a long-term context to budgetary decision making and aligns with regulatory guidelines set by the Australian Energy Regulator ensuring justified and transparent expenditure forecasting.

4.4.5 Asset renewals are based on age, condition and environment

PBA found that we calculated 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 were reviewed directly through the ODK digital system (app and access database)[11]. Upon review, required replacements are identified and assigned to a project.
- 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".
- Our policy is for pole-mounted transformers to run to failure based on risk assessments. We report any public safety and environmental 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 was in place for assets identified as defective or unsafe at any time, including during routine inspection.
- Our planned replacement H1-rated assets were prioritised by risk and budget allowance. The work we have currently under way on pole inspections and health assessment confirms that we have under-rated the health of some poles (for example, some H1 poles are really H2 or H3 health).

4.4.6 Overall Network Condition

PBA 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 (then) previous four years (RY 2021 to RY 2024)
- FNL's Asset Health assessments are provided in Section 7 of this report.
- A summary of inspections completed since 2019 (Section 7.6.1, Table 26).

Firstlight's strategy has been to run a 5-year asset inspection cycle for most distribution assets (except for substation and subtransmission assets which are inspected every 4 months or 6 months respectively). Since April 2019, we have inspected approximately 72% of the distribution fleet (Section 7.6.1, Table 26). Firstlight plans to review whether some asset inspections should increase or decrease their regularity, in consideration of its public safety management system.

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

Firstlight uses 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.

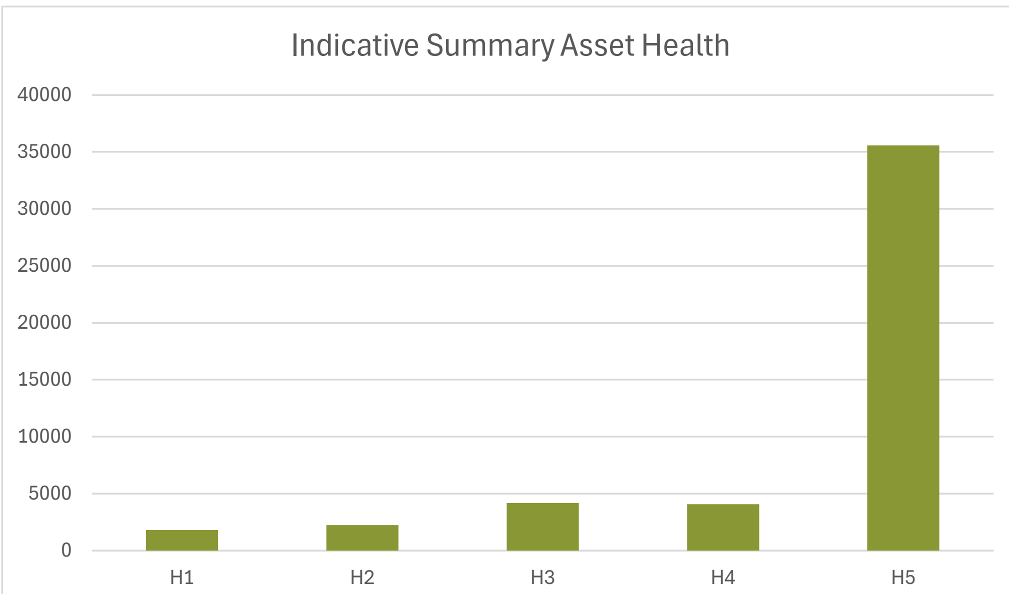
[11] We intend to keep the paper the inspection records as they are, and to gradually grandfather them in IBM Maximo with data from our new inspection application. IBM Maximo integrates fully with the digital platform for asset management which reduces our digital footprint.

Table 10: Asset Health summary

Count of Distribution Assets by Asset Health Category							
Asset Class	**Unit**	**H1**	**H2**	**H3**	**H4**	**H5**	**Total**
Cables	Linear km	54.7	-	-	55.5	351.4	461.7
Conductors	Linear km	74.5	9.2	24.4	268.6	3,164.6	3541.3
Transformers	No. of	78	80	67	229	3,240	3694
Distribution Switchgear	No. of	247	106	82	609	3,971	5015
Poles	No. of	1,325	2033	3998	2,858	24,870	35,084

Table 10 presents a summary of our distribution asset condition. Graph 50 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 as the new asset inspection app and the associated data process improvements take effect.

Graph 50 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. Increasing this accuracy requires a strong focus on communication between inspectors and renewal planners to convey the most meaning and properly focus the inspections. We have pre-empted this by involving the inspectors and the renewal planners in the writing of the inspection standard. Introduction of the Line Inspection app strongly involved the inspectors as described in Section 7.3.

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

- Lines with galvanised steel conductors 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. While the circuit length of galvanised steel conductor lines is extensive, each line only supplies a small number of customers, and the criticality is correspondingly low. Ground-based or drone-based visual assessments for visible corrosion and previous repairs or clashes can be suitable complements to obtaining and testing conductor samples.

- Ground mounted distribution switchgear, where failure can cause significant SAIDI due to the mode of failure and requirement to de-energize to replace the assets, particularly if ground mounted.
- Wooden Poles, in which a significant number have been scored as H1. As detailed in Section 7.4, many of the H1 poles had been misdiagnosed because of historical misunderstandings about the use of red tags prior to introduction of the EEA guidelines. PBA noted that we have introduced an accelerated replacement programme to manage this risk proactively, but we are also currently prioritising the tagged pole re-inspection.

The network has a significant number of radial circuits with very few economic options to improve protection paths. PBA's assessment indicated that our network would benefit from an increase in sectionalisation to limit the manual switching zones around faults. The improvement in protection will, over time, support a reduction in SAIFI and SAIDI, while Firstlight continues to develop network and asset fleet strategies to support longer-term improvements. A review of the asset fleet strategies is currently underway, and this will be complete this calendar year.

4.5 Post Cyclone Gabrielle Reviews

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). The Taskforce advised ministers on requirements for recovery and improved future resilience for each region and gave assurance about whether the activities were meeting those needs.[12] The task force completed its review in early July 2023, and we included a copy of its initial findings in Appendix A of our 2023 Report[13].

4.5.2 Network aerial review post Cyclone Gabrielle

As reported in our 2023 and 2024 reports, we undertook an aerial patrol of the impacted areas to assess Cyclone Gabrielle's initial impacts on our network, with a strong focus on the state of the distribution lines[14]. 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). 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).

4.5.3 Electricity Distribution Sector Cyclone Gabrielle Review

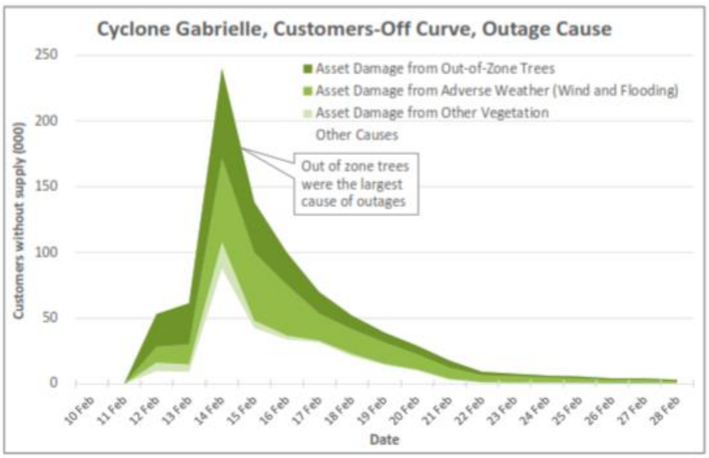
In July 2023, Energia released its Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review. The Energia report was an independent assessment of the appropriateness of the electricity distribution sector's risk reduction, readiness, and response to Cyclone Gabrielle. The assessment was based on an extensive information gathering exercise from ten EDBs impacted by the cyclone, which included Firstlight Network[15].

[12] The taskforce was wound down in February 2024, with responsibilities transferred to the Cyclone Recovery Unit. Publicly released papers relating to the cyclone recovery can be found in https://www.dpmc.govt.nz/our-business-units/cyclone-recovery-unit/publicly-released-cyclone-recovery-related-documents
[13] 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.
[14] Firstlight Network, Unplanned Interruptions Report for the assessment period ended 31 March 2023, Figure 5, page 17.
[15] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 2.

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)[16], as shown in Graph 51.

Latent damage to assets, such as those found by Energia in its July 2023 report, could be discovered after adverse weather and environmental events. In its review during this assessment period, PBA recommended that feeders/circuits in locations impacted by high winds and flooding should be inspected more frequently until we become confident that any latent damage has been discovered where practical. This would include insulation testing of critical subtransmission cables or pre-livening testing of distribution and low voltage cables that have been exposed to flood. It could also include inspection or handheld partial discharge testing of ground mounted asset terminations (looking for early signs of corrosion and partial discharge).

Graph 51: Material causes of customer outages extract from the Energia report



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 2.2 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.

Energia 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"[17].

The Electricity (Hazards from Trees) Regulations 2003 give tree owners the discretion for 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.

In the wake of Cyclone Gabrielle and to improve security of electricity supply, the government amended the Electricity (Hazards from Trees) Regulations in October 2024 to extend the growth limit zones "clear to the sky" for high voltage conductors 33kV and above. While this amendment could have some positive benefit to subtransmission line reliability (probably affecting SAIFI), it is not anticipated to make significant difference to performance from out-of-zone trees.

[16] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 42.
[17] Energia Report to Electricity Networks Aotearoa, Electricity Distribution Sector Cyclone Gabrielle Review, July 2023, Page 43.

The cyclonic winds during Cyclone Hale and Gabrielle extensively damaged lines. 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"[18].

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). Wind speeds like this are more than the design wind pressures required for historical line designs by the Electricity Supply Regulations of 1967, 1976 and 1984, which equate to 135 km/hr[19]. Wind speeds of 165 km/hr are similar to the wind speeds prescribed for the lee zones around mountains[20][21].

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[22]. 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".[23]

[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"[24].

Energia found that we had identified hazards, understood vulnerabilities, and progressed mitigations appropriately. We recognised that there was room for us to improve. Energia considered that a combination of strategies is needed to improve resilience, and identified three key activities for reducing risk:

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.

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

[19] The 1967 Electricity Supply Regulations required designs to fulfil 18 lb per sq foot wind loadings for rural lines. The 1976 regulations metricised the required wind loadings to the roughly equivalent 850 Pascal. This load is equivalent to 135 km/hr wind speed (equation B4 of AS/NZS7000).

[20] Wind speeds of 165 km/hr equate to a wind load of 1260 Pascals. Line design standard AS/NZS7000 does not show the presence of lee zones in Firstlight's network area, but as a limit state standard, it does not necessarily preclude Firstlight from applying this level of wind pressure in its designs. Weather data being sought from NIWA may help Firstlight to tune the line design standards in this respect.

[21] It is noted that wind loads are not necessarily a dominant factor in line designs and that much of the damage to lines during storms comes from wind blown debris (tree branches, roofing iron, trampolines) which are not conventionally accommodated in line designs. In addition to wind load, designers should also consider weight and deviation loadings, and other loads like seismic and maintenance loads, so the difference in wind speed might only affect the odd structure. Often, it's useful to install line termination structures at regular intervals along the line length capable of stopping cascade structural failures.

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

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

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

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

Graph 52: EDB resilience improvement strategy, extracted from the Energia report

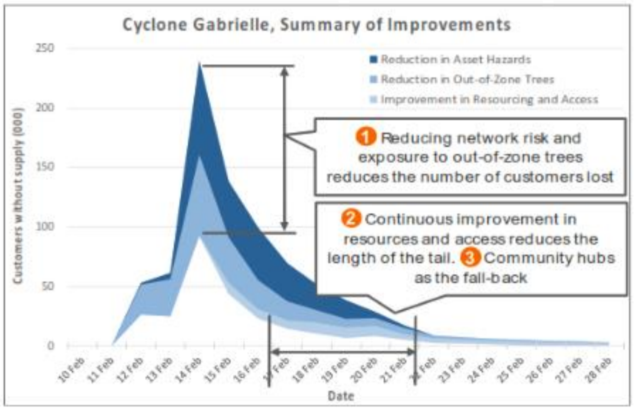


Table 11 Energia recommendation response

Actions in response to Energia recommendations		
Recommendation	**Action**	**Status**
Remove hazards: Out of zone trees	Implement new vegetation strategy	Improved inspection procedures in place. Refer to Section 7.7.
Remove hazards: critical assets	Replace Ground mount oil switches	Four units installed in RY 2024 and further ten installed in RY 2025.
Remove hazards: critical assets	Maintain increased 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	We are replacing wooden poles with concrete poles where possible. Reviewing overhead line design standards.
Improve resourcing	Fault contractors pro-actively located in remote locations prior to recognized weather events	Implemented. Master Services agreement (MSA) approved with main contractor to improve service delivery and increase backup resources.
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	Twenty-two sectionalisers/ automation implementation installed since August 2023. Project being scoped for remaining identified locations.

Actions in response to Energia recommendations		
Recommendation	**Action**	**Status**
Shorten restoration tail	Run pilot on fault passage indicators, reducing time in identifying physical fault location.	Installation of ten first pilot units were completed in Jan 25. Further 15 locations identified for implementation in RY 2026.
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 solar farm applications, Generator project in progress for Raupunga. There is currently a programme for 21 maraes to install solar and some schools have solar.

5. Major Events

5.1 Overview

The following are descriptions of the major events affecting supply reliability through the year. The major events are not a direct root cause of Firstlight exceeding its unplanned SAIDI and SAIFI limits because the limits would have been exceeded even if the normalised major events were excluded. Rather, numerous smaller events occurred during the year. The descriptions provide insights into the nature of the weather events experienced during the year and their impact on supply reliability.

5.2 Summary of Unplanned SAIDI and SAIFI Major Events

Several strong wind events occurred during RY 2025 with southerlies being more prevalent than normal. The wind events affected the ability to climb poles, but moreover, caused widespread tree damage and disrupted travel. One event caused loss of supply to Wairoa district due to transformer inrush.

Table 12: Unplanned SAIDI and SAIFI major events RY 2025

Unplanned Major Events in RY 2025					
Start	**End**	**Pre-normalised unplanned**		**Normalised unplanned**	
		SAIDI	**SAIFI**	**SAIDI**	**SAIFI**
24 Jun 24 18:00	27 June 24 10:30	104.989	0.3795	9.056	0.0779
12 Aug 24 14:30	13 Aug 24 18:30	15.426		2.009	
17 Aug 24 06:00	19 Aug 24 12:30	63.610		5.456	
7 Oct 24 22:00	9 Oct 24 21:00		0.1921		0.0082
26 Dec 24 12:00	28 Dec 24 17:00	72.057		7.284	
7 Mar 25 06:00	8 Mar 25 17:00		0.1784		0.0098
	Total	256.082	0.7500	23.805	0.0959

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

Following much debate by Electricity Engineers Association (EEA) working groups, we changed our fault restoration practices in June 2021 to better align with industry risk-based approaches. Rather than waiting for a fixed length of time for members of the public to notify us of unsafe lines, we now have a preference to patrol the line significantly more before performing a manual reclose. That is, before restoring supply, we patrol the faulted line to ascertain and establish what line damage has occurred. For example, in storms it is possible for a tree to damage our lines causing conductors to come down, or to cause multiple points of damage. Patrolling enables us to identify the damage and to assess public safety hazards before restoring supply.

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 enables an informed assessment of public safety hazards and aligns with good industry practices.

5.4 SAIDI & SAIFI Major Events – 25 June to 27 Jun 2024

5.4.1 Summary

Between 25 June 2024 and 27 June 2024, major interruptions occurred to 17 feeders connected to the Wairoa, Tolaga Bay, Kaiti, Tokomaru Bay, Ruatoria, Te Araroa and Puha substations. These interruptions affected 9886 customers and occurred during gale force winds and rain that caused out-of-zone tree damage, lightning damage and flooding on multiple feeders.

5.4.2 Event Details

Starting on 25 June a southerly front swept through the Wairoa and Tairāwhiti area bringing high winds and rain. The winds intensified on 26 and 27 June with gale force winds gusting to 104km/h. In comparison, Cyclone Gabrielle had wind gusts of lesser speed that peaked at 91km/h.

- A ground mounted switching station on the Borough One feeder in Wairoa had to be shut down due to the risk of flooding by the Wairoa River (5.6 SAIDI. 0.057 SAIFI).
- A tree damaged the 50kV subtransmission line supplying Ruatoria and Te Araroa substations (0.047 SAIFI).
- Several conductor clashes occurred on the 33kV subtransmission line supplying Mahia (0.046 SAIFI). The wind was perpendicular to this line's general west-east direction.
- A pole failure occurred on the Hexton – Puha 50kV feeder (0.038 SAIFI).
- Lightning affected the Crawford Rd feeder (0.036 SAIFI) and the Whangara feeder (0.023 SAIFI).
- A tree went through lines at Waihau (0.023 SAIFI).

The high winds hampered repairs and helicopters were unable to fly for either patrolling or pole work. For safety reasons limited staff were dispatched at night.

5.4.3 Impact

As a result of this weather event, Firstlight's consumers incurred a SAIDI of 105 minutes, adjusted to 9.06 minutes with boundary value adjustment.

5.4.4 Learnings

Following this event, Firstlight has reviewed its vegetation management tactics to include out-of-zone trees. However, out of zone trees are not covered by the Electricity (Hazards from Trees) Regulations and we have no rights to physically manage them, except to inspect them and send letters to the stakeholders accountable for the trees.

The switching station in Wairoa is being flood proofed and is planned to be moved to a location with lesser flood risk. This is part of a wider review under way of the Wairoa area subtransmission architecture (refer to section 8.4).

5.5 SAIDI Major Events – 12 and 13 August 2024

5.5.1 Overview

Strong southerlies gusting to 78 km/hr affected several feeders in the Wairoa area, particularly the 33kV feeder supplying Tahaenui and Mahia. The Mahia generator failed after 10 minutes' operation. An 11kV cable faulted on the Elgin feeder in Gisborne.

5.5.2 Event Details

In the evening of 12 August 2024 and throughout the next day, strong southerlies were causing line faults on feeders in the Nuhaka area.

In the early afternoon of 13 August, the 33kV line between Wairoa and Tahaenui tripped on earth fault, which led the control room to be concerned about the public safety hazards with re-livening.

The adjacent Nuhaka 11kV feeder had been faulted the night before, after a large apple tree had fallen through the lines damaging the conductor and cross arm. The usual procedure if a fault should occur on the Tahaenui line is to run the Mahia generator, which provides backup to the Mahia area. However, the generator stopped operating after 10 minutes due to a mechanical fault with the fuel. With a patrol of road crossings complete, the line was successfully reclosed around one and a half hours later with no cause identified.

On the same day and independently, a cable on the 11kV Elgin feeder in Gisborne faulted, bringing an additional 2.9 SAIDI minutes.

5.5.3 Impact

This event incurred a total of 15.5 SAIDI minutes, boundary value adjusted to 2 SAIDI minutes, and its SAIFI impact was 0.085 as shown in Graph 39 in Section 2.7.

5.5.4 Learnings

Adequate assurance is needed that the generators can reliably operate when necessary.

The cause of the fault was not found. The Tahaenui/Mahia line is a cross-country line, difficult to inspect, with a mix of older structures having a delta conductor configuration and newer structures having flat crossarm configuration. The line follows a route across difficult hill country terrain and patrolling is best done from the air. A possibility is that the sheared insulator pin described in section 5.9 could have been a latent cause of this earth fault.

5.6 SAIDI Major Events – 18 and 19 August 2024

5.6.1 Overview

Gale force winds caused out-of-zone trees to damage several feeders in the Tokomaru Bay and Ruatoria areas. This affected backup capability and led to consumers being without supply for long duration while trees were cleared and conductors repaired.

5.6.2 Event Details

At 12:32 pm on 18 August, an out-of-zone tree went through the conductors at the start of the Inland Feeder. We commenced fault finding/isolation with the view to back feed the feeder from the Makarika Feeder. However, at 1:02pm a second out-of-zone tree went through the conductor at the start of the Makarika feeder. We then attempted to back feed both feeders from the Mata Rd feeder. At 1:24pm a third out-of-zone tree went through the conductor at the start of the Mata Feeder. We had no further feeders available to supply the area and supply restoration had to wait for the repairs following the clearing of vegetation.

An out-of-zone tree also fell through the 50kV line between Tokomaru Bay and Ruatoria, affecting supply to the Ruatoria Substation (738 Customers) and the Te Araroa Substation (477 customers). Following the usual procedure, the generators at Ruatoria and Te Araroa started to provide back-up supply, however further faults tripped the generator at Ruatoria Substation (the generators are arranged to have sensitive electrical protection and they trip before the individual feeders trip), and this contributed to contributing to 6.8 SAIDI.

Trees also came down on the main State Highway 35 which hampered the ability to respond.

5.6.3 Impact

The event caused a SAIDI of 63.6 minutes with boundary normalisation to 5.5 minutes, with a SAIFI impact of 0.146 as shown in Graph 39 in Section 2.7.

5.6.4 Learnings

Firstlight's vegetation management tactics have been amended.

5.7 SAIFI Major Events – 7 October 2024

On 7 October 2024, the 50kV line supplying Makaraka, Parkinson substation and JNL tripped when an opossum contacted the live conductors.

5.7.1 Event Details

At 21:38 on 7 October 2024, Firstlight's afterhours duty controller received a SCADA alarm that CB182 supplying Makaraka had tripped and locked out due to an earth fault. Fault staff were subsequently dispatched to the Makaraka Substation, and switching was done to liven the Parkinson St and JNL substations at 22:06 from the Matawhero substation. Further switching was done to liven two of the Makaraka 11kV feeders at 22:33. As the remaining two Makaraka 11kV feeders share the same poles with the 50kV line, this portion was patrolled and these two remaining feeders were livened at 23:09. The line was patrolled the next day and a possum was found at the foot of 'H' pole B1813 in Howarth St. Possum guards had not been fitted to this pole and the 50kV line does not have auto reclose fitted on account of the lower voltage feeders sharing the same structures.

5.7.2 Impact

The fault caused loss of supply to 2762 customers supplied from Makaraka substation, 1862 customers from Parkinson St substation and 1 industrial customer from JNL substation, a total impact of 0.1928 SAIFI, adjusted to 0.0082 by boundary normalisation. The event caused 11.2 SAIDI minutes as shown in Graph 40. Because the fault occurred at night, there was a short delay while the on-call controller travelled to the control room.

5.7.3 Learnings

Possum guards have since been fitted to this pole, but there are other 50kV poles in the area that do not have possum guards fitted. As described in section 7.4.3, historically possum guards were not fitted to every pole, but they are now being fitted where inspections find they are missing. The line is being reviewed for whether auto reclose should be enabled.

A fault indicator installed at Makaraka or distance to fault capability could potentially have mitigated the need to despatch fault staff to the substation and might have reduced outage duration.

5.8 SAIDI and SAIFI Major Events – 27 December 2024

Gale force southerlies gusting to 107 km/h in the Wairoa district caused several feeders to trip bringing consequent loss of supply to customers.

5.8.1 Event Details

The Wairoa-Tahaenui-Mahia 33kV line tripped at 14:37 on 27 December 2024 interrupting the supply to 1206 customers. This line runs in a west to east direction and is susceptible to conductor clashes. Fault and lines staff were dispatched, and normal fault isolation principles were engaged. The Mahia generator (1.2MW) was started following a pre-planned procedure and this provided a back-up supply to Mahia (938 customers) from 15:12. However the generator tripped at 16:38. Suspecting 11kV line conductor clashing, the generator was restarted and power restored, but it tripped again at 17:55. Line fault indicators at Tahaenui showed that the 33kV fault was between Tahaenui and Mahia. Fault staff had patrolled the areas where the 33kV feeder crosses the road and the 33kV feeder was livened as far as Tahaenui (268 customers at 16:40). However, the line tripped again at 18:42, it was re-livened but then tripped again at 19:06. Following this, another attempt was made to start the generator but a jumper was found to be disconnected at the pole adjacent the generator. With the wind being too strong, climbing the pole was not attempted. For the sake of safety, it was decided to leave the supply off until the morning when the wind was forecast to subside, enabling repairs to be made. The 33kV line was re-livened up to Tahaenui, but the line to Mahia was not re-livened because the wind was still strong. With repairs made, the 33kV line was re-livened and all power was restored at 11:57 on 28 December.

The Ruakituri feeder which supplies 162 customers tripped at 5:21 on 27 December. This feeder is known to be susceptible to line clash during southerly winds. Decisions were made to manually re-close the feeder circuit breaker four times during the day for the feeder to trip again between 20 and 60 minutes later, each time the relay showing that the feeder tripped on overcurrent, signifying conductor clash. Operational experience has shown that auto-reclose is not successful on this feeder during southerly winds because the conductors take longer than recommended "dead" times to settle. Later that evening, at 18:18, the feeder circuit breaker was closed again but this time it tripped and locked out with relay flags showing a sensitive earth fault. Line patrol and sectionalising commenced the next day during better weather conditions. The patrol found a downed pole near the end of the line. All customers except for four were able to have their power restored the next day by 14:22 on 28 December. Access due to weather and availability of a helicopter impacted the response. The replacement pole needed to be helicoptered into position, but in consultation with the affected consumer who was not using the four connections at that time, the pole was replaced on 10 January, and the repair of the numerous other faults that occurred during this period could be prioritised.

5.8.2 Impact

The event brought a SAIDI impact of 68 minutes, normalised through boundary calculation to 7.1 minutes, and a SAIFI impact of 0.151 as shown in Graph 41.

5.8.3 Learnings

The pole at the generator site was scheduled for replacement. A special inspection by drone is planned for the 33kV line. A pole replacement programme has been established on the Ruakituri feeder with more poles to be replaced in the coming year. A new maintenance service agreement is being prepared with the incumbent contractor to improve fault response coordination.

5.9 SAIFI Major Events – 7 March 2025

On 7 March 2025, when re-livening the T3 transformer at Wairoa after a fault on the 33kV line to Mahia, the magnetisation inrush current caused the supply to Wairoa substation to trip.

5.9.1 Event details

The 33kV line supplying Tahaenui and Mahia from Wairoa had tripped and locked out on overcurrent on 6 March. The Mahia generator was used to restore supply to Mahia customers with Wairoa Substation providing an alternative feed via the Nuhaka feeder onto which the generator was synchronised. A patrol of the line provided no evidence of the fault location. At 5am the next morning, a member of the public reported wires down and a helicopter patrol found a burnt pole resulting from a sheared insulator pin. The insulator tipped over the conductor which contacted the cross arm and probably the adjacent conductor and caused a pole top fire.

With the pole replaced during the afternoon of 7 March, the circuit was re-livened at 17:59 on 7 March 2025 by closing the 11kV circuit breaker that supplies the T3 transformer. On re-energisation, Wairoa's incoming circuit breakers tripped due to transformer T3's magnetising inrush current. This caused a complete loss of supply to Wairoa town and surrounding districts.

Following the trip, load was brought back on in stages with all power restored by 18:27.

5.9.2 Impact

The event caused interruptions with a SAIFI value of 0.1770 normalised by boundary calculations to 0.0078. There were two SAIDI impacts with 3.5 minutes on 6 March and 3.7 minutes on 7 March as shown in Graph 42.

5.9.3 Learnings

The protection at Wairoa Substation will be modified to reduce the risk of the inrush problem happening again. An upgrade to Wairoa substation is also being investigated as part of a wider review of the subtransmission architecture in the Wairoa area (refer to section 8.4).

The failed insulator pin is being assessed and findings discussed with line designers.

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.

6.2 Reliability Performance Review

During the assessment period, an internal review was undertaken to investigate and improve the network reliability performance for RY2025.

The review started by canvasing previously proposed actions and re-considering whether they remain applicable, should be amended or not proceeded.

Table 13: Reliability Performance Review

Issue	Context	Planned Action
Feeder security levels impact the reliability of a feeder. Are network extensions viable for reducing the impacts of adverse weather. If not, would permanent diesel generators be a viable alternative?	The Gisborne Tokomaru Bay line was converted to 50kV operation in 2022 creating a second supply to the coast. The line connects at Tokomaru Bay substation and supplies the Ruatoria and Te Araroa substations, while the other line supplies the Tolaga and Tokomaru Bay Substations. The conversion has helped to reduce both SAIDI & SAIFI for the Coast region. The two lines provide full back-feeding capabilities.	Consider the viability of building a new zone substation near to Gisborne Substation to supply its surrounding areas and reduce customer numbers on some of the long town feeders and decrease demand on the Kaiti, Port and Makaraka Substations. Optioneering study RY 2026 Consider the potential for upgrading or re-configuring the electrical architecture at Wairoa Substation. Optioneering study complete. Strategy to be determined RY 2026
	A significant increase in the SAIDI and SAIFI due to the absence of the Raupunga feeder diesel generator shows the impact it can have on achieving our quality targets. Section 6.8 shows that existing generators provide a large SAIDI saving benefit.	There is a capital project planned to install a new generator on the Raupunga feeder during RY 2026.
Reliability analysis and the pole inspection programme indicate the need to continue with an increased pole replacement programme.	The increased pole replacement programme commenced during RY2022, and will continue through the current DPP. The new mobile pole inspection application is improving the quality of pole health data. A focus on crossarm and insulator condition has been integrated into the new inspection schedules.	The increased programme will continue during RY 2026 with target areas identified for H1 pole replacements. Work to inspect hard to access areas of the network (such as the Tahaenui feeder) via drone will be considered for RY 2026.
Cable faults have been focussed on several urban feeders, while the core reasons for the failures are not clear. Some kind of	Options for implementing cable fault monitoring have been discussed but no firm plans have yet crystalised.	New switchgear procurement includes fault indicating capabilities. - Complete

Issue	Context	Planned Action
remote monitoring should be used to reduce the response times to any unplanned faults.		
Conductor faults are increasing in number and have increasing consequence. While inspections are not effective from the ground, we have carried out a drone-based inspection on two feeders	An external contractor conducted a drone survey on the Ruakituri and Mahia feeders (both long rural feeders which traverse rugged and hilly farmland). The results proved beneficial with condition data and defects identified. Drone work has been successful in identifying defects for conductor, and pole top hardware including cross-arms. Various of the worst performing feeders are cross country and difficult to access.	Develop a programme for drone inspections of feeders, particularly involving long rural feeders with sections of line that are difficult to access. Such feeders would include Hicks Bay, Mata, Tauwhareparae, Wairoa-Tahaenui. RY2026 Develop a programme to carry out physical testing on sample conductors to better understand condition in line with recent EEA guideline. RY2026

6.3 Sectionaliser Project

Sectionalisers are load break switches that isolate the section of line downstream after a fault has occurred, without requiring the entire feeder to be de-energised. There are three main ways in which we benefit by installing sectionalisers:

- When a fault occurs beyond a sectionaliser, it means that the customers upstream of the sectionaliser remain with power.
- If the sectionaliser operates, it allows the field fault worker to head straight to the area with the isolated line, enabling a faster restoration of power than if they had to first patrol the lines upstream of the sectionaliser.
- When a fault occurs that does not result in the sectionaliser operating, the fault worker can infer that the fault is upstream from the sectionaliser, saving time as line beyond does not need patrolling, and interrupted customers can have their power restored more quickly.

During late 2023 and early 2024, we installed twelve sectionalisers. These have had a big impact on the number of customers affected by unplanned outages. Then between August and October 2024, we installed a further seven sectionalisers.

Table 14 shows the savings in SAIDI we have made in unplanned customer outages from having these additional nineteen sectionalisers being in service. Savings will have been made in SAIFI too, because the customers upstream from the sectionalisers will not have been exposed to the faults to which they would have otherwise been exposed.

The savings in SAIDI resulting from the sectionalisers despite the increasing numbers of defective equipment related interruptions indicate that the network is improving in resilience.

Table 14: Estimated SAIDI Savings resulting from installed Sectionalisers

Sectionaliser	Type of Line	Customers before*	Customers after*	Date installed	Feeder	General Area	Customer minutes saved from faults beyond sectionaliser	Customer minutes saved from faults ahead of sectionaliser	Total customer minutes saved	Total SAIDI saved
J309	Spur line	59	32	27/03/2024	Awatere	Whakaangiangi Rd	31395	2880	34275	1.318
G1074	Spur line	121	25	12/12/2023	Tauwhareparae	Arahiki Rd	-	1500	1500	0.058
G1419	Spur line	29	56	19/12/2023	Mata	Anaura Rd	-	10080	10080	0.388
J3702	Spur line	107	21	16/02/2024	Te Araroa	East Cape Rd	-	630	630	0.024
H1726	Spur line	81	32	7/03/2024	Makarika	Makarika Rd	-	3840	3840	0.148
H1219	Spur line	33	30	23/11/2023	Mata	Mata Rd	7560	8100	15660	0.602
J1048	Spur line	208	28	14/12/2023	Tikitiki	Waiomatatini Rd	-	840	840	0.032
H135	Mesh	47	16	30/11/2023	Mata	Tuakau Rd	87381	4800	92181	3.545
W5585	Spur line	134	21	27/02/2024	Raupunga	SH 2 Raupunga	18600	10080	28680	1.103
W3953	Spur line	302	43	29/02/2024	Raupunga	Mohaka township Rd	-	15480	15480	0.595
D2073	Mesh	304	155	5/03/2024	Lavenham	Lavenham Rd	-	27900	27900	1.073
F140	Mesh	329	56	25/03/2024	Matawai	Matawai Road (Otoko)	34650	3360	38010	1.462
D3416	Mesh	102	47	4/09/2024**	Tahora	Taumata Road, Rere	13410	-	13410	0.516
A91	Mesh	544	44	26/08/2024**	Whangara	Matokitoki Valley	70560	5280	75840	2.917
F423	Mesh	154	230	12/09/2024**	Matawai	Matawai Road (Otoko)	-	-	-	-
W810	Spur line	183	84	18/09/2024**	Morere	Omana Road, Nuhaka	75600	5040	80640	3.102
W799	Spur line	124	38	10/09/2024**	Ruakituri	Ohuka	-	-	-	-
W1221	Spur line	186	38	24/09/2024**	Mahia	Pongaroa	-	13680	13680	0.526
W789	Mesh	196	742	8/10/2024**	Mahia	YMCA Rd, Mahia	-	44520	44520	1.712
						Total	**339156**	**158016**	**497172**	**19.122**

*Based on April 2024 maps
**Part year date install

The biggest saving in customer minutes is from sectionaliser H135 on Tuakau Road, closely followed by W810 at Nuhaka, and A91 in Matokitoki Valley. W810 and A91 have only been installed for around half of the reporting period so these are likely to continue to provide a significant benefit in the current year.

The greatest savings can be seen where there are many customers upstream of the sectionaliser, particularly when a fault occurs beyond the sectionaliser at night, if a fault worker cannot access the line to patrol until daylight for reasons of safety.

6.4 Line Fault Indicators

During the assessment period, Firstlight Network trialled the application of line fault indicators (LFIs) to assess the benefits they provide with locating faults. Line fault indicators help with fault restoration by reducing the time required for fault location (second box in Figure 4) and they can help to reduce SAIDI. LFIs attached to overhead line conductors measure and signal the passage of fault current at their location. Most fault locators advise fault staff via a flashing lamp, while some types can send SCADA notifications through cell technology.

A study of the benefits provided by line fault indicators was undertaken on the Lavenham feeder. This feeder supplies customers in the intensive agricultural area near to Patutahi village. Three sets of line fault indicators had been installed in the following locations:

- Location A – at the Tiniroto Road end of Kaimoe Road with 33 customers before and 180 customers beyond to sectionaliser D2073 and 149 customers beyond that.
- Location B – on Brunton Road at the corner of Tiniroto Road with 33 customers before and 57 customers beyond.
- Location C – on Tiniroto Road at the corner of Brunton Road with 33 customers before and 30 customers beyond.

During the RY2025 assessment period, customers on the Lavenham feeder experienced 11 faults (excluding fuse faults). In ten of these faults, the LFIs did not need to be used because the control room was able to identify the fault location quickly by other means, either because nothing tripped, the network was shut down at short notice, or from advice from members of the public.

However, the LFIs did assist with determining the location of one fault on the trial feeder. On 13 February 2025, a car crashed into a pole located beyond location C and there was no call in from the public. The LFI identified the fault, and the fault worker was able to patrol the section of line beyond location C. It took approximately 30 minutes for the fault worker to reach the site of the accident.

The LFI's advice reduced the uncertainty facing the fault worker with having several parts of the feeder to patrol, yielding a saving that could have been 0.935 SAIDI. It is a matter of assumption which parts of the feeder the fault worker would have patrolled first without the guidance from the LFI. Probably the first part of the feeder to patrol would have been the lines before locations A, B and C, which would have taken approximately 30 minutes. The second part to patrol would have been the lines beyond location A, which would have taken approximately 60 minutes. The third part would have been beyond location B, which would have taken approximately 30 minutes. The likely saving in restoration time is estimated to be 90 minutes, comprising (30 + 60 + 30) minutes – 30 minutes = 90 minutes affecting 270 customers.

Assisting fault location in this instance, was the knowledge that sectionaliser D2073 had not 'seen' a fault, which allowed the controller to open this switch remotely and back feed from the adjacent Waimata feeder, restoring power to 149 customers within 12 minutes.

A second LFI trial was undertaken on the 50 kV line between Tolaga Bay and Tokomaru Bay, beginning in late October 2024 with communications to the control room installed in mid-December. There were two faults from that time until the end of the assessment period, and in both instances fault indicators were used early in the fault location and switching process. The faults were pinpointed, and 649 customers were able to have their supply restored using remote switching. The restoration time would have been 20 to 25 minutes faster than if the generator had been started, with an estimated saving of 0.57 SAIDI minutes per fault.

In conclusion, LFIs can play a very useful role in determining the location of a fault, allowing fault workers to be directed to the right area.

6.5 Possum Investigations

In the past, Firstlight used to regard its 50kV and urban overhead lines as having low risk of contact from wildlife, like possums. The Makaraka outage in October 2024 (section 5.7) has now changed Firstlight's perceptions of possums. Following this event, Firstlight carried out an investigation into the application of possum guards on poles. Historically possum guards were not fitted to every pole, even if the cost of fitting a possum guard to a pole is small. Following the outage, Firstlight has instigated a programme to fit possum guards retrospectively as a find-and-fix when inspections find they are missing. They are also being fitted to all new pole structures on 50KV and below.

6.6 Reviews of Protection Systems

Various protection system related reviews have been undertaken during the assessment period, including:

- Relay setting reviews on the Makaraka feeder following the fault on 7 October 2024;
- Reviews of the application of auto reclose on 50kV feeders in line with the EEA Guide Automatic Reclose of HV Circuits following a Fault.
- Reviews of 11kV incoming circuit breaker settings at Wairoa to ensure they accommodate the in-rush currents from energising the downstream Tahaenui transformer.

6.7 Changes to Field Service Arrangements

The field services agreements are established to ensure that work delivery arrangements on Firstlight's network footprint are effective. A master services agreement (MSA) is currently under consideration which would include the provision of first fault response, corrective maintenance, planned maintenance and capital works projects on Firstlight's network.

The intent is to provide the commitment that enables contracted service providers to:

- Obtain, develop and maintain the workforce required for sustainable and continuous service provision.
- Improve safety commitments and performance through the implementation of joint KPIs intended to measure and enhance the safety outcomes of both contractor and principal.
- Assure rate reasonability through rate benchmarking against national service providers.

An alternative of issuing competitive tenders has been discounted on the grounds of a lack of suitable established local competitors, the criticality of delivering the existing works programme given the disruption such a change would create, and benchmarks have indicated that there would not likely be significant savings.

Consideration of an in-house service provision model has not proceeded due the lack of existing capability and qualified field staff within Firstlight Network.

6.8 Standby generation reduced the impact of interruptions on our consumers

Our approach to managing the quality limits is to deploy fixed and mobile generators to supplement supply during any unplanned outage that cannot be restored within our service level periods. This approach is a cost-effective solution on our long rural feeders where the load is minimal and where there are few network back-up supply options.

Mobile generators are useful for assisting our planned shutdowns should the area affected include a critical connection, like health support equipment and businesses.

We avoided 412 SAIDI minutes during the assessment period by deploying standby generators on our network, as shown in Table 15. Standby generation has been shown to be an effective and appropriate approach to providing consumers with redundancy where it is cost-prohibitive to provide more traditional supply via duplicated network feeders.

Table 15: SAIDI minutes avoided by employing standby generation for unplanned interruptions

Location	Customer minutes avoided	SAIDI minutes avoided
Transportable Generators	1,286,880	49.3
Mahia (Gen 1)	1,686,561	64.6
Puha (Gen 4)	439,052	16.8
Coast (includes Tolaga Gen 5, Ruatoria Gen 2, Te Araroa Gen 6)	7,349,257	281.6
Total	10,761,750	412.2

7. Our network is being managed for improvement

7.1 Overview

In this section, we summarise our developments in Clarus' and Firstlight's asset management systems and capabilities (section 7.2).

Following this, we describe the analysis we have conducted during the assessment period and in any of the three preceding assessment periods on:

- Asset health assessment, condition monitoring and improvement;
- Trends in asset condition and approaches towards asset renewal decision making;
- Causes of unplanned supply interruptions, particularly the causes of defective equipment outages;
- asset replacement and renewal; and
- vegetation management [25].

7.2 Asset Management Context

Firstlight's approach towards delivering a reliable electricity supply to its customers is driven at the highest level from its Asset Management Policy and its Strategic Asset Management Objectives. Firstlight and Clarus have been devoting much attention to making asset management improvements and aligning Firstlight within the Clarus' group. The integration of Firstlight's asset management system within Clarus Group remains a continuing process involving aligning information systems and processes.

7.2.1 Asset Management Policy

The asset management policy has recently been updated to represent all the infrastructure assets that Clarus Group owns. Firstlight Network adheres to the Clarus AM Policy and a copy is presented in Screenshot 1.

The new AM Policy supersedes the Asset Management Policy that was published in Section 7.2 of Firstlight's Asset Management Plan 2023. The 2023 AMP described Firstlight's commitment to asset management, while stating that the policies and strategies would be reviewed to ensure alignment with the context, stakeholders and objectives of Firstgas Group. At the time of writing the 2023 Asset Management Plan, the staff were undergoing a change of ownership and were grappling with the consequences of two major storm events.

[25] As prescribed in clause 12.4(f) of the DPP Determination.

Screenshot 1: Clarus Asset Management Policy

Clarus

Asset Management Policy

Clarus is the umbrella term used for the separate legal entities of First Gas Limited, Gas Services NZ Limited, Rockgas Limited, Firstlight Network Limited, Flexgas Limited, First Renewables Limited and any and all of their related companies. All references to Clarus contained in this policy are to be treated as a reference to those entities. All permanent, fixed term and casual employees employed by any of these legal entities and all contractors and consultants undertaking work on behalf of Clarus are also expected to adhere to this Policy.

Clarus Asset Management Policy is to effectively manage the Clarus assets across their entire lifecycle in a safe, efficient and environmentally appropriate way to serve the needs of our customers, stakeholders and end-users while optimising the long-term return of our shareholders.

Achieving Operational Excellence in Asset Management is key to delivering on Clarus Mission:

Deliver safe reliable and cleaner energy today and in the future, doing right by our environment, people and communities.

To deliver on our asset management policy Clarus will:

- Prioritise the integrity of our assets to ensure the safety of the people and places affected by our operations.
- Provide a reliable, resilient and secure service that meets customer needs.
- Preserve the environment by operating in a manner that mitigates environmental risks.
- Address and meet all legislative requirements.
- Communicate our investment plans to stakeholders, particularly the communities that host our assets.
- Reduce downside financial risks while optimizing financial outcomes for our shareholders.
- Balance the needs of competing objectives in a consistent and transparent manner.

To achieve and monitor this we will:

- Engage with our stakeholders in an open and transparent manner, integrating customers into our decision making.
- Provide efficient and effective systems for whole of life asset management processes.
- Regularly review our performance using relevant leading and lagging indicators.
- Grow the organisational competence and capability of Clarus in step with our asset management objectives.
- Ensure our Board and management are fully informed with accurate and timely data to support their responsibilities.
- Communicate with both internal and external stakeholders on all aspects of this policy.
- Continuously strive for improvement in all areas of asset management that align with the ISO 55000 suite of standards.

All our people are responsible for:

- Ensuring their own and others adherence to this policy.
- Escalating any issues that may put the aims of this policy at risk.

Paul Goodeve
Chief Executive Officer

Clarus | 09007 | 13 January 2025 | 1 | 1

7.2.2 Asset Management Strategy

Firstlight's asset management strategy comprises three high level themes as follows:

Theme 1: Develop Asset Management System

- Comprehensive AMMAT assessment, benchmarking against ISO55000
- Staff competence and capability
- Implementing asset class hierarchy and strategies for lifecycle management
- Implementing current industry forecasting methodologies and removing DNO
- Asset data quality

Theme 2: Leadership and Governance

- Renewing Firstlight Network Asset Management objectives
- Aligned governance processes with Clarus, decisions approved by Audit, Risk, Regulation Committee
- Asset Management system integration with the business to ensure coordination, decision making alignment, communicating the importance of the AM System

Theme 3: Risk Management

- Integrated Risk Management framework into Clarus
- Implemented Firstlight Network Asset Risk Register to manage network risks on the network comprising risk treatment plans, interim controls, management of change and forecast expenditure.

The initiative to move towards defining and developing Firstlight's asset management system for achieving certification to ISO55001 is being driven from the Executive.

Section 7.3 of the 2023 Asset Management Plan, updated in the 2025 and 2024 AMP Updates described eight improvement initiatives. These initiatives are tactical in nature, and they seek to fulfil the strategic themes described above. Fulfilment of these improvement initiatives is ongoing, and this section 7, along with section 4, further describes the progress of some of these initiatives.

1. Improve network resilience to adverse wind, flooding and geotechnical hazards as mitigation to the increasing impacts of climate change through extreme weather events amidst aging network assets. This includes focussing on worst performing feeders, ensuring overhead line design standards achieve an appropriate level of resilience, enhancing contingency plans, improving SCADA and OMS utilisation, enhancing the use of network automation, and improving vegetation management planning.
2. Enhance vegetation management activities since vegetation remains a consistent and significant causal factor for supply interruptions. This initiative includes improving inspection and remediation processes for whole of feeder, focusing on subtransmission and key feeders, plantation owner engagement, and wider growth limit zone advocacy.
3. Align asset fleet plans to asset health and criticality indices. In the context of aging subtransmission and distribution assets, maintaining asset performance is one of the main objectives of health and criticality-based asset renewal decision processes.
4. Improve network security and automation using fault location, reclosers and sectionalisers, and additional feeder interconnections. Fault location and switchgear will help to pinpoint fault locations and focus repair efforts. Subtransmission asset "hardening" is intended to mitigate the impact of slips and other adverse environmental conditions, such as flooding and geotechnical hazards.

5 & 6. Ensuring the network can support the region's energy transformation and decarbonisation plans. Developing alternative options for providing network capacity into Gisborne, to accommodate demand from new industries and electrification of transport and process heat.

7. Improving asset management practices and asset information, with the aim to improve the asset maturity score to 3. The change in ownership has required migrating the asset management information system to Maximo, which has slowed the focus on core asset information. Focusses

include capturing condition information, improving maturity of asset risk management, and improving the asset management documentation.

8. Balance the Energy Trilemma consistent with stakeholder expectations. Balancing and communicating stakeholder expectations on affordability, security and sustainability is a strategic activity in which senior management "walk and talk" the asset management strategy.

7.2.3 Asset Management Committee

To help implement the Asset Management Strategy, Firstlight has established an Asset Management Committee whose role is to:

- Champion the implementation of Clarus' asset management systems within Firstlight and provide feedback from Firstlight into Clarus' asset management systems.
- Oversee the development of Firstlight's Asset Management Plan and provide guidance on the strategy;
- Provide guidance on risk management strategies related to asset management;
- Review asset lifecycle management plans and network development plans;
- Review and monitor asset performance;
- Review the asset management policies and procedures.

The committee comprises senior management and staff from within Firstlight and Clarus. The Asset Management Committee is important for the Chief Operating Officer to represent Firstlight's asset management directions at Executive and Board level.

As part of ongoing network reliability monitoring, Firstlight reviews its quality performance monthly. These are internal operational meetings that provide the Chief Operating Officer with reports for the Audit, Risk and Regulatory Committee. The meetings discuss the previous month's network performance along with the detail of the major interruption events.

Reliability reports to the committee are prepared using Firstlight's new BI Reporting tool. This tool can slice and dice data from the faults database in a multitude of ways quickly and easily. The tool plays an important role in flattening information availability across the organisation. For instance, the Chief Operating Officer regularly uses this tool to gather information about interruptions when needed.

Following the reviews described in sections 4.3 and 4.4, we are in the process of reviewing our suite of Asset Fleet Plans and structuring them differently to improve the link between our asset health modelling and our asset renewal programmes. It is planned that these new asset class plans will be a key part of our preparation for our 2026 AMP. This work is further described in Sections 8.5 to 8.7.

7.3 Ongoing Asset Health Improvement

The Asset Management Strategy refers to ongoing improvements in the way in which asset renewal programmes are aligned with health indices and improving asset information practices. Various initiatives follow these directions particularly around pole inspection practices and replacement.

7.3.1 Conductor Health Assessment

Several factors influence the performance of overhead line conductors as they age. Typical conductor failure modes involve corrosion, annealing following fault events, third party damage and fretting. Corrosion can result from manufacturing defects or poor workmanship, particularly if the wrong materials are used for sleeves and taps. Fretting involves a combination of wear and corrosion. Movement in the conductor due to wind or wind induced vibration causes micro-cracking on the surfaces of the conductor strands around which corrosion seeds, and the conductor gradually fails due to fatigue. Different conductor types have different exposures to these failure modes. Copper conductors tend to corrode in coastal environments and are subject to fretting if vibration is not controlled. AAC conductors maybe prone to annealing and fretting. ACSR conductors can tend to develop internal corrosion if the inner steel core is not effectively greased, and the corrosion can be observed visually as the surface bulges. Galvanised steel conductors tend to be prone to surface corrosion and work hardening, while their conductivity limits their application to remote rural spurs.

Conductor health assessment is largely desk based, and the algorithms rely on known or assessed age, environment and to some extent, field knowledge. Up until recently, field assessment of conductor health has been judged by the numbers of historical faults to which the conductors have been exposed, often measured by the number of sleeves per unit length or span. However, following the release of the EEA Conductor Condition Assessment Guide, Firstlight has been developing a conductor testing programme. Thus far, we have gathered one conductor sample for prototype tensile strength and wrap testing and have work orders raised for other samples. It is expected that as a record of the tests of conductor samples become more extensive, we can better calibrate our conductor health algorithms yielding more accurate renewal forecasts.

7.3.2 Pole Inspection Process

During the previous year, Firstlight has been working to update its lines fleet strategy and inspection standard to align with the pole inspection guidance from the Electricity Engineers Association (EEA). This has been in conjunction with Firstlight's line inspectors to drive real life experience and consistency. Line inspection is performed by three in-house staff who have a mix of previous line mechanic experience, physical and technological capability, and productive and safe mindset.

The fulfilment of Firstlight's earlier lines fleet strategy (2021) presented various difficulties:

- The pole condition inspection results had relied upon descriptors with undefined and ambiguous meanings.
- The condition of pole top attachments was included within the pole inspection record as free text fields, which has led to difficulties analysing the data and the data has not been well maintained. This has led to ineffective renewal programmes for cross arms and insulators
- The fleet strategy suggested that all poles would have an inspection carried out within three years, but this was never achieved.
- A large population of H1 health poles has built up, more than could feasibly be replaced within a reasonable length of time.

Firstlight has since updated its standard for pole inspection based on the EEA guide. The EEA guide provides advice that helps line inspectors to judge the health scores that should be assigned to aged poles based on visual inspection attributes. The preparation of the new standard has been accompanied with a process of consultation with line inspectors and their retraining for better alignment with the standard. This included the inspectors each independently inspecting the same sample of poles to challenge and confirm the consistency of their findings.

Firstlight's GIS team has also developed and implemented an in-house dedicated Asset Inspection application for gathering condition information that uses ESRI mapping technology, like the platform used on our vegetation management app. The new tool allows inspectors to review asset attribute quality as well as gather asset condition information digitally in the field, thereby streamlining our asset management processes. With the tool, line inspectors locate the asset under inspection on a map on their device, check its field ID, confirm its attributes (such as pole type and number of cross arms), then rate its condition on a scale of 1 to 5, and enter information justifying the assessment. Defective line subcomponents are handled by raising a defect notification.

For reasons that are now historical, inspected poles on Firstlight's network were tagged as unsafe when assessed as having five or fewer years' remaining life. This has resulted in a large pole population being tagged, more than could feasibly be replaced within the times given by the EEA guideline. In addition to being somewhat wasteful, it has resulted in the poles closest to failure not being addressed with the necessary priority. In accord with historical Electrical Supply Regulations, the EEA Guide for Work on Poles and Pole Structures recommends that poles deemed as unsuitable to be climbed should be marked to ensure that field personnel are aware of the hazard. Poles are marked with an orange tag when they are known or suspected to be unsafe for carrying their structural design loads but can support normal loads and are marked with a red tag when they are at risk of failure under normal structural loads and are unsafe to climb.

7.4 Trends in asset condition

To establish the trend in asset condition, we have used the health indicators disclosed in schedule 12a of our 2025 AMP Update, shown in Table 16.

Table 16: 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

Note: All health data is as reported in July 2025.

7.4.1 Cable health

The health scores indicate that around 5% of distribution and Low Voltage cable circuit length needs replacement with an H1 health rating. The proportion of cable with H1 health has reduced this year based on desktop assessment.

There is a wide variety of LV cables in use depending on the historical design and construction practices when they were installed. Until the mid 1980s, covered aluminium conductors were often used with tee connections leading to isolation boxes within a customer's premises. If water enters these cables due to damage to the insulation or at the tee joints, deterioration to the conductor can be rapid. Modern low voltage cable systems use 4 core cable or single core cables with PVC insulation and PVC sheath looping between street boxes.

For distribution cables, the manufacturing processes for curing the XLPE insulation cables have advanced over time; their improved quality manifesting in longer expected lives. Manufacturers will readily claim that the modern cross-linked polyethylene (XLPE) distribution cables will last for 80 years. Amongst cables installed until around the mid 1980s however, the tendency for water treeing to develop in the insulation has led to an expectation of reduced life. The valuation handbook from the early 2000s considered a life of 45 years for these cables to be appropriate, and some lengths of cable have reduced health on this account, while many of these cables continue to provide reliable service longer than their standard 45-year life. Failure rates for the early XLPE cables generally appear to be affected by their original selection, third party damage and their historical through-fault duty.

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 around 1% of our PILC cables are due for replacement. Problems with these older "oil- impregnated" cables occur when they are disturbed. New connections and third-party excavations can 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 can allow moisture to enter the cable leading to degradation of the cable insulation.

The subtransmission cables are all in good condition with H5 rating.

Table 17: Cable health by kilometre in each cable category

	H1	H2	H3	H4	H5	Total
Sub transmission UG up to 66 kV (XLPE)	-	-	-	-	1.7	1.7

	H1	H2	H3	H4	H5	Total
Distribution UG XLPE or PVC	2.0	-	-	4.3	41.8	48.1
Distribution UG PILC	-	-	-	7.5	100.4	107.9
LV UG Cable	52.3	-	-	42.2	201.0	295.5
LV Streetlighting	0.4	-	-	1.6	6.5	8.5
Total	54.7	-	-	55.5	351.4	461.7

Table 18: 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	4.1%	-	-	8.9%	87.0%	100%
Distribution UG PILC	-	-	-	7.0%	93.0%	100%
LV UG Cable	17.7%	-	-	14.3%	68.0%	100%
LV Streetlighting	5.2%	-	-	18.7%	76.1%	100%

7.4.2 Conductor health

Most of the conductor is in as-new condition, indicated by its health being very good. Around 2% of the conductors have a health where they need imminent replacement.

Table 19: Conductor health by kilometre in each conductor category

	H1	H2	H3	H4	H5	Total
Subtransmission OH up to 66 kV	0.1	3.7	2.3	9.0	320.7	335.8
Subtransmission OH 110kV	-	-	-	17.4	285.0	302.4
Distribution OH open wire	64.9	4.6	15.3	193.2	2,096.2	2,374.2
Single wire earth return (SWER)	-	-	-	-	0.7	0.7
LV OH Conductor	9.5	0.9	6.8	49.0	449.3	515.4
LV OH/UG Streetlight circuit	-	-	-	-	12.7	12.7
Total	74.5	9.2	24.4	268.6	3,164.6	3,541.3

Table 20 shows that most conductors are classified as H5 health or as new condition with no drivers for replacement.

Table 20: Conductor health by percentage age in each conductor category

	H1	H2	H3	H4	H5	Total
Subtransmission OH up to 66 kV	-	1.1%	0.7%	2.7%	95.5%	100%
Subtransmission OH 110kV	-	-	-	5.8%	94.2%	100%
Distribution OH open wire	2.7%	0.2%	0.6%	8.1%	88.3%	100%
Single wire earth return (SWER)	-	-	-	-	100%	100%
LV OH Conductor	1.8%	0.2%	1.3%	9.5%	87.2%	100%
LV OH/UG Streetlight circuit	-	-	-	-	100%	100%

The extensive use of single strand steel conductor on post war constructed remote feeder spurs brings an interesting renewal and maintenance challenge. This conductor has low weight and strong tensile strength but low conductivity (an appropriate conductor for long spans on rural spur lines) but is becoming aged.

7.4.3 Pole Health

Table 21 gives the numbers of poles on our network by type and voltage.

Table 21: Count of poles by category

Pole Category	400 V	11 kV	33 kV	50 kV	110 kV	Total	Avg. Age
Concrete	2,644	13,969	14	1,476	99	18,202	24.5
Steel	75	36	-	11	517	639	52.2
Wood	3,615	11,296	151	1,151	34	16,247	37.3
Total	6,334	25,301	165	2,638	650	35,088	25.5
Concrete/Steel - total	2,719	14,005	14	1,487	616	18,841	
Concrete/Steel - percentage	8%	39%	-	4%	2%	54%	
Wood Poles - percentage	10%	32%	-	3%	-	46%	

Records of which poles have been historically inspected are prone to some uncertainty. The previous ODK mobile application required inspectors to enter the asset's field ID manually and this has led to asset identification errors when the collected data comes to be used. For example, asset duplications can be found which cause uncertainty to the user. The ODK application did not include rating scales for condition and instead inspectors entered condition descriptors which are open to misinterpretation. The new structure inspection application is used for capturing pole attribute data capture at the commissioning stage, and for data requirements for an upgrade to the CMMS system.

As part of its drive to improve inspection data, Firstlight has been reassessing its red tagged poles during RY 2025 and has thus far found that around two out every three red tagged poles can be re-classified.

The fleet strategy is investigating reducing the wood pole population, and currently we are planning a trial with the Wagners FRP composite poles.

Following the recent supply interruption at Makaraka where a possum contacted a 50kV line, it has been realised that possum guards have not been fitted to many poles located in town areas or on 50kV circuits. Possum guards are now being fitted to poles that do not have them fitted as the inspection process continues.

Table 22: Count of Poles by category and health

	H1	H2	H3	H4	H5	Total
Concrete poles / steel structure	42	85	372	612	17,728	18,839
Wood poles	1,283	1,948	3,626	2,246	7,142	16,245
Other pole types	-	-	-	-	-	-
Total	1,325	2,033	3,998	2,858	24,870	35,084

Repex modelling has been used to determine the health profile of the pole fleet in table 22 and 23. The health modelling indicates that almost 8% of our wood pole population is in imminent need of replacement, and that 12% need to be replaced in a small number of years. Much of the reason for the large population at H1 stems from a historically fragmented view within the organisation of what constitutes a "red tagged" pole.

Almost all the concrete poles are in as new condition, while a small tail of approximately 0.2% of the concrete pole population is at H1 health level.

It is expected that with the new approach towards line inspections, the accuracy of the health determination will improve over the coming years.

Table 23: Percentage of Poles by category and health

	H1	H2	H3	H4	H5	Total
Concrete poles / steel structure	0.2%	0.5%	2.0%	3.2%	94.1%	100%
Wood poles	7.9%	12.0%	22.3%	13.8%	44.0%	100%
Other pole types	-	-	-	-	-	-

7.4.4 Transformer Health

Table 24 shows that the health of our distribution and power transformers is good.

Table 24: Transformer health by the number of transformers in each transformer category

	H1	H2	H3	H4	H5	Total
Zone substation transformers	-	-	1	8	25	34
Pole mounted transformers	76	79	60	195	2667	3077
Ground mounted transformers	2	1	6	26	538	573
Voltage regulators	-	-	-	-	10	10
Total	78	78	67	229	3,240	3,694

The main risk for 'older' transformers is corrosion, particularly in coastal and exposed locations. Inspections are focused on the larger sized transformers that supply commercial or intensive agricultural customers. A run to failure strategy is appropriate for small rural pole mounted transformers, and these transformers tend to be inspected during line inspections or when earth testing is performed.

7.4.5 Switch Health

Switches are necessary for sectionalising feeders during a fault and for providing isolation during repair work. They must be rated for the load that they switch, and they can cause lengthy feeder outages if they fail. Accordingly, we have a well-planned maintenance schedule in place and regular inspections to monitor assets focused on risk management. Table 25 shows switch health in each switch category.

A programme has been underway to replace the older distribution oil switches that have operational restrictions for safe working with new SF6 units. A failure mode has been identified in which the insulation breaks down in the bus extensions of ABB SD series oil filled ring main units, and maintenance or replacement are mitigations. This failure mode was involved with the Childers feeder outage (refer to section 7.5.1).

Out of the 225 pole-mounted fuses and switches, 190 are fuses. When a pole is replaced, the fuses will typically be replaced simultaneously. Otherwise, fuses are run to failure based on performance, replacement time, and minimal impact upon failure, unless a condition assessment deems them unserviceable. Researching fuse installation dates has revealed inaccuracies in data due to missed historical asset information updates. Improving data accuracy is an ongoing initiative.

Table 25: 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)	-	-	-	-	-	-

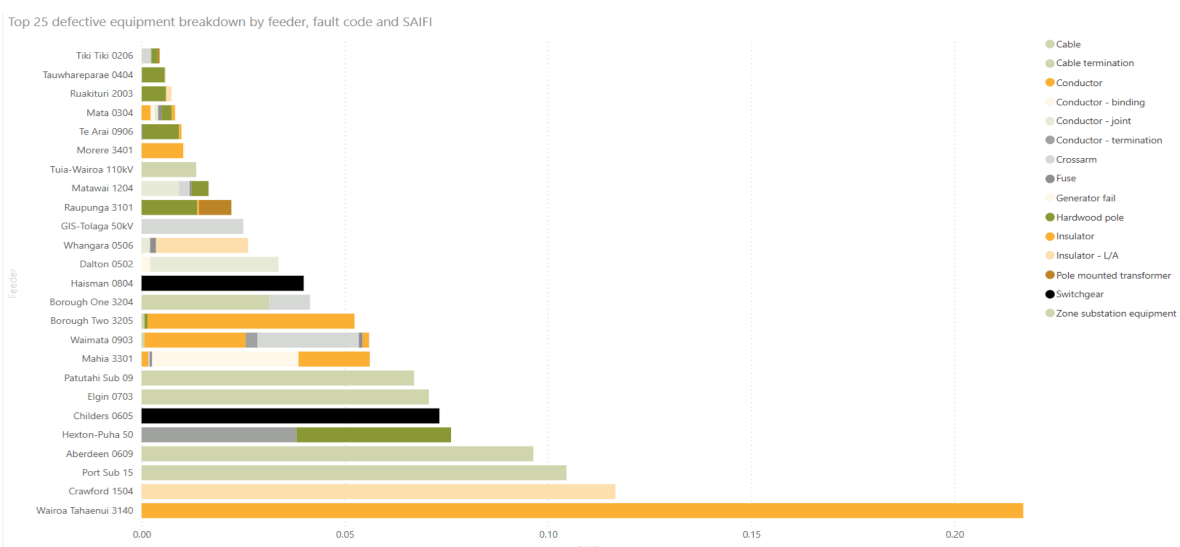
		H1	H2	H3	H4	H5	Total
	33 kV Switch (Pole Mounted)	-	-	-	-	2	2
	33 kV Ring Main Unit	-	-	-	-	-	-
	50/66/110 kV Circuit Breaker (Indoor)	-	-	-	-	-	-
	50/66/110 kV Circuit Breaker (Outdoor)	1	-	-	5	41	47
	3.3/6.6/11/22 kV Circuit Breaker (Ground Mounted)	10	6	-	17	75	108
	3.3/6.6/11/22 kV Circuit Breaker (Pole Mounted)	3	-	-	-	10	13
Distribution	3.3/6.6/11/22 kV Circuit Breaker (Pole Mounted) – reclosers and sectionalisers	2	1	-	6	33	42
	3.3/6.6/11/22 kV Circuit Breaker (Indoor)	-	1	2	10	2	15
	3.3/6.6/11/22 kV Switches and Fuses (Pole Mounted)	225	98	76	517	3,527	4,466
	3.3/6.6/11/22 kV Switches (Ground Mounted) – except Ring Main Units	1	-	2	5	64	73
	3.3/6.6/11/22 kV Ring Main Units	5	0	2	49	216	277
Total		**247**	**106**	**82**	**609**	**3,937**	**5,015**

7.5 The cause of the Unplanned Interruptions

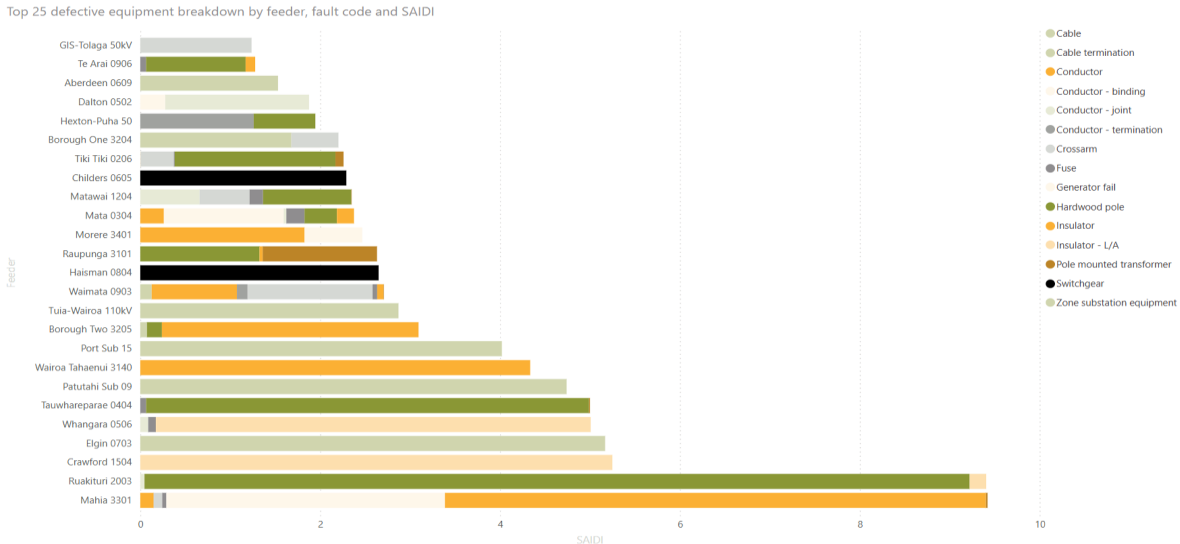
7.5.1 Feeder analysis

Graphs 46 and 47 in section 4.3.1 show the number of defective equipment interruptions and the associated unplanned SAIDI and SAIFI on the ten worst performing feeders.

Graph 53: Breakdown of Defective equipment SAIFI by feeder and fault code



Graph 54: Breakdown of Defective equipment SAIDI by feeder and fault code



The large SAIFI exposure on the Wairoa Tahaenui 33kV feeder shown in Graph 53 resulted from early mechanical failure of an insulator. The cause of this failure is under investigation. When re-livening an issue with inrush current was experienced resulting in an increased impact. Remedial action has been taken to reduce the likelihood of the in-rush issue.

The Crawford and Whangara feeders have been affected by failed lightning arresters. A particular batch of lightning arresters installed between 1998 and 2005 have been found to be prone to failure. Because analysis of past faults has shown the likelihood of lightning strikes is low in the Gisborne urban area, a programme of work was completed to replace the stand-off lightning arresters with standard stand-off insulators.

On the Aberdeen feeder, an old 1940s era PILC cable faulted causing the addition of 0.096 SAIFI. It is possible that the cable could have been damaged following nearby third-party earthworks. Supply restoration was affected by a switching error during isolation which resulted in a second supply disruption and increased SAIFI.

Zone substation equipment failures affected supply at the Port Substation (10 June 2024) and Patutahi substation (31 May 2024). Port Substation suffered from a transformer protection relay maloperation that caused all the outgoing feeders to trip without cause, resulting in 0.104 SAIFI. The GE URT60 type transformer protection relays were just over twenty years old: their operating system had become erratic after internal battery replacement. The relays have now been replaced, but their failure occurred just two months before their programmed replacement date. As a result, Firstlight Network is moving to a 15 year time-based replacement for its microprocessor-based protection relays.

The Patutahi substation suffered from water ingress in its transformer protection relays. The transformer Buchholz relay is mounted on the transformer to monitor surges of oil should an internal fault occur. Water had entered the relay contacts and internal Formica insulation resulting in the transformer tripping and the addition of 0.067 SAIFI. Load resistors have now been added to similar Buchholz relays to prevent this from occurring again.

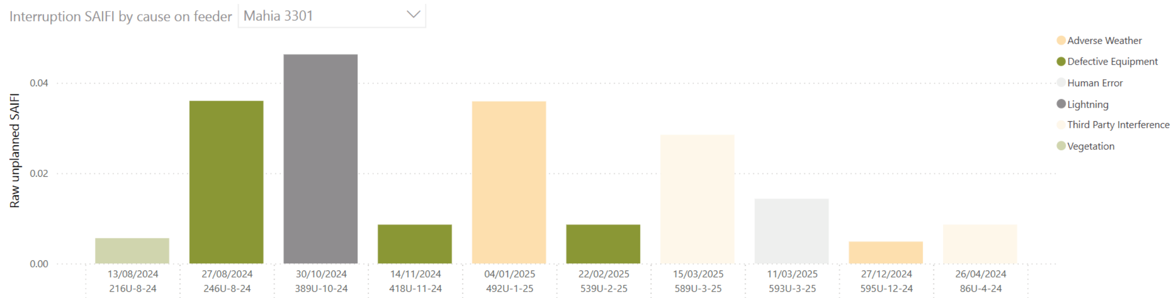
Ground mounted switchgear failures affected the Childers and Haisman feeders (0.073 and 0.033 SAIFI respectively). On Childers Road, planned work was under way to replace an old oil filled switch on the adjacent Gladstone feeder. While network switching was done to prepare for the switch replacement, the insulation in a neighbouring ring main bus extension failed causing a loss of supply to customers on two feeders. Supply restoration was enabled quickly because fault switchers were immediately on hand.

On the Haisman Rd feeder, an oil switch failed internally which caused a loss of supply to 976 customers, 77 of whom could not have supply restored quickly because they are supplied from a feeder spur that has no back-feed capability.

Graph 54 shows that Hardwood pole failures have affected SAIDI more than SAIFI, because of their long repair time. Other analysis shows that hardwood poles were the biggest contributor to defective equipment SAIDI, largely because their failure occurred during high wind events when there were access delays and resources were stretched. One of these failures occurred on a remote spur of the Ruakituri feeder during the December wind event affecting 4 ICPs that were not in use at the time. The consumer advised he was comfortable with the repair taking two weeks, but the work's de-prioritisation has added 3 SAIDI minutes.

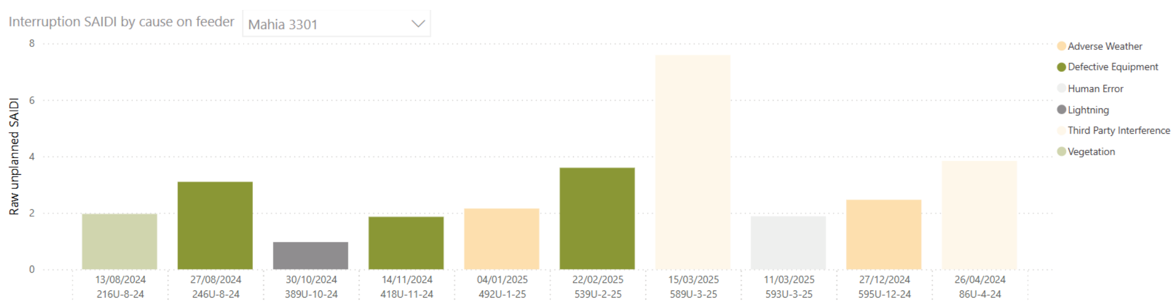
Cable termination failures occurred on the Elgin feeder and the Hexton Puha feeder.

Graph 55: Interruption SAIFI by cause on the Mahia feeder

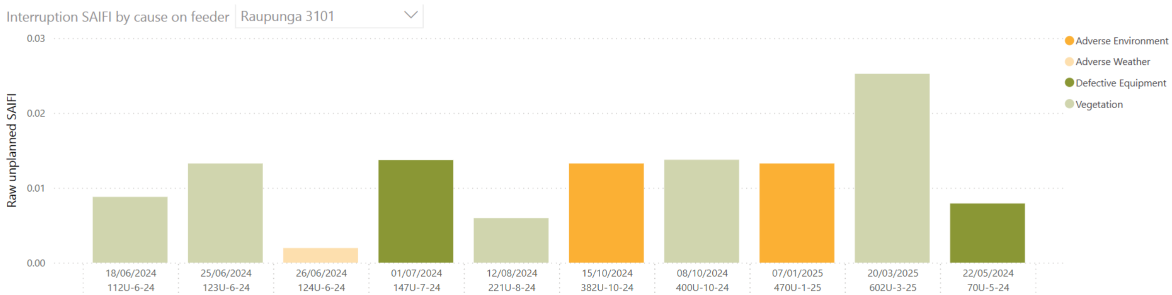


The Mahia feeder event on 15 March 2025 added 7.6 SAIDI minutes and 0.029 SAIFI and followed Fire and Emergency NZ advice of a large fire in Mahia with their request to isolate the electricity supply. The fire was close to the Blacks Pad substation so switching could restore supply to only 65 customers of the 742 affected. Supply was interrupted for around 5 hours. The Third Party Interference interruption on 26 April 2024 resulted from a large tree that had been felled into the line on Mahia Peninsula. The adjacent pole had been red tagged and could not be climbed and the fault person had difficulty sleeving the conductor due to its condition and night-time visibility.

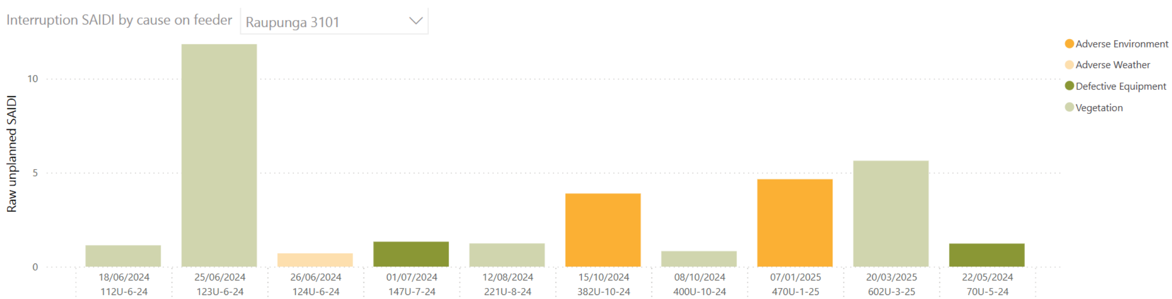
Graph 56: Interruption SAIDI by cause on the Mahia feeder



Graph 57: Interruptions SAIFI by cause on the Raupunga feeder



Graph 58: Interruptions SAIDI by cause on the Raupunga feeder

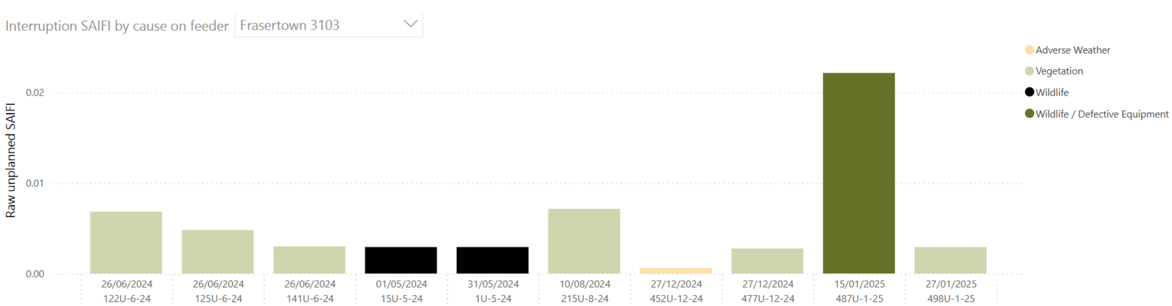


The Raupunga feeder is a long rural feeder that supplies mainly extensive agricultural customers, including the villages of Raupunga and Kotemaori and the terrain inland. It has two reclosers and two sectionalisers and autoreclose is enabled on the feeder circuit breaker and both reclosers. It has limited interconnection capability with the Frasertown feeder. Raupunga feeder has been exposed to several vegetation faults involving out of zone trees. One long duration interruption occurred in adverse weather when an out-of-zone plantation tree fell into the line in gale force winds in late June. This involved response delays due to safety concerns for field crews.

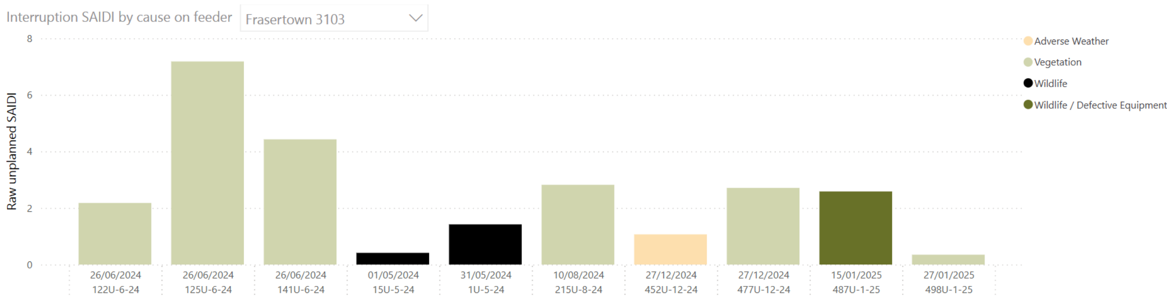
The other long interruption occurred on 20 March when a plantation tree came through the line. This feeder has a disposition for swirling winds during some weather conditions that cause conductor clash.

The Raupunga feeder had a diesel generator that was used to maintain supply during fault events. Consideration of reinstating this generator is given in section 6.2.

Graph 59: Interruptions SAIFI by cause on the Frasertown feeder



Graph 60: Interruptions SAIDI by cause on the Frasertown feeder



On the Frasertown feeder, three separate faults occurred during the major weather event in June, each of them from out of zone trees. Patrols were deferred due to safety concerns until the following day and two sites where trees came through the lines were inaccessible because of high river levels. With limited back feed routes, customers were without supply for a prolonged period.

7.5.2 Our network characteristics impact performance

Our electricity distribution network consists of long single feeders that reach remote and sparsely populated areas. Of the approximately 26,100 ICPs consumers we serve, 9000 are rural, and only a small percentage of customers are in remote rural areas and small settlements such as Te Karaka, Tolaga Bay, Tokomaru Bay, Ruatoria, Matawai and Mahia.

Graphs 18, 19 and 20 in Section 2 show that of the total Unplanned Interruptions on our network during the assessment period, 161 interruptions disrupted supply to one or two consumers (SAIFI<0.0001) accounting for 3.6 of our total SAIDI minutes. The interruptions impacting fewer than 26 customers (<0.001 SAIFI) accounted for 46.6 SAIDI minutes.

We operate a large radial network and multiple feeders extend into remote areas with inherent low security. As forestry plantations have developed, much of the remote network footprint has been subject to de-population. Lines now bypass tracts of land that used to supply farming operations to maintain supply to fewer customers who still expect adequate reliability.

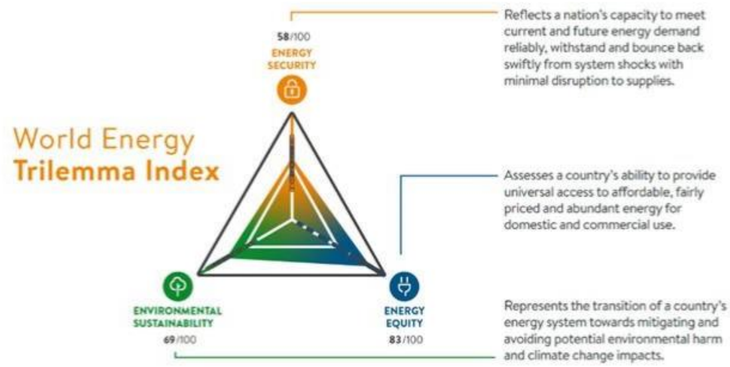
Providing the network security to these feeders to prevent prolonged outages would involve a large investment that may not provide a viable economic return. Strata Energy Consulting, in its 2013 report to the Commerce Commission following breaches of SAIDI boundary levels during the 2011 and 2012 assessment periods, stated—

> "Given the specific economic issues in the Gisborne region, ENL[26] 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."[27]

This price-quality trade-off is not easy to make, and we are acutely aware of our consumers' dependence on a sustainable and reliable electricity supply that is also affordable. The trilemma (shown in Figure 5) is expected to become more intense as New Zealand delivers on its carbon-zero goals and electrifies the economy.

[26] Eastland Network Limited was Firstlight Network's predecessor.
[27] Strata Energy Consulting, Report on the reliability performance of Eastland Networks Limited, produced for the Commerce Commission, 9 July 2013, Paragraph 18.

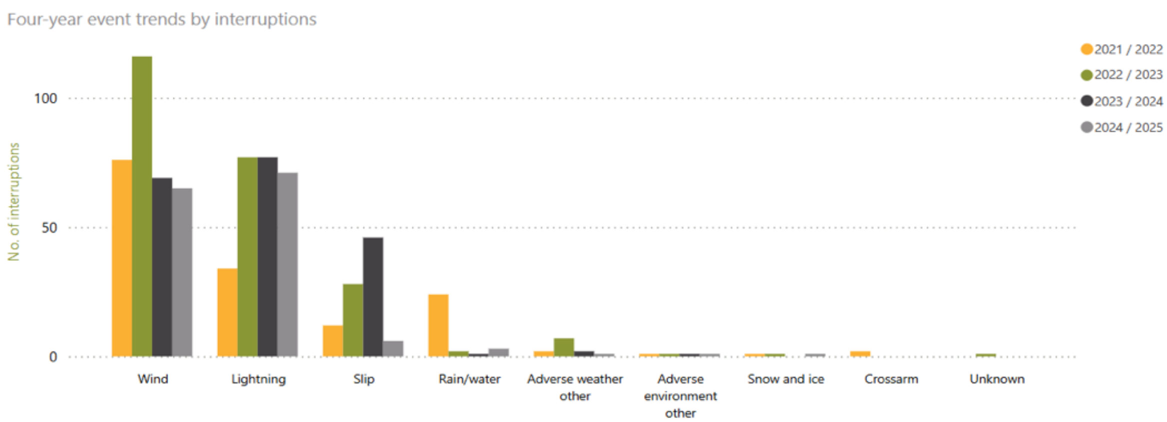
Figure 5: World Energy Trilemma Index



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 tend to 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.

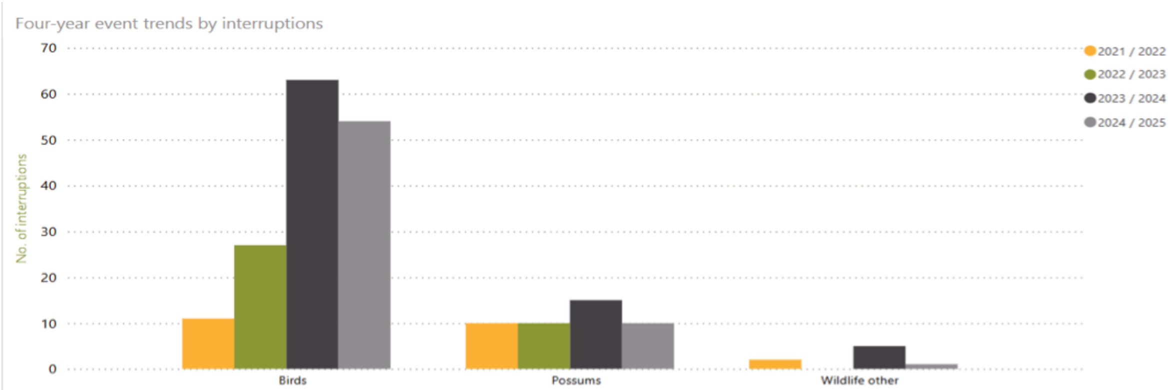
7.5.3 Four-year interruption trend

Graph 61: Four-year Adverse Weather and environmental events trends



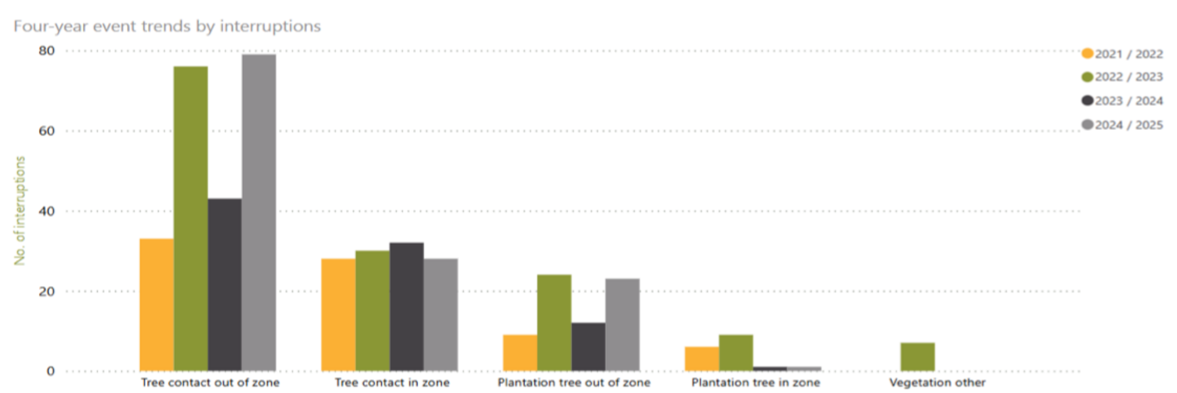
Wind and lightning were significant contributors of interruptions during the assessment period. Several major wind events occurred during the assessment period, which are further described in Section 5. Lightning interruptions in Graph 61 are distinguished from the lightning arrester induced failures that are presented in Tables 5 and 6.

Graph 62: Four-year Wildlife event trends



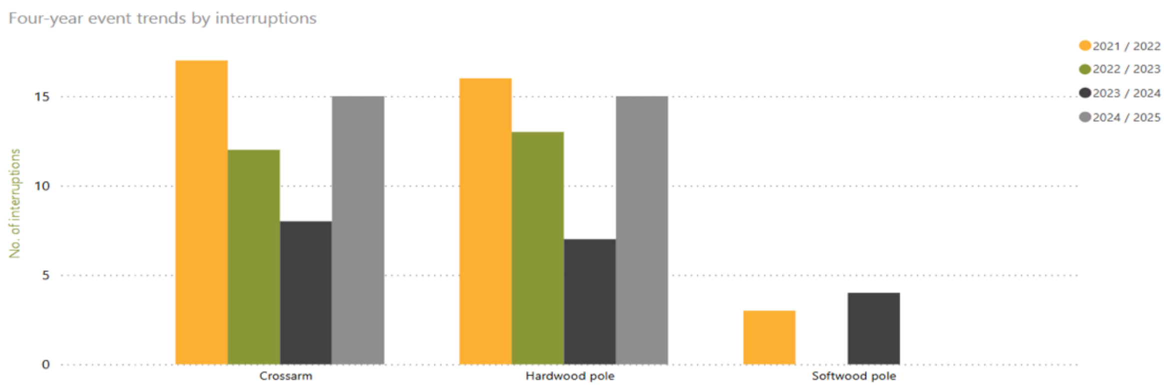
Graph 62 shows that bird strike induced interruptions were significant in number compared with earlier years, even if there not as many interruptions as last year. Possum related interruptions were only a small part of the total interruption count, but one possum interruption was a major contributor to SAIFI as described in Section 5.7.

Graph 63: Four-year vegetation event trends



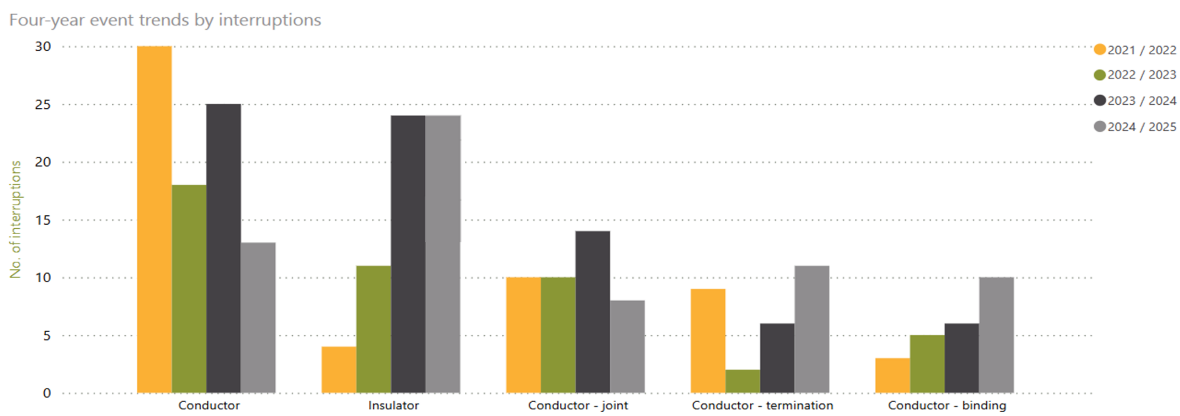
Graph 63 shows that the prevalence of out-of-zone tree interruptions was around four times that of in-zone tree contacts and higher than any year in the last four years. The out-of-zone trees tend to cause major damage to lines because they tend to crash into the lines and the lines require reconstruction. In-zone tree contacts tend to cause earth faults as branches brush against the conductors, which can be hazardous to the public but are less likely to cause line damage.

Graph 64: Four-year pole and cross-arm event trends



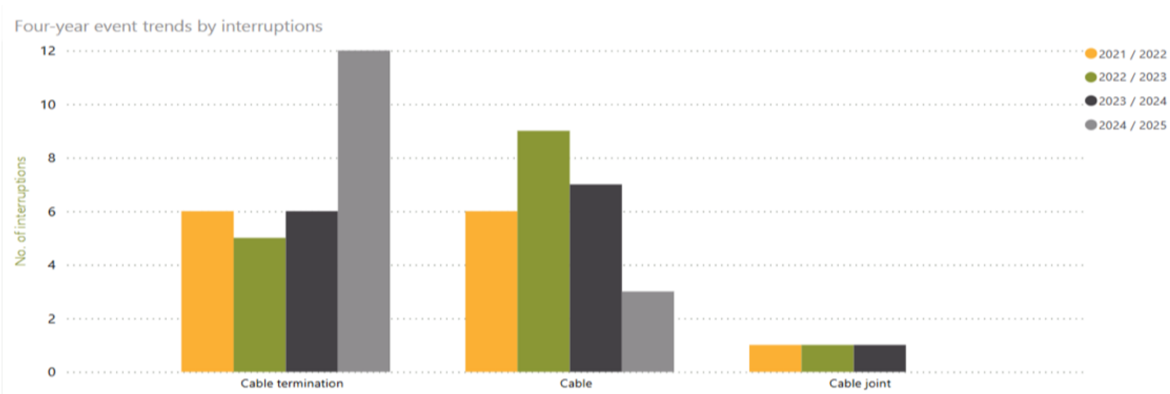
There were more hardwood pole and cross arm related faults than last year but they were on a par with the numbers in the previous two years.

Graph 65: Four-year conductor and insulator event trends



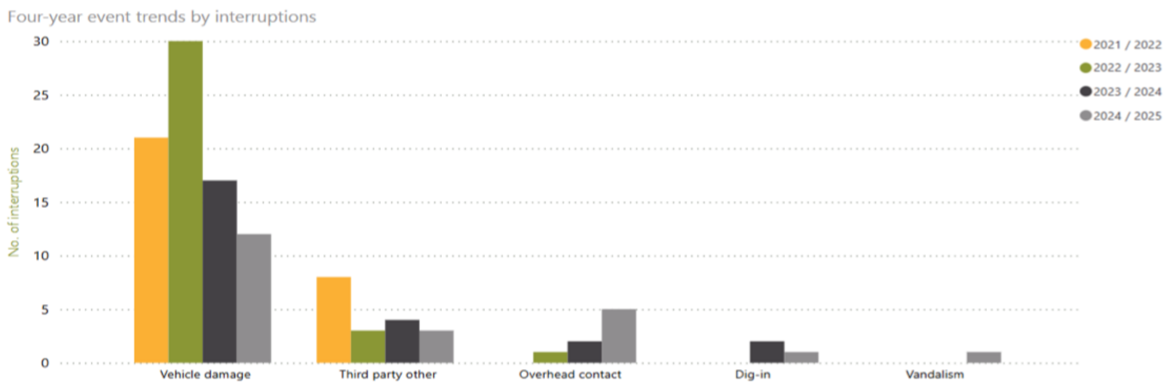
Graph 65 shows that the numbers of conductor and insulator faults were lower than the previous year, the numbers of termination and binder faults were higher. The impact of conductor clashes on SAIFI was significant though because of the conductor faults on the 33kV feeder.

Graph 66: Four-year cable event trends



The incidence of all cable related interruptions is similar to previous years, but during the assessment period the numbers of cable termination faults was higher than previous years. This could have been because of the previous years' levels of rainfall. Nevertheless cable feeders tend to be in urban areas, and they tend to supply more customers than rural feeders, which means that a cable interruption can have a wider impact to customers than other types of interruption.

Graph 67: Four-year third-party interference event trends



The total number of third party damage interruptions is somewhat less than the previous year, and significantly less than the earlier years. This is consistent with the findings during Gabrielle, where it was noted that incidences of vehicle damage were higher during the major event. Despite the slight reduction in interruptions, third party interference remains the fourth highest contributor to SAIFI and SAIDI results if Major Event Days are excluded.

7.6 Asset replacement and renewal

7.6.1 Progress on Asset Inspections

Table 26 shows the number of assets inspected by asset class since April 2019. It indicates an inspection rate of around 72%.

Table 26: Current percentage of asset condition data captured

Asset class	No. of assets in the fleet	Inspected since 1 April 2019	
Concrete poles	18,530	14,043	76%
Wood poles	16,542	11,764	71%
Distribution OH Open Wire Conductor	-	-	-
3.3/6.6/11/22 kV Switches and fuses (pole mounted)	4,473	1,713	38%
Pole mounted transformers	3,092	3,160	102%
3.3/6.6/11/22 kV Circuit Breakers (pole mounted)[28]	44	44	100%
Zone Substation Switchgear	122	122	100%
Ground Mounted Transformer	583	372	64%
3.3/6.6/11/22 kV Switch (ground mounted)	356	60	17%
Zone Substation Transformers	35	35	100%

[28] Reclosers and Sectionalisers

7.6.2 Inspection and routine maintenance of zone substations

We have adopted Transpower's maintenance and schedules for zone substations and Ventia holds the contract for zone substation maintenance. Zone substations follow a linear inspection programme with each substation inspected every three months, with more intensive checks, diagnostics and servicing undertaken on an annual and four yearly routine. Partial discharge and thermovision equipment is used to diagnose substation bus work.

The Gisborne substation bus has been reconfigured to provide a diverse route for subtransmission circuits supplying the coast.

7.6.3 Inspection and maintenance of our subtransmission network

Subtransmission follows a six-monthly inspection routine, with inspections undertaken by Ventia. The phase configuration of the tower circuits is important to minimise the potential for conductor clashes. We are reviewing the Wairoa network architecture to improve resilience (refer to section 8.4). Preventive work is undertaken on insulators to minimise the risk of bird interference, and on fitting possum guards to 50kV poles (refer to section 6.5).

7.6.4 Inspection and maintenance of our radial network

Our current focus has been on re-inspecting the poles that have been tagged and replacing them when required. Having done that, our next focus is to continue with the inspection of overhead structures that have no electronic condition inspection record so that we can continue to improve our profiling of asset health.

Historically, towers have been inspected annually by Ventia using a spreadsheet to capture inspection results. 50 kV pole lines have been inspected every five years. It is now proposed to supplement these inspections with a visual line walk to identify obvious defects.

Asset replacements have been customarily done on a like for like base, but as time passes, we are anticipating that this will need to change with:

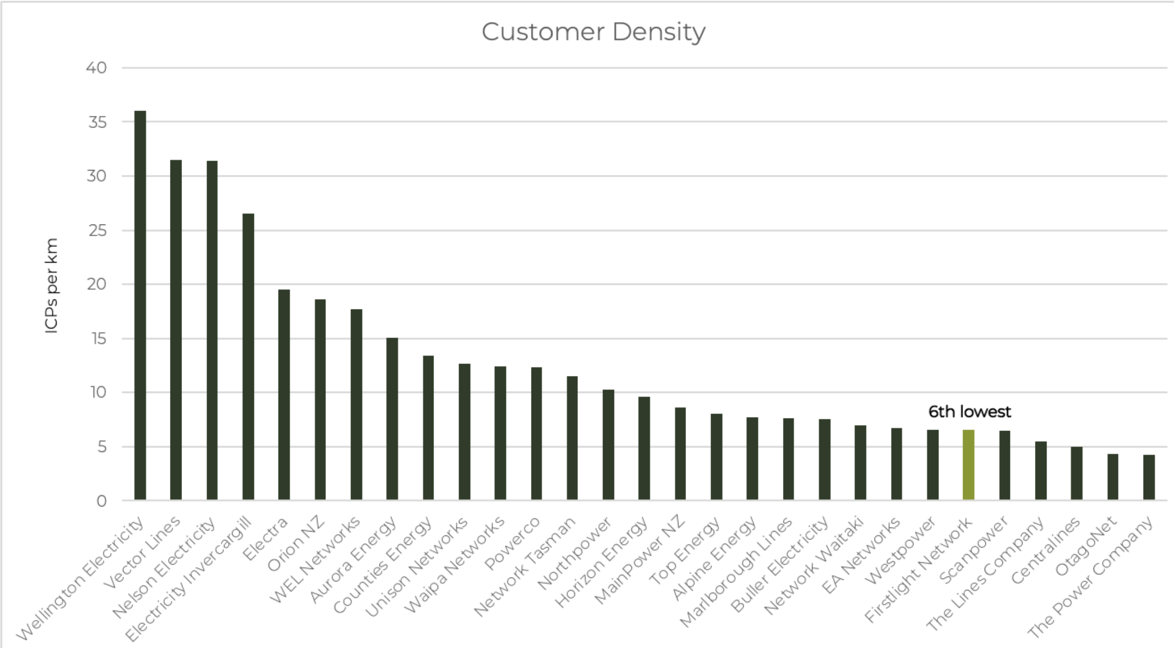
- Improving Remote Area Power Supply technologies and costs that give an alternative to conventional network renewal;
- Introduction of network automation devices, the management of protection grading, and the corresponding use of alternative feeder supply paths that can maintain adequate voltage;
- Reviewed feeder alignments due to slips, forestry and land use changes, and demand changes;
- Limit state line designs and the likely necessity to consider increased design wind speeds;
- Pole selections that consider transportability at construction and torsional strength for uneven conductor loadings;
- Customer reliability expectations (we have one of the lowest customer densities amongst our peers – see Graph68) while our customer base generally has limited means.

With limited economic options to build N-1 resiliency for the security of supply (Graph 69 shows that we have, on average, over 10 years, a compound annual growth rate (CAGR) of -0.35% per annum); the next best option is to sectionalise the network and feeders as much as possible with electronically controlled (automatic or remote) protection devices to minimise the size of manual switching zones and the number of customers impacted.

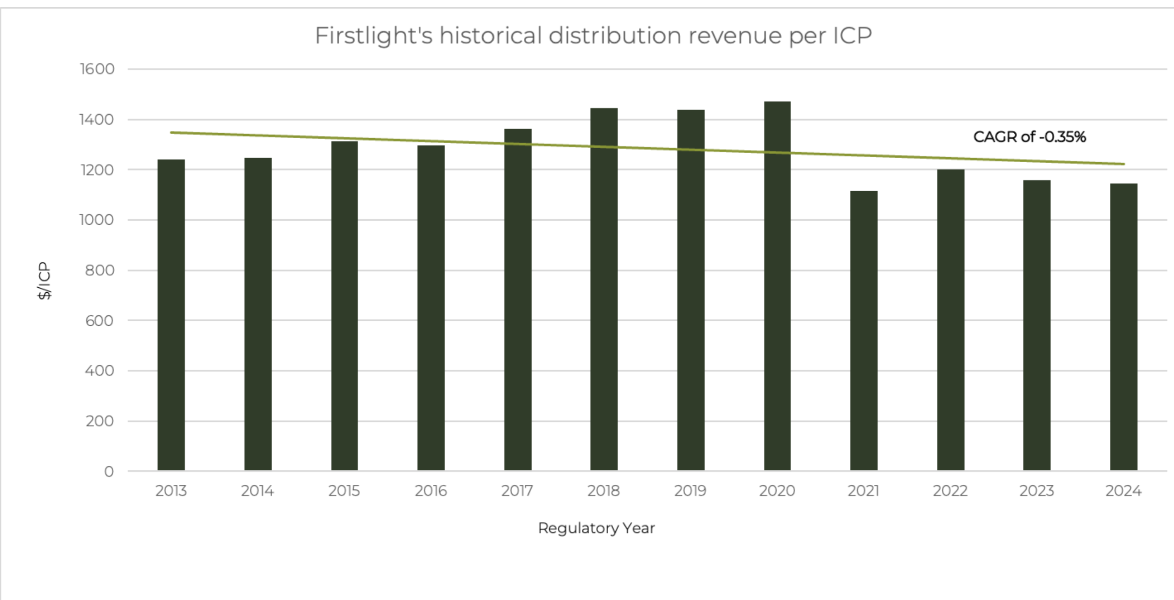
The challenge with increasing the protection devices is to carefully manage the necessary grading between devices to avoid unnecessary tripping of upstream devices.

-

Graph 68: Firstlight Networks consumer density



Graph 69: Firstlight Networks regulated returns over 10 years



7.7 Vegetation management

Vegetation was the leading cause of unplanned SAIDI during this assessment period. Vegetation related interruptions contributed a total of 183 SAIDI minutes, with 165 SAIDI minutes (91%) being attributable to out of zone trees (refer to Table 3). In the coastal areas, the out of zone trees include large wilding pines and poplars, while almost 47 SAIDI minutes were caused by plantation trees.

During its history, Firstlight's network has seen major land use changes. In the Tairāwhiti and Wairoa areas, much of the distribution network was built in the post war period until the early 1980s to serve extensive sheep and beef farmland. However, in the forty or so years since, much of the farmland has been converted to forestry plantations. The conversion to forestry was encouraged by the Gisborne District Council following the large scale of land slips in Cyclone Bola. Some land was mandated to have effective tree cover by 2021 and much of it was planted with pine plantations to stabilise hillsides and prevent further erosion[29].

7.7.1 Regulatory Perspectives

The Electricity (Hazards from Trees) Regulations 2003 provide the statutory framework under which line companies manage vegetation near lines. These regulations provide line owners with the rights to cut trees when they encroach within the Growth Limit Zone or notice zone. Line owners have no enforcement power when trees are located outside these areas, even when they pose a known risk. This limitation is particularly problematic with commercial plantations because trimming requests can conflict with plantation owners' economic priorities.

In October 2024, the Government amended the tree regulations to introduce a "clear-to-the-sky" buffer zone to prohibit vegetation from overhanging power lines by one metre around the Growth Limit Zone. The amendments also empowered line owners to issue warning notices when this zone is breached.

While these changes represent progress, they may not have significantly improved outcomes during weather events like Cyclone Gabrielle or the wind events that occurred during the assessment period. Much of the damage came as a result of damage from large trees that were located well outside the regulated zones.

From a local authority perspective, the Gisborne District Council has increased its monitoring and compliance focus on forestry operations. It has prosecuted several plantation owners for failing to comply with resource consent obligations for discharging slash, logging debris and sediment into streams. The Council has also been lobbying the Government to change the National Environmental Standard for Plantation Forests (NES-PF) on the grounds that the regulatory environment it creates is too permissive.

The effect of the increased focus from the local authority is that Firstlight may become obliged to clear debris in line with forestry industry practice if it issues Hazard Notices and undertakes the vegetation management activities within plantations. The cost implications are significant.

7.7.2 Emerging Trends

While the numbers of interruptions ascribed to in-zone vegetation faults remained similar to those of previous years, there was a noticeable reduction in vegetation in-zone fault SAIDI when compared with the previous year. In zone trees accounted for only 17 SAIDI minutes, of which only 0.5 SAIDI minutes were attributable to plantation tree contacts. In comparison, in RY2024, 32 SAIDI minutes were associated with in-zone tree contacts.

However out of zone trees, particularly plantation trees continue to disrupt supply reliability. The out of zone trees typically fall from outside the Growth Limit Zone (GLZ) and notice zones, where line owners have no legal authority to enforce trimming.

Identifying out of zone hazardous trees is not straightforward, because they may appear non-hazardous prior to events and the way that they fall is unpredictable. We try to fell trees when they become in-zone.

Firstlight uses four contractors for providing vegetation and arborist services.

7.7.3 Strategic Initiatives

To address the risks associated with vegetation (supply reliability and public safety), we are:

- Advocating with forestry companies and plantation owners about establishing wider clearance corridors, especially ahead of replanting cycles.

[29] https://www.stuff.co.nz/business/farming/102228269/forestry-meets-farmland--30-years-on-from-cyclone-bola

- Participating in the new Eastern Vegetation Management Group, a collaboration with other electricity distributors (EDBs) to develop shared solutions.
- Issuing a Future Hazards Notice to better inform landowners of their obligations and the risks posed by unmanaged vegetation.

7.7.4 Principles and Key Objectives

Table 27: 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 in productive efficiencies and lower costs to serve.
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,

Strategy Point	Description
	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.

7.7.5 Assurance Plan

Table 28: Leading and lagging measures used in our dashboard

Leading indicators	Lagging indicators
Patrol Metres Completed/ % of area patrolled vs target	Trees in zone
Number of inspections carried out	Out-of-zone trees (identified as Fall Zone in the App)
Number of issues referred to landowner for consenting	Notices issued – First cut, Second cut, Future Hazard
Number of Actions needed – consented works	Actions Pending – Trims and Fells
SAIDI/SAIFI vegetation related to each feeder	Trees Cut or trimmed – Actions taken
Health of line patrolled (Vegetation)	Budget vs Actuals to date – Planned vs Emergent risk

7.7.6 Tree App

Firstlight's Tree App is an ESRI based application that integrates network data with aerial imagery. It identifies tree site locations and landowners pictorially in a way that is intuitive to users. Data pertaining to a tree includes site location, tree species and photos and these are attached to the site, which builds historical lifecycle information about the trees over time.

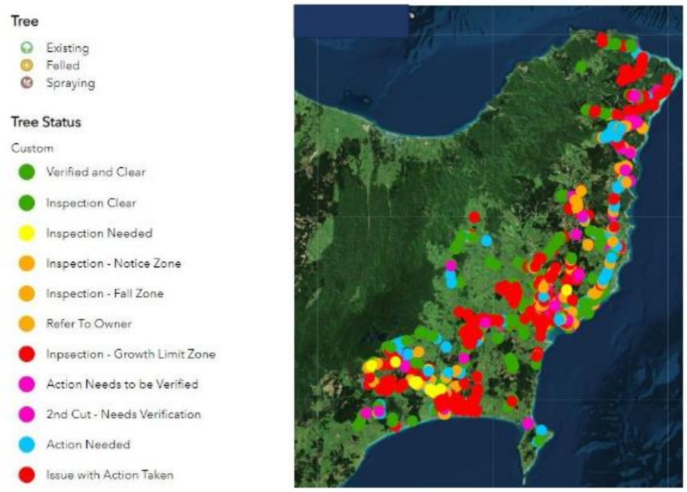
Through mobile devices, the app provides and records all the information that vegetation contractors need in the field and in the office in real time. Data captured in the field (like tree site inspection results) are sent to the main map through cellular networks (or if there is no cellular coverage, data is stored in the mobile device and synched when connectivity resumes). Similarly, field users can obtain the information they need about a particular site from the main map in real time. Users can see when the last inspection was undertaken and check if a tree site needs to be inspected again.

The app works pictorially. Each tree site is assigned a visual status indicator of what needs to be done and what has been done in the past. Symbols identify the status of a site, such as if a tree has been felled or if it requires spraying. These visual cues help quickly assess site status and required actions. Screenshot 2 shows the tree site colour codes and symbols.

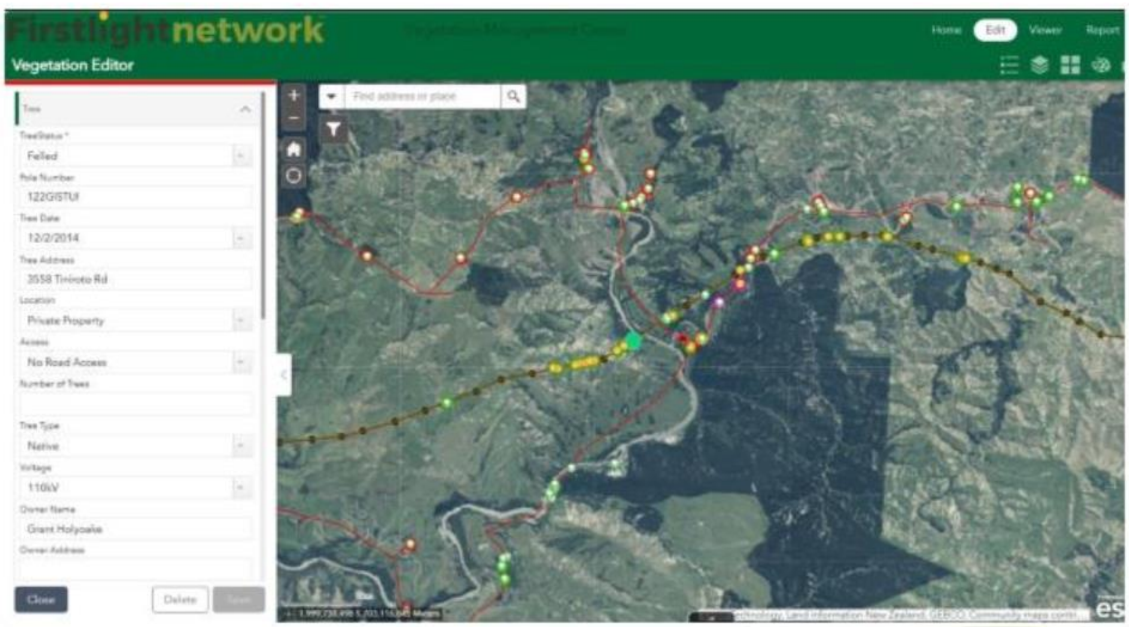
The real time nature of the application minimises duplications and rework. The Tree App has brought operational efficiencies by eliminating the need to print and exchange photos and maps for contractors to obtain before travelling to a site or drop off when they return. Work order numbers are recorded on each site so they can be efficiently linked with the Maximo MMS. Reports of the data can be exported in spreadsheet form for filtering, follow up planning and long-term record keeping.

Field contractors have been using the app for over a year now, and this led to large improvements in reporting accuracy, data integrity and visibility of tree work. While in the field, contractors can record hazard warning notices requested by landowners against tree sites. Screenshots 3 and 4 demonstrate the information that is loaded against the tree sites. The vegetation contractors all have access to the same information that Firstlight has through the Tree App.

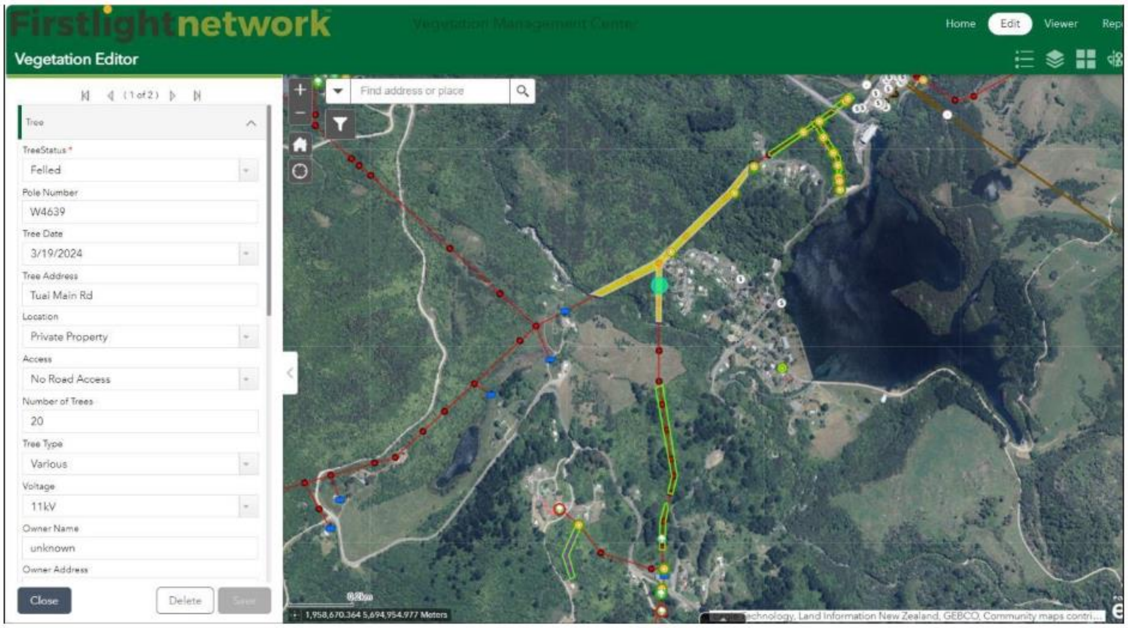
Screenshot 2: Tree Fault Map showing the symbols and colour codes for tree sites



Screenshot 3: Maps of the 110kv lines in our Vegetation Management Centre



Screenshot 4: Map of the Village Feeder (Tuai) in our Vegetation Management Centre



7.7.7 Strategic patrolling

Firstlight is planning to implement annual visual inspections of critical subtransmission lines and feeders. These inspections will be rapid (walk-by or drive-by if lines are visible from road), seeking to find obvious visible defects such as in-zone trees or broken hardware.

In the context of vegetation management though, strategic patrolling has been used during the past year in combination with the Tree App and ensures that we're doing preventive maintenance at the right time.

Regular cross functional reliability review sessions consider the recent reliability performance and consider the vegetation risks. These sessions inform operational decision making on:

- Which feeders to patrol, and which parts of the feeders should be patrolled?
- What is the best methodology and technologies to use for patrolling?
- How long should the patrols take?

7.7.8 Contractor-managed zones

Firstlight has studied the vegetation contracting and arborist market architecture and uses this understanding to decide on how many contractors to use, what types of work they should do, how fault responses should be covered and how to disperse workload between the contractors. Vegetation work contracts form the foundation to our vegetation contract relationships. They define the standard and call-out rates, resource availability, pre-qualifications, KPIs and shared expectations.

We have arranged vegetation contract agreements to manage the specific areas of our network that have a higher propensity for SAIDI impact from tree interruptions. A single contractor is allocated a specific network area for which they take responsibility, carrying out regular patrols of their zones, reporting any issues found through the Tree App, which immediately notifies us of high-risk vegetation issues. The vegetation team assesses the reports and issues work orders as required for the contractors to carry out vegetation management as planned for their zones within the budget available. KPIs have been established to monitor our contractors' performance across these zones.

7.7.9 Advocacy and Forestry

Firstlight's Electrical Hazard Management Plans define the forestry companies and landowners associated with sections of the network and describe the respective responsibilities and liabilities.

Firstlight has also convened the Eastern Vegetation Management forum, which is a cross-industry group of vegetation managers representing different EDBs that discusses common issues and how to approach them. The group has developed the revised Future Hazard Notice form which we use to clearly inform forest owners of any potential future hazards, giving them the opportunity and time to proactively remove hazards, such as young trees, before they become problematic.

Firstlight was involved in the 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

We provide an outline of any intended reviews, intended analysis or intended investigations that would meet the categories specified in clause 12.4 c to f that were planned but not yet completed[30].

8.2 Strategic Reliability Management Plan

Reliability performance is given an important profile in the 2025 and 2024 Asset Management Plan Updates. While delivering appropriate levels of service reliability is a priority, the actual levels are influenced by a range of factors including asset condition, weather, nearby vegetation, third party activity, capacity to respond and network security.

As a consequence, the 2025 Asset Management Plan Update describes Firstlight's development of its Strategic Reliability Management Plan (SRMP). This plan collates the reliability enhancement work undertaken thus far and prioritises work streams to provide the most reliability improvement impact.

The initial objective of the SRMP is to improve network reliability by preventing and limiting the impact of supply interruptions caused by aging assets, weather events and vegetation. Its initiatives will focus on response capability and improving the network's ability to withstand events such as repeated strong winds, consistent heavy rain and landslips. Recent weather events from the past three regulatory years have demonstrated vulnerabilities within the network prompting a comprehensive improvement programme to ensure reliability. The programme consolidates previous actions, recommendations and improvements into three categories of:

- Respond – when there is an outage to reinstate supply to customers quickly
- Prevent – the outages from happening
- Improve – our understanding of the outages and the underlying processes that we use to manage our network reliability.

The programme's initial focus has been to minimise the number of customers affected by a fault. This has been supported by installing sectionalisers on feeders, replacing oil switches to improve isolation during unplanned interruptions, and using generation on feeders that don't have the back feed capabilities.

The programme has also sought to reduce supply restoration times through the application of fault indication.

Respond

When an interruption occurs, the priority is to reconnect as many customers as possible safely and in a timely manner that doesn't lead to safety risks for our field crews and staff. To do this effectively we need to respond correctly when there is an outage. Ensuring we have trained field crews and staff in the right location, with the correct tools and equipment. Some of the initiatives to improve our response include:

- Embed the Coordinated Incident Management System (CIMS)
- Continually review and improve callout response capabilities and locations of field crews
- Mobilise field crews ahead of weather events to remote locations
- Install a dedicated emergency response room to manage large events and emergencies
- Deploy mobile generators to keep customers connected during fault restoration

[30] As required by clause 12.4 of the DPP Determination.

Prevent

Preventing an interruption involves replacing aged or poorly performing assets and improving the network operation to prevent unplanned outages from occurring. We plan to use targeted asset replacement programmes to prevent future unplanned outages by improving the assets condition and using current best practices for installation. Some of the initiatives to prevent unplanned outages include:

- Install sectionalisers capable of segmenting the network and minimising the number of customers affected during a fault
- Install line fault indicators to aid fault finding and feeder patrols
- Replace ground mounted oil switches to eliminate the safety hazards associated with older switchgear types and reduce the scale of network isolations and simplify fault switching.
- Replace poles and cross arms across our networks to ensure we operate a safe network. Improve resilience by using stronger poles. Replace insulators and conductor bindings with new cross arms.
- Sample inspect previously inspected poles to provide feedback and assurance on the pole inspection standard.
- Inspect assets to assess their current condition and proactively replace equipment before failure.
- Identify and quickly remove in-zone vegetation.
- Install additional connected generation in strategic locations to maintain supply to customers.

Improve

As we implement improvements to the network, we need to ensure we continue making the right choices. We continue to analyse and discuss the improvements and where possible, to measure the benefits provided by implemented reliability initiatives. Improving reliability requires many change items to manage. The following are some of the improvement initiatives.

- Establish a comprehensive Strategic Reliability Management Plan
- Analyse the reliability impact on consumers, the type of consumer connected at the ICP and the reliability differences between urban and rural customers
- Develop pathway to compliance scenarios and understand the impact to the network and consumers for each scenario
- Analyse the effectiveness of the changes we make on the network to improve reliability
- Change our design and operating standards to work within the adverse environment in which we now operate and that our network must adapt to when exposed to higher wind speeds, flood zones and geohazard risks
- Review the effectiveness of the pole inspection and replacement programme to understand if there is a benefit of a cross arm and insulator programme.
- Update pole field data inspection requirements to provide better condition assessment of the pole, cross arm, insulator and conductor health.
- Review and analyse the worst performing feeders and unplanned outages to better understand the trends.
- Improve our current risk and criticality-based practices, ensuring routine maintenance inspection and asset renewal programmes are focusing on high risk areas and assets critical to network reliability.
- Continue to strengthen engagement with tree owners, local communities and businesses to collaboratively manage vegetation.
- Leverage LIDAR technology to identify vegetation related risks.
- Engage on and advocate for larger clearance zones (Tree Regulations).

8.3 We are completing our reviews, analyses and investigations

Section 7.4 has described the improvements that Firstlight has under way in condition assessment. Table 29 shows various of these asset related actions underway.

Table 29: Leading and lagging

Major actions	
New vegetation strategy implemented, including improved inspection technology and contractor management.	Refer to Section 7.7
Accelerated sectionalising of the network - Twenty-two sectionalisers/ automation implementation installed since August 2023. Project being scoped for remaining identified locations. Yet to evaluate the use cases for FuseSavers.	RY 2026
Progress trial on fault passage indicators – Trial completed with 15 new locations identified for RY 2026.	RY 2026
Swap out of oil filled ground mount switches that cannot be operated under fault conditions to reduce impacted customers when diagnosing faults. 14 units installed. Now an ongoing replacement programme.	Ongoing
Widened resource pool for fault response to major events.	Ongoing
Review of asset inspection has commenced. New inspection application with improved data collection and management, inspector training and strong EEA Guideline alignment.	Ongoing

8.4 Wairoa Subtransmission Architecture

A review is under way, but not yet completed, to consider development options for improving the subtransmission network architecture in the Wairoa region. Several issues are converging that make review and rationalisation of network architecture worthwhile:

1. The network in the Wairoa region operates with four different voltage levels and there is potential for the numbers of voltage levels to be reduced to two or three. Wairoa Substation is supplied from Transpower at Tuai at 110 kV. Waihi Hydro connects to Wairoa Substation at 50 kV. Subtransmission to Blacks Pad near Mahia operates at 33kV. Supply to Wairoa town, the freezing works and the surrounding districts operates at 11kV distribution voltage with transformation at Wairoa Substation.
2. The 110/11 kV transformers at Wairoa substation are aged single-phase units with aged tap changers and original Automatic Voltage Regulation (AVR) and control panels. During the assessment period, the tap changers in one of the transformer banks stopped mid-way between taps and one of the trip relays failed to operate. While this incident did not cause a loss of supply, the incident represents a near miss for the reliability of these critical assets.
3. Supply to Blacks Pad at 33kV comes by stepping the voltage up from 11kV at Wairoa Substation. Energising this transformer has resulted in the 11kV supply tripping, causing widespread loss of supply to the Wairoa region (refer to section 5.9).
4. The location of the Kiwi Road 11kV switching station that supplies Wairoa town, freezing works and surrounding districts has a risk of flooding. Network resilience could be improved if the existing switching station were relocated or rationalised with substations having more conventional subtransmission supply.
5. The electrical protection systems have complexities and vulnerabilities that result from the way in which the subtransmission network is architected.

8.5 Fleet Management Plans

During the current calendar year, Firstlight has been reviewing its suite of Asset Class Strategies, which are planned to be key parts in the preparation of Firstlight's 2026 AMP.

In conjunction with the changes in the DPP4 allowances, the processes of budgeting and financial forecasting have been transitioning to forecast asset renewal quantities based on Maximum Practical Life (MPL) multiplied by unit rates with comparison to historical ten-year values, with consideration of the effect on delivered supply reliability.

Firstlight has been looking to transition to align with the REPEX method of asset renewal modelling instead of the DNO methodology, which is a probabilistic and numerical approach to renewal forecasting used in the UK. The DNO methodology requires calibration to New Zealand conditions, and this makes its application attuned to users who have relatively advanced maturity in their asset health and criticality models. The REPEX model is aligned to the EEA's Asset Health and Asset Criticality guidelines, which essentially follow a qualitative treatment, allowing its users a pathway to improve their asset renewal decision making processes.

As detailed in section 7.3, Firstlight has:

- Improved and revised its asset inspection standards
- Improved its field mobility application in flight for asset inspections
- Adopted the EEA health and defect ratings
- Adopted the EEA pole tagging practices.

The following opportunities for continued improvement are planned for the coming calendar year:

- Aligning systems and processes with ISO55001
- Reviewing asset fleet plans, in association with the asset hierarchies in the Maximo EAMS
- Assessing the new functionalities in the upgraded Maximo application suites.

8.6 Asset Hierarchies

Aligned with the review of the asset fleet plans and in preparation for the proposed EAMS upgrade, the asset hierarchies are being reviewed with advice from Asset Dynamics and guided by involvement with the EEA's Asset Information Group to better define the relationships between the core asset elements. Combined with the EAMS, it is hoped that the revised hierarchies will assist with better understanding the real lifecycles of the assets and the drivers behind their performance.

Figure 6 shows the relationship between core asset elements and Figure 7 shows the types of equipment installed at zone substations as an example of the asset hierarchy. The asset class definitions play an important part of asset recognition and capitalisation. Table 30 shows the proposed asset classes.

Figure 6: Relationships between core asset elements

Figure 7: Asset hierarchy example – equipment installed at a zone substation

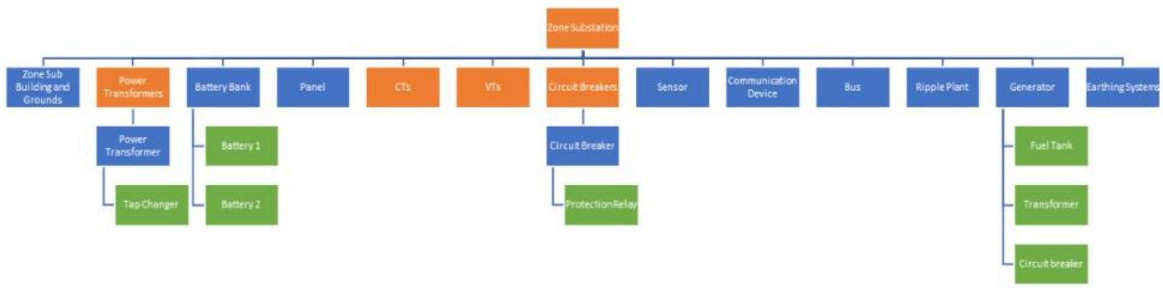


Table 30: Proposed Asset Classes

Asset Class	Asset Fleet
Support Structure	Pole, Steel Structure, Cross Arm
Overhead conductor	Subtransmission conductor, Distribution conductor, Low Voltage conductor
Underground cable	Subtransmission cable, distribution cable, Low Voltage cable
Zone Substation	Power transformer, Indoor switchgear, outdoor switchgear, ancillary equipment, buildings and grounds
Distribution switchgear	Ground mounted switchgear, pole mounted switchgear, overhead switch, low voltage enclosure
Distribution transformer	Ground mounted transformer, overhead transformer, voltage regulator
Other Network Assets	Protection relay, Batteries and DC Supplies, Generators, Metering and load control, Network communication, SCADA, RTU

8.7 Asset Management Plan

Preparations are currently under way for the RY 2026 AMP, which aims to be a watershed AMP for the new ownership under Clarus. Firstlight has benefited from Clarus' IT system and Asset Management resources in which the desire for ISO55001 certification is a strategic theme.

The most recent full AMP was the RY 2023 AMP. Its publication followed the change of ownership and the two major weather events, and the Commerce Commission extended its deadline for delivery to September 2023. The modelling behind the RY 2023 AMP was inherited from the previous owner. Data quality issues emerged during the transition from the previous SAP works management system to the Maximo EAMS and much of the asset condition information was paper based and not particularly simple to analyse.

It is anticipated that the new AMP will take on the findings from the asset class strategy reviews, particularly describing the programmes for overhead structure renewal, distribution switchgear renewal and the automation plan delivery.

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.

[Signature]	[Signature]
Mark Adrian Ratcliffe	Fiona Ann Oliver
13 August 2025	13 August 2025

10. Appendix 1 - Glossary

ABS – Air Break Switch – a pole mounted distribution switch, typically operable from the ground, ganged across three circuit phases with limited load break capability.

AVR – Automatic Voltage Regulation – equipment that controls the electricity network operating voltage.

CAIDI – Customer Average Interruption Duration Index – the average interruption duration that a given customer would experience, or the average supply restoration time, usually expressed in minutes

CIM – Common Information Model – An asset management functioned Common Information Model is being developed by the Electricity Engineers Association's (EEA) Asset Information Group as a collaboration involving EDBs and Transpower.

CMMS – Computerised Maintenance Management System

Distribution – electricity network equipment that supplies rural localities or urban suburbs, typically operating at 11,000 V (11kV).

DNO (Distribution Network Operators in the UK) – in the context of asset renewal planning, DNO methodologies refer to numerical techniques for modelling and forecasting the future renewal needs of electricity distribution asset populations calibrated for the UK environment. Like REPEX, these techniques seek to minimise the present value of economic costs associated with long life asset ownership.

EAMS – Enterprise Asset Management System. Firstlight uses the IBM Maximo system for works management and managing asset condition information. This is used in conjunction with the Esri Geographical Information System and associated field mobility applications.

LFI – Line Fault Indicator – LFIs are devices that can measure the current through the conductor of an overhead line to which they are attached. Installed by a competent person with a hot stick, they can signal to fault staff if they have detected a fault beyond them.

Low Voltage (LV) – electricity network equipment operating at 400V (two or three phase) or 230V (single phase).

MAS – Maximo Application Suite – an integrated IBM application used for asset lifecycle management

MAS9 – a version release of the Maximo Application Suite from mid 2024 that provides new and enhanced features for managing asset maintenance and renewal.

MMS – an alternative name for a Computerised Maintenance Management System

MPL – Maximum Practical Life. In respect of asset renewal planning, MPL is the length of time that an asset serves a useful economic life.

MSA – Master Services Agreement – refer to section 6.7.

ODK – Open Data Kit – a mobile application for gathering asset condition data from the field. It is also used to refer to the process used to move the data into the databases that asset planners use for asset health management.

REPEX – An asset renewal forecasting modelling concept that seeks to minimise the present value of the economic costs associated with long life asset ownership. REPEX modelling differs from DNO techniques because they are more attuned to qualitative techniques.

RMU – Ring Main Unit – ground mounted distribution switchgear featuring at least three circuit switches within the same unit, ganged across three circuit phases and capable of breaking load currents.

RTU – Remote Terminal Unit installed at remote or dispersed sites that report equipment statuses to SCADA through communications systems.

SCADA – Supervisory Control and Data Acquisition – a system of hardware and software for monitoring, controlling and managing processes, equipment and systems critical for electricity distribution.

RY – Regulatory Year representing the period between (and including) 1 April and 31 March.

SAIDI – System Average Interruption Duration Index – the length of time that a customer experiences without supply on average during a year, usually expressed in minutes.

SAIFI – System Average Interruption Frequency Index – the number of supply interruptions that a customer experiences on average during a year.

SF6 – Sulphur hexafluoride, a colourless, odourless gas used as an insulating medium in electrical switchgear.

Subtransmission – electricity network equipment that supplies electricity supply zones (large rural areas or suburbs). Typically operating at 110 kV, 50 kV or 33 kV.

SRMP – Strategic Reliability Management Plan – refer to section 8.2.

SWER – Single Wire Earth Return, a system of electricity distribution comprising a single conductor with return current flowing through the earth. It is typically only used for supplying a small number of customers in a remote rural area.

Tree regulations – specifically the Electricity (Hazards from Trees) Regulations 2003.

11. Appendix 2 - Significant SAIFI event look-up

Date 2024/25	Feeder	Cause	SAIFI	SAIDI (min)	Report Section
31 May	Patutahi	Protection relay failure	0.067	4.7	7.5.1
10 June	Port	Protection relay failure	0.104	4.0	7.5.1
25 June	Multiple feeders	Adverse weather, vegetation	0.172 (Note 1)	55.5 (Note 1)	5.4
26 June	Multiple feeders	Adverse weather, vegetation	0.207 (Note 1)	49.1 (Note 1)	5.4
28 July	Makaraka	Unknown	0.072	4.3	2.4.3
3 August	Multiple feeders	Multiple causes	0.090 (Note 1)	7.8 (Note 1)	2.7, Graph 39
12 August	Multiple feeders	Adverse weather	0.038 (Note 1)	6.2 (Note 1)	5.5
13 August	Multiple feeders	Adverse weather	0.085 (Note 1)	9.2 (Note 1)	5.5
18 August	Multiple feeders	Adverse weather	0.146 (Note 1)	60.9 (Note 1)	5.6
19 August	Multiple feeders	Adverse weather	0.029 (Note 1)	7.0 (Note 1)	5.6
8 October	Makaraka	Possum contact	0.178	10.4	5.7
18 October	Hexton	Felled tree	0.134	1.8	2.9
4 November	Childers	Defective switchgear	0.073	2.3	7.5.1
18 November	Patutahi	Third party	0.086	2.7	2.9
17 December	Multiple feeders	Adverse Weather, Vegetation	0.075 (Note 1)	4.7 (Note 1)	-
27 December	Multiple feeders	Adverse weather	0.151 (Note 1)	68.6 (Note 1)	5.8
31 December	Kaiti and others	Adverse Weather, vegetation	0.157 (Note 1)	7.9 (Note 1)	2.2, Table 8 2.7, Graph 41
28 February	Aberdeen	Cable failure	0.096	1.5	7.5.1
7 March	Tahaenui	Transformer inrush	0.171	1.8	5.9
11 March	Hexton	Unknown	0.134	5.5	2.4.3, Table 8

SAIFI and SAIDI numbers provided for the main event unless noted.

Note 1: SAIFI and SAIDI numbers provided are the daily total.