

# ENSMS Performance and Bushfire Preparedness Report

Part A 1 July 2023 to 30 June 2024

Part B 1 October 2023 to 30 September  
2024

31 October 2024

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Case studies are provided throughout the document to highlight key initiatives and achievements, and/or provide background information for the reader.



# Introduction

This document is the Annual Performance Report for the Essential Energy Electricity Network Safety Management System (ENSMS).

It is produced to meet the requirements set out in the Independent Pricing and Regulatory Tribunal (IPART) Electricity Networks Reporting Manual (September 2022). As such, it is intended to provide sufficient information for IPART or members of the public and our customers to assess our performance against our ENSMS objectives to manage the risk arising from the design, construction, commissioning, operation, maintenance and decommissioning of the electricity network to people, property and the environment, so far as is reasonably practicable.

The report is structured in two parts:

- ▶ Part A sets out the annual safety performance for the period 1 July 2023 to 30 June 2024
- ▶ Part B sets out our bushfire preparedness activities undertaken for the period 1 October 2023 to 30 September 2024

The timeframes for Parts A and B differ due to the relative focus of the content, with Part A aligned to financial year and Part B aligned to fire season.

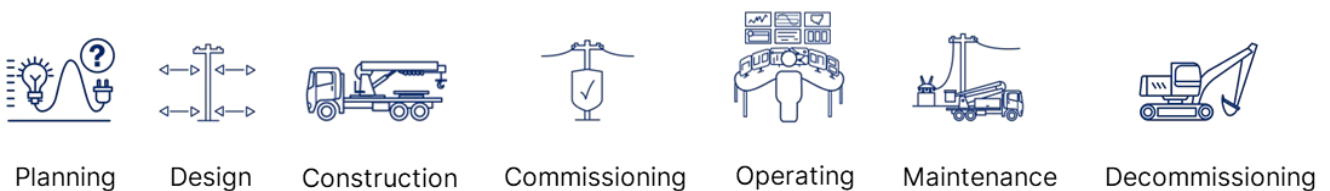
## Context

We build, operate and maintain an electricity network that services regional, rural and remote communities across 95 per cent of New South Wales (NSW) and parts of southern Queensland. Essential Energy's network delivers power to more than 957,000 homes and businesses, 170 hospitals, and 1,250 schools.

We aim to continuously improve safety performance for employees, contractors and the community, while also striving to deliver on other customer priorities including reliability and affordability.

The ENSMS is critical to delivery of network safety outcomes given it translates safety objectives into effective and efficient actions for the control of safety risks associated with the electricity network. These risks include public and worker safety, bushfire and other environmental impacts, safety risks arising from any loss of electricity supply, and risks to public property and network assets. The ENSMS applies a 'Plan-Do-Check-Act' approach, supporting continuous improvement in all aspects of safety performance and practices.

Figure 1 depicts the 'whole of lifecycle' approach to safety that is taken by the ENSMS.



**Figure 1 Network and asset lifecycle phases considered by the ENSMS**

The ENSMS works in harmony with other key management systems within the business, including the:

- ▶ Asset Management System,
- ▶ Work Health and Safety Management System, and
- ▶ Environmental Management System.

# Essential Energy network footprint

Our network footprint covers 95 per cent of New South Wales and parts of southern Queensland, traversing 737,000 square kilometres of diverse landscape from the desert to the coast, across alpine to sub-tropical.

We operate from close to 100 depots and offices throughout NSW.

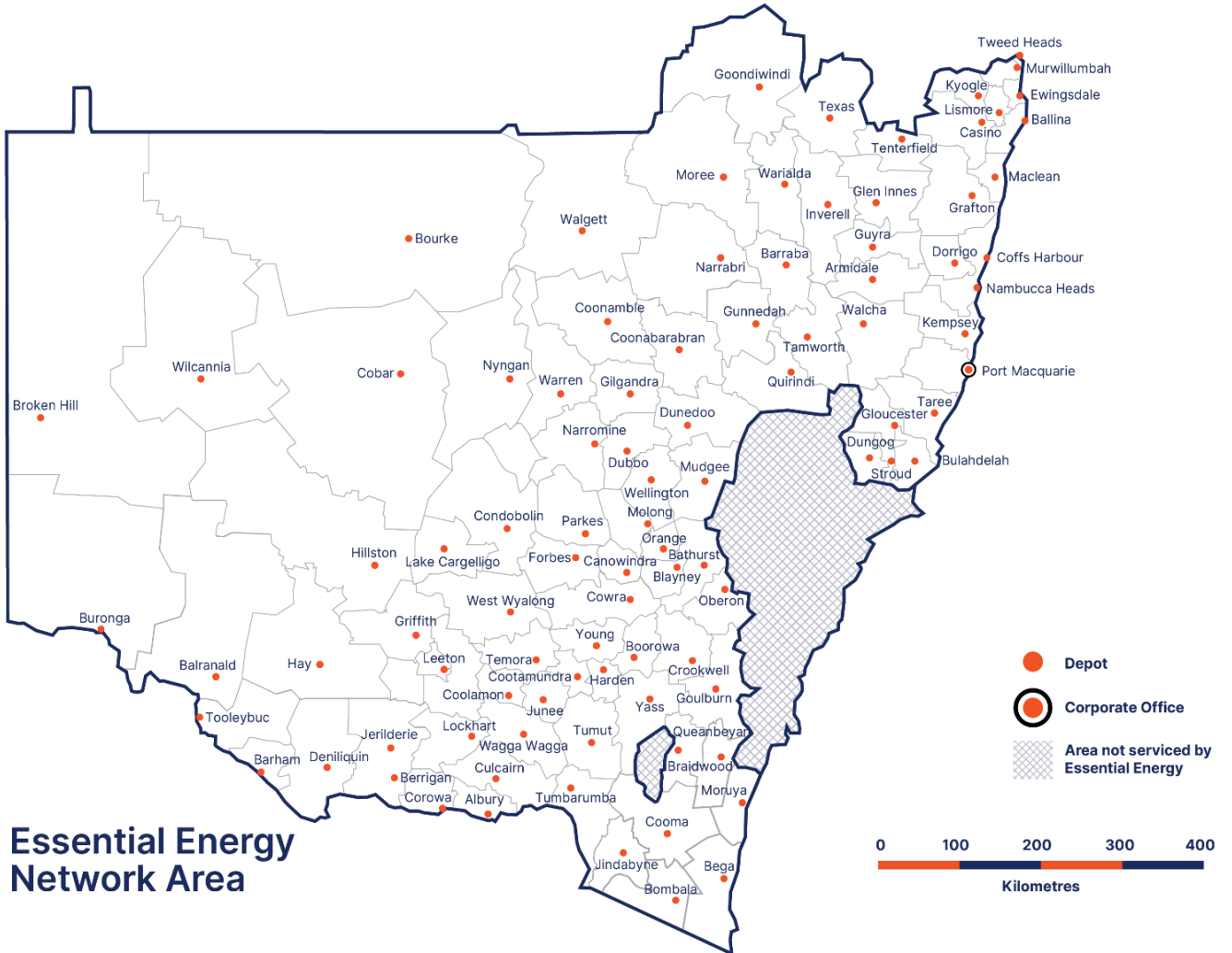


Figure 2 Essential Energy's network footprint and key locations

## Background

As critical infrastructure that is co-located in the communities it serves, the safety risks associated with an electricity network need to be managed accordingly. This is a core function of a Distribution Network Service Provider (DNSP).

The hazards associated with an electricity network have the potential to cause harm to network and other workers, the public and the environment. Contact with electrical energy can cause significant and fatal injuries and arcing may start fires in adjacent vegetation. In addition to these hazardous events, the loss of supply in some circumstances can result in harm, particularly to vulnerable persons dependent on electricity supplied medical equipment, and populations that have a greater risk of impact from heat illness.

Electricity network operators must take account of all these hazards and take steps to manage them *so far as is reasonably practicable*<sup>1</sup>.

We operate and maintain a safety management system which provides a systematic approach to the identification, analysis and control of hazards associated with the electricity network. This includes reporting incidents to our industry regulator within specified timeframes and collating incident data to provide a view of the overall safety performance.

The performance measures contained in this report are a combination of leading measures (that indicate future performance) and lagging measures (that indicate past performance) of the safety of our electricity network. These are consistent with the expectations of our regulator, IPART.

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<sup>1</sup> This is a key concept in safety management and is a requirement in law in many jurisdictions. It requires ensuring that all 'reasonably practicable' measures to manage safety are in place, where the limit of what is reasonably practicable involves weighing the risk against the measures necessary to eliminate or reduce it, in what is essentially a benefit-cost comparison.

# Part A – ENSMS Annual Performance Report

Part A reports against a framework of safety performance indicators defined within IPART's *Electricity Networks Reporting Manual* as per Figure 3.

Part A is structured around the four 'Tiers' defined in Figure 3 as follows:

- ▶ Section 1 describes Tier 1 indicators (Major incidents)
- ▶ Section 2 describes Tier 2 indicators (Minor incidents)
- ▶ Section 3 describes Tier 3 indicators (Control failure near misses)
- ▶ Section 4 describes Tier 4 indicators (Control implementation)

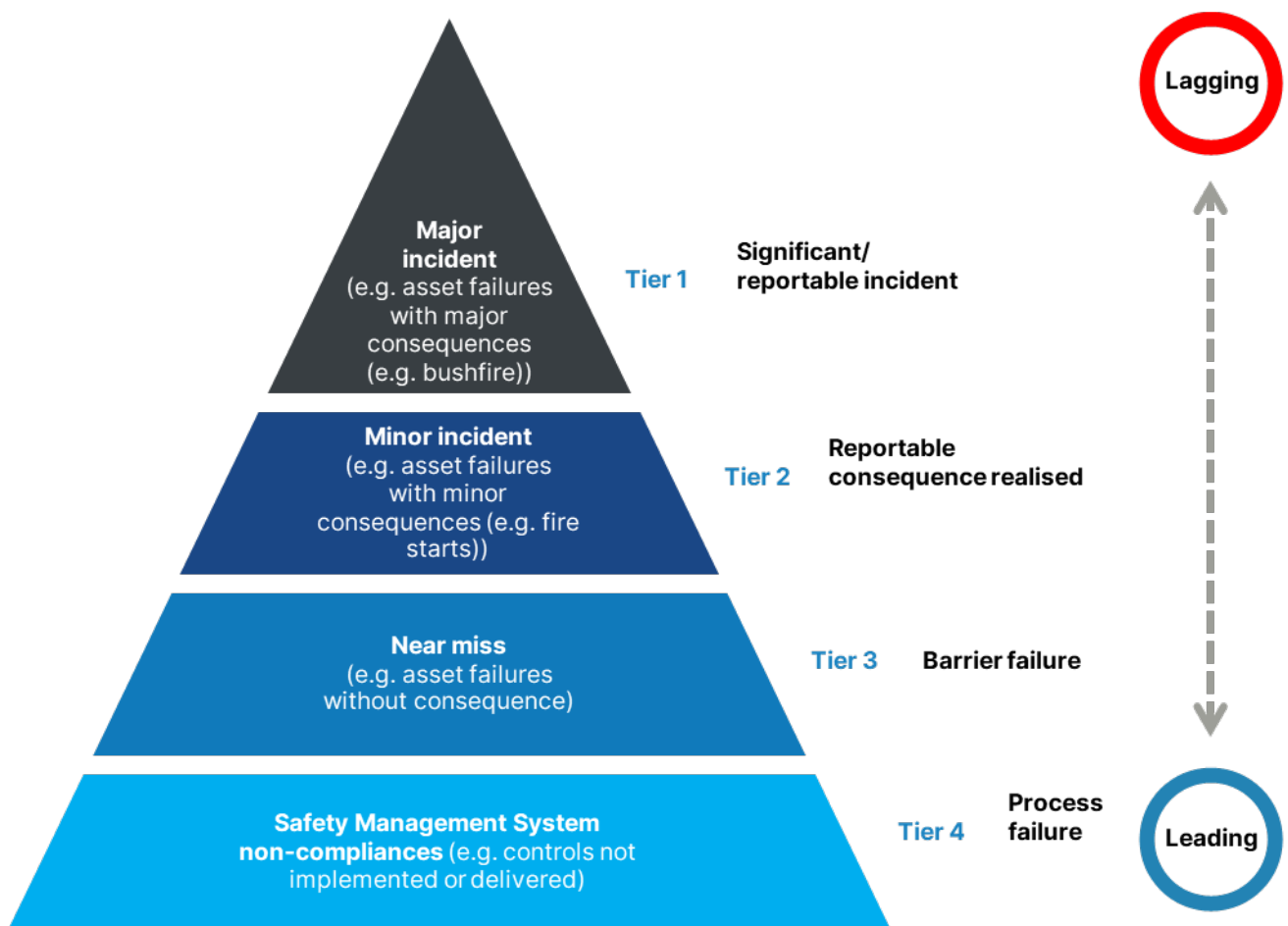


Figure 3 IPART Safety Performance Monitoring Framework

Trends of the key statistics from this report, FY2024, and from previous reporting periods are shown in Figure 4.

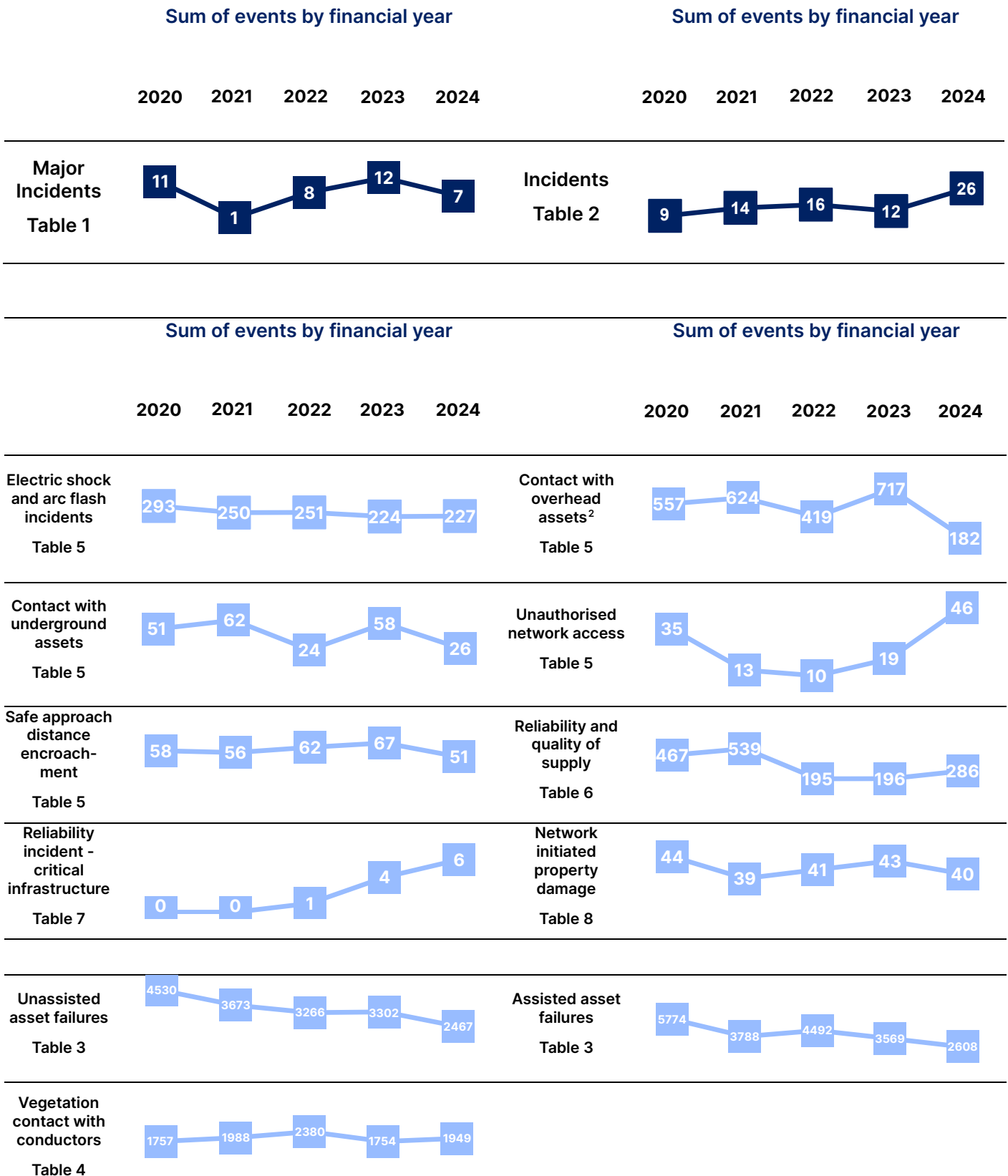


Figure 4 Key statistic trends from the ENSMS Performance Report

<sup>2</sup> Step change resulting from update to reporting methodology to align with the IPART reporting guidelines



## Section 1 and 2

These tables summarise electricity network-related incidents that resulted in harm to the public, our workers, network assets, public or private property, or the environment. Table 1 and Table 2 are a record of these incidents that have been reported to IPART in accordance with the *Electricity Networks Reporting Manual – Incident Reporting (June 2023)*.

### Tier 1 – Major Incidents

Major Incidents are defined as those that have resulted in significant consequences such as fatalities, life changing or life-threatening injuries where the electricity network was the cause of the incident, for example due to an asset failure. Major Incidents also include incidents resulting in significant loss of property such as major bushfires that were started by the network, as well as significant power outages.

Table 1 provides a brief description of all Major Incidents that occurred on or involved our network during the reporting period.

**Table 1: A1 Major Incidents**

ESSNM <sup>3</sup> OBJECTIVE		DESCRIPTION OF MAJOR INCIDENT REPORTED UNDER THE INCIDENT REPORTING REQUIREMENTS
Safety of members of the public		<ul style="list-style-type: none"> <li>▶ Member of the public operating a light aircraft for recreational purposes, contacted the overhead network and crashed to the ground. Pilot and a passenger suffered fatal injuries from impact and fire.</li> </ul>
Safety of persons working on the network		<ul style="list-style-type: none"> <li>▶ Vegetation contractor was going aloft in an Elevated Work Platform when he encountered a swarm of bees. Worker was stung multiple times and suffered an anaphylactic reaction and passed away in transit to medical assistance.</li> <li>▶ Accredited Service Provider (ASP) worker has contacted Low Voltage (LV) powerlines while in an Elevated Work Platform, resulting in a fatality.</li> </ul>
Protection of property	Third party property	<ul style="list-style-type: none"> <li>▶ Nil</li> </ul>
	Network property <sup>4</sup>	<ul style="list-style-type: none"> <li>▶ Nil</li> </ul>

<sup>3</sup> *Electricity Supply (Safety and Network Management) Regulation 2014*

<sup>4</sup> Network property damage events in this table are not considered Major Incidents in the IPART Incident Reporting Manual

ESSNM <sup>3</sup> OBJECTIVE	DESCRIPTION OF MAJOR INCIDENT REPORTED UNDER THE INCIDENT REPORTING REQUIREMENTS
<p>Safety risks arising from loss of electricity supply</p>	<ul style="list-style-type: none"> <li>▶ 4 October 2023 - widespread weather event across Northern NSW with wind speeds of 48km/hr and wind gusts recorded at 83km/hr. This resulted in vegetation debris causing power outages as well as other impacts to the electricity network. Multiple depots were affected with the wind event.</li> <li>▶ 5 October 2023 - widespread weather event in South Eastern NSW with high winds. This resulted in a number of network faults across multiple depots. Extended outages from the widespread weather event on the 4th of October.</li> <li>▶ 16 October 2023 - widespread weather event in regional, rural and remote NSW with high winds. This resulted in a number and variety of network faults across multiple depots.</li> <li>▶ 25 December 2023 - widespread storm activity across Eastern NSW had significant impacts in multiple locations across the network. Strong wind, lightning and heavy rain caused the failure of assets including conductors, poles, crossarms and associated equipment with further incidents caused by impacted vegetation. Storms impacted the network across the North Eastern operating areas, as well as the South Eastern and Riverina regions. Most customers affected were restored within 14 hours.</li> </ul>

## Case Study – Aviation engagement

We are engaging with the Aerial Applicators Association of Australia (AAAA), attending branch meetings, and providing electricity awareness talks with members to improve electricity network hazard awareness for aerial applicator pilots. Awareness talks cover the use of the Look Up and Live<sup>5</sup> application to improve planning for the aerial spraying activities across rural land holdings as well as overlaying the network data from the Look Up and Live application into commonly used flying applications such as Tabula, which would give pilots visual awareness of powerline locations. An opportunity has been identified through our Public Safety Working Group to share the lessons learnt with Recreational Aviation Australia, to improve awareness of the hazards associated with flying near powerlines, safe incident response and using technology like Look Up and Live to plan flying activities.

<sup>5</sup> Link to [Look Up and Live](#)



## Tier 2 – Incidents

Incidents are defined in the *IPART Electricity Networks Reporting Manual (June 2023)* as incidents that result in safety consequences such as hospitalisation and a person receiving care from a health care professional, where the electricity network was the cause of the incident, for example due to an asset failure. This category also includes lower-level impacts to public property (such as smaller fires) and smaller power outages.

Table 2 provides a brief description of all Incidents that occurred on or involved our network during the reporting period.

**Table 2: A2 Incidents**

ESSNM OBJECTIVE	DESCRIPTION OF EACH INCIDENT REPORTED UNDER THE INCIDENT REPORTING REQUIREMENTS
Safety of members of the public	<ul style="list-style-type: none"> <li>▶ A telecommunications worker fell from Network Pole whilst undertaking telecommunications works. Diagnosed with fractures and treated.</li> <li>▶ Member of the public received an electric shock when he picked up a fallen conductor on a roadway. Medically treated.</li> </ul>
Safety of persons working on the network	<ul style="list-style-type: none"> <li>▶ Essential Energy contractor working aloft in Elevated Work Platform when the platform tipped over. Workers suffered minor injuries, one worker was admitted to the hospital overnight.</li> <li>▶ Essential Energy worker using a link stick suffered an injury to his bicep requiring medical intervention.</li> <li>▶ Essential Energy worker using a grinder sustained a cut to the hand requiring medical intervention.</li> <li>▶ Essential Energy worker was throwing a service cable over a branch and sustained a serious muscle strain requiring medical intervention.</li> <li>▶ Essential Energy worker sustained an electric shock whilst working aloft in an Elevated Work Platform. Medically treated.</li> </ul>

Protection of third-party property

- ▶ 11 September 2023 - A flying fox clashed high voltage conductors and was suspected to have caused a grass fire that burnt 15 ha.
- ▶ 20 October 2023 - A high voltage timber crossarm failed, causing conductors to fall to ground resulting in a grass fire that burnt 14.7 ha.
- ▶ 31 October 2023 - A weather system with high winds caused a 66 kV subtransmission pole failure. This resulted in a fire in a sugar cane crop that burnt 15 ha.
- ▶ 30 November 2023 - An overhead service failure was suspected to have caused a fire that damaged farm machinery and burnt 12.4 ha.
- ▶ 1 December 2023 - A timber high voltage crossarm failed due to significant termite damage which caused a conductor to fall to ground resulting in a fire that burnt 15 ha.
- ▶ 4 December 2023 - A timber strain arm split and failed, causing high voltage conductor to fall to ground, resulting in a fire that burnt 40 ha.
- ▶ 8 December 2023 - Lightning damaged insulator caused a phase to earth fault that was suspected to have started a fire that burnt 20 ha.
- ▶ 13 December 2023 - Strong winds caused a large tree branch to break, which contacted and broke a high voltage copper conductor. The conductor impacted the ground starting a grass fire that burnt 11.7 ha.
- ▶ 27 Dec 2023 - A lightning strike on a SWER pin pole caused the high voltage conductor to come to ground causing an extensive grass and scrub fire that burnt 200 ha.
- ▶ 28 December 2023 - A lightning strike on a 19.1 kV SWER timber pole caused the conductor to fall within the vicinity of the ground. Conductor remained energised and was suspected to have ignited a large grass fire several days after the lightning strike that burnt 6 ha.
- ▶ 10 January 2024 - A timber termination crossarm failed due to termite damage, causing a high voltage conductor to fall to ground and start a fire in a stubble paddock that burnt 10 ha.
- ▶ 15 January 2024 - A high voltage pin insulator, damaged from a suspected lightning strike, failed in strong winds. The attached conductor fell, coming to rest approximately 1.5 m above the ground and was suspected to have started a large grass and scrub fire that burnt 34.9 ha.
- ▶ 22 January 2024 - A high voltage insulator and attached conductor fell from the end of a weathered timber crossarm. The conductor contacted a small shrub and it was suspected that the fallen conductor was the ignition source of a brush fire that burnt 15 ha.
- ▶ 5 February 2024 - A timber high voltage crossarm failed due to severe termite damage, causing a high voltage conductor to contact the timber pole, resulting in a pole fire. It was suspected that the pole fire was the source of the ignition which impacted a shed, surrounding fences and also caused a grass fire that burnt 4.5 ha and caused property damage in excess of \$100k.
- ▶ 29 March 2024 - A grass fire started underneath overhead mains where a balloon came in contact with the conductors, the fire burnt 12.14 ha.
- ▶ 23 May 2024 - House fire - No cause of incident established. Inspection of maintenance and inspection history did not indicate any outstanding defects and no conclusive evidence as to the cause of the fire or network involvement.

ESSNM OBJECTIVE	DESCRIPTION OF EACH INCIDENT REPORTED UNDER THE INCIDENT REPORTING REQUIREMENTS
	<ul style="list-style-type: none"> <li>▶ 29 June 2024 - A broken neutral connection caused network voltage issues and was suspected to have caused damage to residential appliances. Incident still under investigation.</li> </ul>
Safety risks arising from loss of electricity supply	<ul style="list-style-type: none"> <li>▶ 4 October 2023 - widespread weather event in Northern NSW with wind speeds of 48km/hr and wind gusts recorded at 83km/hr. This resulted in vegetation debris causing power outages as well other impacts to the electricity network. Multiple depots were affected with the wind event.</li> <li>▶ 25 December 2023 - widespread storm activity across Eastern NSW had significant impacts in multiple locations across the network. Strong wind, lightning and heavy rain caused failure of assets including conductors, poles, crossarms and associated equipment with further incidents caused by impacted vegetation. Severe storms impacted the network across the North Eastern operating areas, with additional impacts in South Eastern, Riverina and Murray regions.</li> </ul>

## Case Study – Early Fault Detection

The consequence of a failure of a network component is often a discharge of electrical energy. The discharge of electrical energy can lead to electric shock, and damage to property and environment due to fires started by this discharge. The ability to detect, locate and act on the conditions that lead to failures should result in a reduction in failures that lead to severe consequences.

Early Fault Detection is a proprietary technology that can provide information about the presence and location of some conditions that indicate a future failure of a network component before the component fails. Early Fault Detection is an innovation imagined and brought to life here in Australia by IND.t in the aftermath of the Black Saturday fires in 2009, the most significant of which were started by a failure of electricity infrastructure.

In FY2025, we will install Early Fault Detection devices across a limited section of our electricity network as part of a trial to understand the benefits and opportunities that could flow from a broader installation of these devices.



## Tier 3 – Control failure near miss

Failure of electricity network assets, particularly functional failure where assets stop performing a required function, for example supporting electrical conductors at a prescribed height above the ground, or the carriage of electrical energy from source to load, can result in a dangerous release of energy.

Eliminating all asset failures is not practically or financially achievable, and we manage these risks so far as is reasonably practicable.

Various inspections are performed on our assets to identify conditions that lead to asset failure. Analysis of inspection data and failure rates influence replacement programs to manage the risk that is associated with failure. These tables demonstrate how effective the inspection and maintenance programs are in minimising asset failures.

This section sets out events such as an asset failure or where a worker, member of the public or livestock or a pet came into contact with the network, but that did not result in a safety consequence that meets the criteria reported in Sections 1 and 2 above. These are categorised as 'near misses' and are reported across six tables:

- ▶ Table 3 sets out near misses related to functional failures of network assets
- ▶ Table 4 sets out near misses related to trees or branches (vegetation) contacting overhead wires (conductors)
- ▶ Table 5 sets out near misses related to unintended contact, unauthorised access and electric shocks originating from network assets. *Unintended contact* describes incidents such as construction or agricultural vehicles contacting overhead or underground conductors. *Unauthorised access* describes incidents such as trespass onto the Essential Energy network e.g. into zone substations
- ▶ Table 6 sets out near misses related to electric shocks, due to specific causes related to network assets and workmanship and near misses related to the quality of the electricity supply
- ▶ Table 7 sets out near misses due to supply interruptions to *critical infrastructure* e.g. hospitals and road tunnels
- ▶ Table 8 sets out network-initiated property damage events, for example where public property including cars, buildings, crops or livestock have been damaged by the network
- ▶ Table 8 also includes events where non-electrical assets belonging to Essential Energy have been damaged by the network e.g. damage to Essential Energy vehicles or buildings.

The remainder of this section provides a brief description of each of the tables, to explain the terms used and provide some context for the reported performance. This is followed by each of the tables that sets out the performance for the reporting period.

### NETWORK ASSET FAILURES

Table 3 lists those asset failures that occurred on our network during the reporting period, split by the major asset types. These are reported in the context of the total population for each asset type and the 5-year average annual failure numbers.

For each asset type, the table reports the failures that occurred during the reporting period, broken out by:

- ▶ Unassisted and assisted failure types, where:
  - › unassisted failures are those considered to be within our control. For example, failures caused by asset degradation and aging due to corrosion, termite attack and wood decay.
  - › assisted failures are those attributed to external causes, for example vehicle impacts, vandalism, lightning, fires and storms that resulted in wind speeds in excess of relevant design standards.
- ▶ Whether the failure resulted in a fire, or no fire; and

- ▶ If the failure did result in a fire, was the fire limited to the asset (Contained), or did it spread to the surrounding environment (Escaped)



**Table 3: A3 Network asset failures**

PERFORMANCE MEASURE	POPULATION	5-YEAR AVERAGE ANNUAL FUNCTIONAL FAILURES	FUNCTIONAL FAILURE TOTAL FY2024 <sup>6</sup>	ANNUAL FUNCTIONAL FAILURES (FOR REPORTING PERIOD)					
				UNASSISTED			ASSISTED		
				NO FIRE	FIRE		NO FIRE	FIRE	
					CONTAINED	ESCAPED		CONTAINED	ESCAPED
Towers	209	0	0	0	0	0	0	0	0
Poles (including streetlighting columns/poles and stay poles)	1,416,412	968	524	75	3	8	430	0	8
Pole top structures		575							
Pole top structures - crossarms	1,445,846		637	361	0	8	255	1	12
Pole top structures - insulators	4,544,136		206	38	1	5	148	1	13
Pole top structures - conductor ties	4,631,057		122	47	1	1	68	0	5

<sup>6</sup> This column is the sum of the columns to the right.

PERFORMANCE MEASURE	POPULATION	5-YEAR AVERAGE ANNUAL FUNCTIONAL FAILURES	FUNCTIONAL FAILURE TOTAL FY2024 <sup>6</sup>	ANNUAL FUNCTIONAL FAILURES (FOR REPORTING PERIOD)					
				UNASSISTED			ASSISTED		
				NO FIRE	FIRE		NO FIRE	FIRE	
					CONTAINED	ESCAPED		CONTAINED	ESCAPED
Conductor HV <sup>7</sup> (inc. subtransmission) OH <sup>8</sup>	157,735	973	692	197	8	32	422	4	29
Conductor HV (inc. subtransmission) UG <sup>9</sup>	3,137	52	93	65	1	3	22	0	2
Conductor LV <sup>10</sup> OH	24,973	519	455	219	0	1	230	1	4
Conductor LV UG	7,592	218	110	80	2	2	21	1	4
Service line OH	686,681	1516	938	648	0	1	287	0	2
Service line UG	258,271	21	4	3	0	0	1	0	0
Power transformers	755	1.2	3	2	0	0	1	0	0

<sup>7</sup> High voltage (HV)

<sup>8</sup> Overhead (OH)

<sup>9</sup> Underground (UG)

<sup>10</sup> Low voltage (LV)



PERFORMANCE MEASURE	POPULATION	5-YEAR AVERAGE ANNUAL FUNCTIONAL FAILURES	FUNCTIONAL FAILURE TOTAL FY2024 <sup>6</sup>	ANNUAL FUNCTIONAL FAILURES (FOR REPORTING PERIOD)					
				UNASSISTED			ASSISTED		
				NO FIRE	FIRE		NO FIRE	FIRE	
					CONTAINED	ESCAPED		CONTAINED	ESCAPED
Distribution transformers	143,830	952	520	89	0	6	423	0	2
Reactive plant	373	9	4	0	2	0	0	1	1
Switchgear - zone/subtransmission/transmission substation	11,664	8.4	10	10	0	0	0	0	0
Switchgear - distribution OH	384,122	915	669	448	6	11	192	2	10
Switchgear - distribution ground based	74,510	22	38	34	0	1	3	0	0
Protection relays or systems	5,443	32.2	16	16	0	0	0	0	0



PERFORMANCE MEASURE	POPULATION	5-YEAR AVERAGE ANNUAL FUNCTIONAL FAILURES	FUNCTIONAL FAILURE TOTAL FY2024 <sup>6</sup>	ANNUAL FUNCTIONAL FAILURES (FOR REPORTING PERIOD)					
				UNASSISTED			ASSISTED		
				NO FIRE	FIRE		NO FIRE	FIRE	
					CONTAINED	ESCAPED		CONTAINED	ESCAPED
Zone/ sub transmission / transmission substation SCADA system	1,287	44	25	25	0	0	0	0	0
Zone/subtransmission/ transmission protection batteries	702	22	11	9	0	0	2	0	0
Network standalone power systems (SAPS)	3	0	0	0	0	0	0	0	0

## Case Study – Enterprise Asset Management Solution

Managing network assets safely, efficiently and reliably is the core function of Essential Energy. In May 2024, we successfully migrated to a new Enterprise Asset Management (EAM) solution, replacing legacy systems with a cloud-based digital platform. The EAM solution strengthens the business’ ability to track, monitor and analyse network asset data, to support strategic and operational decisions, including how often assets are inspected and when they should be replaced.

The solution provides the right systems, processes, data sources and ways of working in place to manage our assets over their entire lifecycle. It provides higher quality and more granular data, along with improved integration with other systems. This significantly uplifts our capability to meet our licence conditions, operate safely and efficiently analyse the condition of the network.

### VEGETATION CONTACT WITH CONDUCTORS

Table 4 breaks out the numbers and causes of vegetation contact with conductors into the following categories:

- ▶ ‘Grow in’ vegetation is any vegetation that has grown into the space around the conductors, allowing contact to occur. This might come from trees that are below, to the side or above electricity network conductors.
- ▶ ‘Fall in’ vegetation is usually dead, diseased, or dying vegetation from trees surrounding or above the electricity network conductor that has fallen onto the conductor e.g. dead branches that fall onto electricity network conductors when they drop from a nearby tree.
- ▶ ‘Blow in’ vegetation is usually branches that have been picked up by high winds from some distance away from electricity network conductors and which has been ‘blown into’ the conductors.

**Table 4: A4 Vegetation contact with conductors**

PERFORMANCE MEASURE	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JULY 2020
Fire starts – grow in	9	0	0	0	1
Fire start – fall in and blow in	24	26	25	22	48
Interruption – grow in	210	229	158	132	138
Interruption – fall-in and blow in	1,706	1,499	2,197	1,834	1,570

## Case Study - Vegetation management

We trim or remove trees and other vegetation that could impact powerlines and start a bushfire, cause a power outage or an electrical safety risk. During 2023-24, in partnership with our contracted service providers performed more than 120,000 trimming tasks (often with multiple trees per task) and removed 14,767 hazardous trees.

Our vegetation management team actively participates in national and international forums, sharing knowledge and seeking to continuously improve practices. In a recent survey of electricity utilities across Australia, North America and Europe, we benchmarked favourably for the efficiency and effectiveness of our vegetation management program.

Engagement with local government councils continues to be strengthened, with five new memorandums of understanding (MOU) put in place during the year, with Carrathool Shire Council, Greater Hume Shire Council, Leeton Shire Council, Tweed Shire Council and Temora Shire Council. Essential Energy now has 14 vegetation management MOUs in place across its network, helping to ensure mutual benefit and positive outcomes in regional communities.

### UNINTENDED CONTACT, UNAUTHORISED ACCESS AND ELECTRIC SHOCKS

Table 5 displays events that resulted in electric shocks that were not classified as 'Major Incidents' or 'Incidents' in accordance with IPART's *Electricity Networks Reporting Manual – Incident Reporting (June 2023)*. Table 5 also records instances of unintended or unauthorised contact or close access to the electricity network that had the potential to result in an electric shock.

Examples of events included in Table 5 include:

- ▶ Member of the public receiving an electric shock (not classified as a Major Incident or Incident), due to a faulty network connection to a residence;
- ▶ Tipper truck contacting overhead powerlines while operating;
- ▶ Construction excavator contacting underground powerlines while operating;
- ▶ Theft of copper earth wires from power poles; and
- ▶ Construction scaffolding erected too close to the network.



**Table 5: A5 Unintended contact, unauthorised access and electric shocks**

DETAIL	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JULY 2020
<b>Electric shock and arc flash incidents originating from network assets including those received in customer premises</b>					
Public	207	202	219	231	262
Public worker	2	5	9	4	2
Network employee / network contractor	4	3	9	2	9
Accredited Service Provider <sup>11</sup>	1	0	0	0	3
Livestock or domestic pet	13	14	15	13	17
<b>Contact with energised overhead network asset (e.g. conductor strike)</b>					
Public road vehicle	74	423	305	401	355
Plant and equipment	39	181	113	91	93
Agricultural and other	69	112	156	130	107
Network vehicle	0	1	0	2	2
<b>Contact with energised underground network asset (e.g. conductor strike)</b>					
Plant and equipment	22	54	37	55	47
Person with handheld tool	4	4	4	7	4

<sup>11</sup> Accredited Service Providers are persons who have been accredited through a NSW Government-recognised accreditation scheme, to undertake contestable work on the Essential Energy network

UNAUTHORISED NETWORK ACCESS (INTENTIONAL)					
Zone / BSP <sup>12</sup> / Transmission substation / switching station	2	0	2	0	0
Distribution substation	27	9	4	8	20
Towers / poles	9	8	8	4	14
Other (e.g. communication sites)	8	2	2	1	1
Safe Approach Distance (SAD)					
Network employee / network contractor	4	7	5	1	3
Accredited Service Provider	12	7	6	3	3
Public	9	5	11	11	8
Public Worker	26	48	60	41	44

The trends for electric shock, contact with the energised overhead network, and contact with the underground network for the reporting periods FY2020 - FY2024 are shown on the next page in Figure 5.

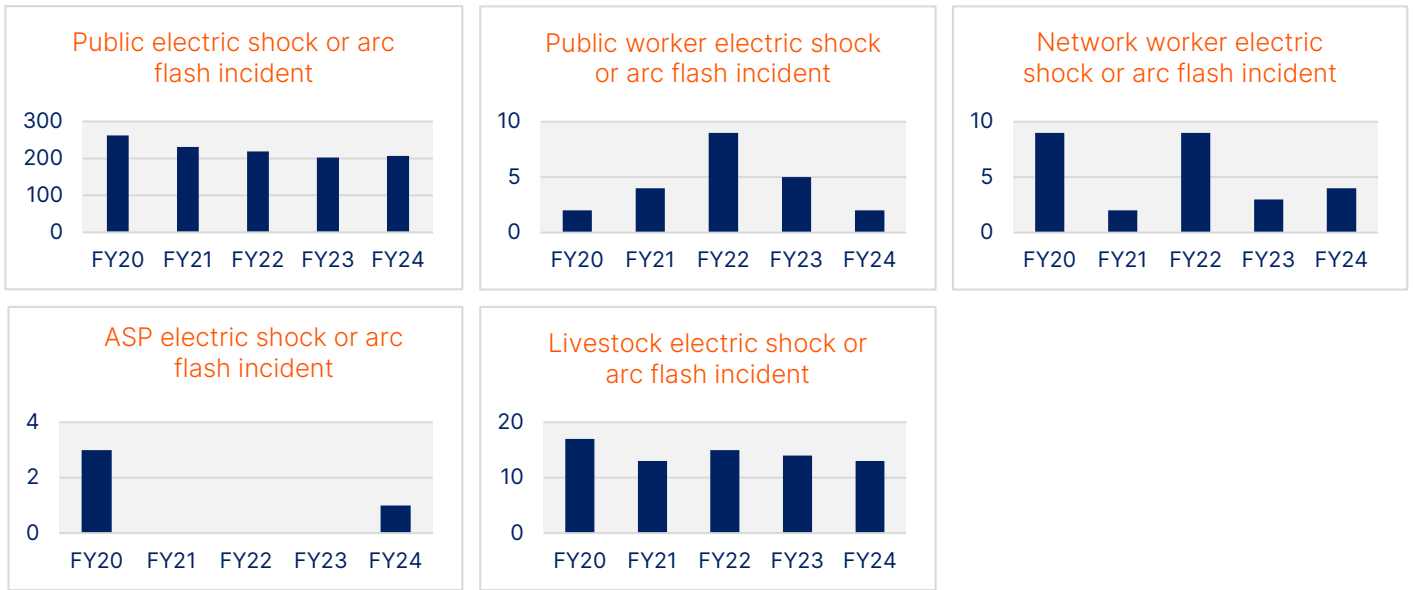
Of note, there has been a step change in the reported number of incidents involving contact with the electricity network resulting from aligning the reporting methodology with IPART's *Electricity Networks Reporting Manual - Safety management system performance measurement – September 2022*

There has been a significant increase in the number of copper theft incidents occurring on our network. Essential Energy has engaged with NSW Police to provide intelligence on movements and trends in theft incidents in an effort to disrupt this illegal and dangerous activity.

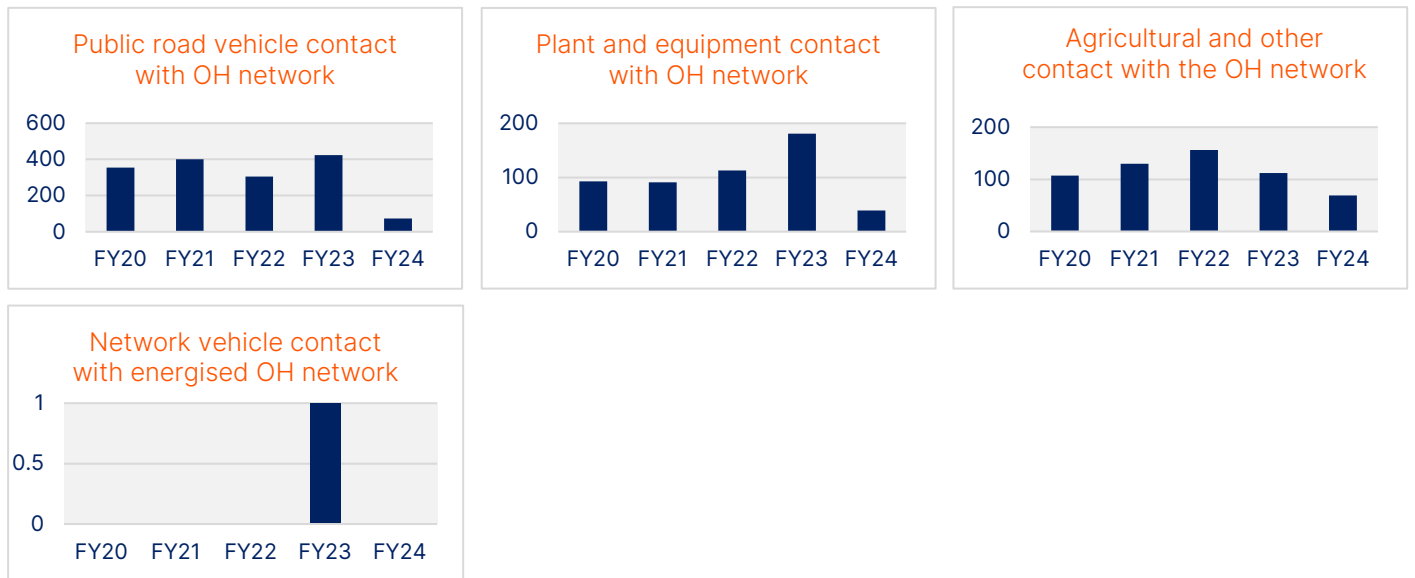
<sup>12</sup> Bulk supply point



## Electric shock or arc flash incident trends FY2020-FY2024



## Contact with energised overhead (OH) network trends FY2020-FY2024



## Contact with energised underground (UG) network trends FY2020-FY2024

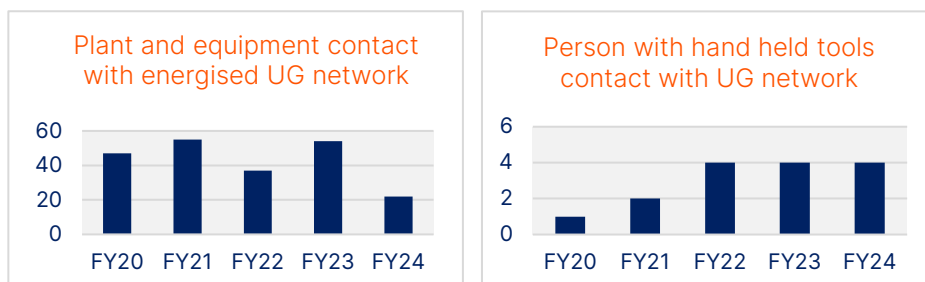


Figure 5 Unintended contact with the overhead and underground network trends FY2020-FY2024

## RELIABILITY AND QUALITY OF SUPPLY

Table 6 details occurrences of:

- ▶ Three types of events that resulted in increased risk of electric shocks that were not classified as Major Incidents or Incidents in accordance with IPART's *Electricity Networks Reporting Manual - Incident Reporting (June 2023)* but resulted in dangerous network conditions (high voltage into low voltage, reverse polarity, and neutral integrity due to poor work practices or incorrect procedure).
- ▶ Events resulting in sustained (longer than 10 minutes) network voltages that either exceed or are lower than the limits prescribed in the Australian Standard *AS61000.3.100-2011 Limits—Steady state voltage limits in public electricity systems*. The basis of reporting for sustained voltage excursions outside of emergency range has been updated to align with industry accepted reporting. This has resulted in a step change between the periods FY2021 and FY2022.
- ▶ Electric shocks that were caused by a defective neutral connection that resulted from asset defects or failures, but were not reportable incidents under IPART's *Electricity Networks Reporting - Incident Reporting (June 2023)* (Neutral integrity due to asset defect or failure).

**Table 6: A6 Reliability and Quality of Supply**

PERFORMANCE MEASURE	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JULY 2020
High voltage into low voltage	23	25	21	21	16
Sustained voltage excursions outside emergency range	100	17	6	344	259
Reverse polarity	3	3	1	3	1
Neutral integrity due to poor workmanship or incorrect procedure	3	1	2	2	1
Neutral integrity due to asset defect or failure	157	150	165	181	190

## Case Study – AEMC 2030 smart meter roll out recommendation

Maintenance of neutral integrity from our network to our customers' installations is fundamental to the safety of customers' electrical installations. The Australian Energy Market Commission (AEMC) review of metering services has made a recommendation to deploy smart meters to all customers across our network footprint by 2030 and that retailers provide power quality data, inclusive of neutral impedance data. This is a significant step in proactively identifying potentially unsafe conditions at a customer premises often before the customer is aware.

## RELIABILITY AND QUALITY OF SUPPLY – CRITICAL INFRASTRUCTURE INCIDENTS

Table 7 details events where supply was lost to critical infrastructure, which are defined as:

- ▶ Peer group A1, A2, A3 and B hospitals;
- ▶ Road tunnels on motorways that have emergency evacuation systems;
- ▶ Events and buildings where more than 5,000 people could be affected by an outage; and
- ▶ Other community infrastructure determined by the network operator to be of National, State or Regional significance.

**Table 7: A7 Reliability and Quality of Supply – Critical infrastructure incidents**

TYPE OF CRITICAL INFRASTRUCTURE (E.G. HOSPITAL, TUNNEL)	MINUTES OF SUPPLY LOST	CAUSE	CONSEQUENTIAL SAFETY IMPACTS ASSOCIATED WITH SUPPLY ISSUE
Coffs Harbour Hospital	12	14 August 2023 - Switched for safety, Telstra line down	There were no safety impacts reported from this incident
Port Macquarie Base Hospital	48	16 August 2023 - Unknown fault, likely trees blown into assets	There were no safety impacts reported from this incident
Lismore Base Hospital	115	16 September 2023 - Car into HV/LV Pin Pole 9795 (144 Ballina Rd) near 41-L10342. Broken Ties. Pole requires replacement	There were no safety impacts reported from this incident
Port Macquarie Base Hospital	34	23 October 2023 - Koala near 11kV mains, switched for safety and removal	There were no safety impacts reported from this incident
St Helena Tunnel	30	6 June 2024 - Buchholz trip on transformer within zone substation	There were no safety impacts reported from this incident
Port Macquarie Base Hospital	27	27 June 2024 - Vegetation brought conductors down.	There were no safety impacts reported from this incident

We have improved our identification of critical loads in our Distribution Management System to help identify and prioritise those loads that matter the most in the event of an outage. This in turn has resulted in an increase in the number of critical infrastructure loss of supply incidents reported. We expect this to continue as our understanding of critical loads across our network improves.

## Case Study – Strengthening cyber security arrangements

We continued to fortify our cyber security approach during the year, delivering a comprehensive action plan to address regulatory compliance, identity and access management, data protection, incident response and recovery, and enterprise standards and processes. We have introduced cyber security considerations into our enterprise-wide project management practices, complementing education activities to help employees understand their important role in maintaining security.

### NETWORK-INITIATED PROPERTY DAMAGE EVENTS

Table 8 details events where public or network property was damaged, and it is considered that there is a reasonable likelihood that the damage was caused by the network.

**Table 8: A8 Network-initiated property damage events**

DETAIL	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JULY 2020
<b>Third party property (assets including vehicles, buildings, crops, livestock)</b>					
Damage (e.g. Fire, Physical impact or Electrical)	40	43	43	39	44
<b>Network property (including non-electrical assets including vehicles, buildings)</b>					
Damage (e.g. Fire, Physical impact or Electrical)	3	0	0	1	1

## Tier 4 - Control implementation

This section sets out Essential Energy’s performance in planning, implementing, reviewing, and delivering key safety risk controls, as set out in the ENSMS. It is structured as follows:

- ▶ Table 9 details amendments and improvements made to Essential Energy’s suite of Formal Safety Assessments and associated risk treatments during the reporting period
- ▶ Table 10 sets out activities undertaken in connection with design, construction and commissioning work on the Essential Energy network
- ▶ Table 11 sets out activities undertaken and outstanding in relation to asset inspections
- ▶ Table 12 sets out asset ‘corrective action tasks’
- ▶ Table 14 sets out activities undertaken and outstanding in relation to vegetation inspections
- ▶ Table 15 sets out activities undertaken in relation to public electrical safety awareness
- ▶ Table 16 sets out internal audit activities performed on aspects of the ENSMS

- ▶ Table 17 sets out external audit activities performed on aspects of the ENSMS

## AMENDMENTS AND IMPROVEMENTS TO FORMAL SAFETY ASSESSMENTS

We have continued to implement the updated formal safety assessment (FSA) structure proposed in FY2022. The updated formal safety assessment structure consists of 4 formal safety assessments addressing the hazards arising from design, construction, operation, maintenance and decommissioning of the electricity network - Network Assets FSA, Work Impact on Property FSA, Bushfire FSA and Loss of Supply FSA and 2 compliance demonstrations that describe how the workplace health and safety and environmental management systems comply with the requirements of *AS 5577:2013 Electricity network safety management systems*.

We continued with the program of cyclic FSA reviews during FY2024, with a comprehensive review of the Bushfire FSA undertaken. This review has provided a template for future FSAs that articulates the complexity of the system of control for network-initiated fire.

Table 9 describes amendments and improvements to Formal Safety Assessments (FSAs) during FY2024.

**Table 9: A9 Amendments and improvements to Formal Safety Assessments (FSA) or associated risk treatments**

FSA	AMENDMENTS / IMPROVEMENTS
Worker Safety	<p><b>Network Fatal Risk Critical Control review</b></p> <p>The rollout of the Network Fatal Risk (NFR) Critical Controls Framework was completed this year. Tasks and controls were collated using bowties in the TotalSAFE risk management module for all seven NFRs and 10 Safety Business risks. The NFR Critical Controls were rolled out to the business through the electronic Hazard Identification, Risk Assessment and Control (HIRAC) tool and were accompanied by monthly focussed assurance activities through the Site Safety Interaction program and NFR Critical Control posters which are prominently displayed in depots.</p> <p>The updated safety risks and critical controls allow workers to focus on the most important controls while undertaking high-risk work tasks. The regular monthly assurance activities undertaken by operational leaders provide the business with assurance on the effectiveness of control implementation and the data review with relevant subject matter experts mean any identified deficiencies in understanding or implementation can be quickly actioned to increase compliance.</p> <p><b>Health and Wellbeing</b></p> <p>Throughout the 2024 financial year the IGNITE program offerings have been expanded to include implementation of:</p> <ul style="list-style-type: none"> <li>▶ Hazardous Manual Tasks training that was successfully implemented across the EE footprint with a two-year schedule to allow attendance for all employees who perform manual tasks in their roles and are at risk of injury;</li> <li>▶ Health Checks have been rolled out across the organisation. Over 300 health checks have been completed to date, identifying health risk areas for employees to proactively address with their General Practitioner and prevent poor health outcomes;</li> </ul>

FSA	AMENDMENTS / IMPROVEMENTS
<p>Worker Safety</p>	<p><b>Health and Wellbeing (cont.)</b></p> <ul style="list-style-type: none"> <li>▶ Health Screening was implemented in December 2023, providing employees access to reimbursement for up to \$200 per year for an extended General Practitioner consult and any required health screening to further support employees in proactively addressing any health risk areas they may have;</li> <li>▶ Healthy You dietician and exercise physiologist consultations continued through the year with an increase in participation rates in employees having their own personalised health program developed to assist them in achieving their health goals; and</li> <li>▶ All Staff webinars continued to provide all employees with access to leading health information to assist them in proactively managing their health, making positive health behaviour changes and educating them on psychosocial hazards in the workplace and how to best manage these.</li> </ul> <p>In addition to the above IGNITE program offerings, 100 per cent of all people leaders completed Mental Health First Aid training. The intention of this strategic initiative was to increase our people leader’s knowledge around mental ill health to better support employees and reduce stigma. Further to this, Essential Energy was also successful in achieving recognition from Mental Health First Aid Australia as a Skilled Workplace.</p>
<p>Public Safety</p>	<p>At the conclusion of FY2024 the Public Safety Working Group completed all deliverable actions identified in the Public Safety Treatment Plan and risk assessment. The Working Group have proposed to continue the current Public Safety Treatment Plan for 12 months while a total review of the risk assessment and Public Safety Treatment Plan are undertaken.</p> <p><b>Perceptions of electrical risk in agricultural workers</b></p> <p>Our joint initiative with the Centre for Work Health and Safety and Deakin University to investigate the perceptions of electrical risk in agricultural workers continues, with the drafting of a literature review considering recent relevant research into the perceptions of electrical risk in agricultural workers.</p> <p>Deakin University have also conducted a data gathering exercise involving an online survey (n=250 respondents) and generative interviews (n=60 respondents) with participants that have been involved in incidents of contact with electricity networks during agricultural activities.</p> <p>The next steps for this project will be to prepare a report detailing the findings of the survey and interviews and suitable interventions to address any relevant findings. This will be presented to a Stakeholder Reference Group to test the findings and proposed interventions. Once finalised, the report findings will be used to guide policy development and risk analysis.</p> <p><b>Network Assets Formal Safety Assessment</b></p> <p>In FY2024, we completed a cost-benefit analysis of rapid earth fault current limiting (REFCL) in our operating context as a control for public safety risk and network-initiated bushfire risk.</p> <p>REFCL is a ground fault neutralising technology that shifts the voltage ground faulted phase to zero in a very short period reducing any fault current and earth potential rise to virtually zero. This evaluation found that REFCL was not a reasonable treatment in our operating context, or in any reasonably foreseeable future climate scenarios. We will continue to monitor costs and benefits of REFCL reported by other network operators and test for reasonableness.</p>

FSA	AMENDMENTS / IMPROVEMENTS
Protection of property	No update
Loss of supply	<p>We are currently undertaking a cyclic review of our Loss of Supply Formal Safety Assessment and expect this review to be concluded by 31 December 2024.</p> <p><b>Safety consequences of loss of supply</b></p> <p>We have continued to lead the Energy Networks Australia working group investigating the safety consequences of loss of supply. Phase 2 of this project commenced in FY2024, with CSIRO engaged to deliver a project to operationalise the findings of Phase 1 of this project. This project is expected to be finalised in September 2024 with a report detailing the data inputs to an Exposure, Sensitivity and Adaptability model to identify vulnerable populations and a guideline for the operationalisation of the model.</p> <p><b>Implementation of climate impact study findings into ‘business as usual’</b></p> <p>We engaged risk modelling and actuarial consultants to develop a model to estimate the impact of climate change on the rate of failure of assets leading to outages for bushfire, windstorm and flood under RCP4.5 and RCP8.5 in the years 2030, 2050 and 2070. This model was used as an input to the <i>2024-2029 Regulatory Proposal</i> - our source of funding for network renewal and maintenance.</p> <p>With acceptance of the Regulatory Proposal by the Australian Energy Regulator, this climate modelling is now being used to influence our asset models to predict the changing risks posed to our network in the future from climate change. These asset models are used to prioritise replacement investments targeted at maintaining overall reliability, in line with customer preferences, while considering the impacts of climate change on the network.</p> <p><b>Resilience and Reliability investments</b></p> <p>Our <i>2024-2029 Regulatory Proposal</i> also included significant investment in improving the network’s resilience to external events such as fire and flood which have a significant impact on network reliability and customer’s experience. This includes investment in standalone power systems (SAPS), microgrids and community resilience portable generators.</p> <p>We also maintain our ongoing Poor Performing Feeder and Worst Performing Segment programs targeting reliability improvements in worst served areas of the network.</p> <p><b>Cyber Security Plan</b></p> <p>Essential Energy’s Cyber Security Plan has been implemented to improve the protection of our network operating and information technology systems.</p>

## Bushfire

A cyclic review of the Bushfire FSA was completed in FY2024, which built out a comprehensive system of control for network-initiated bushfire hazards. The review identified 49 treatments to reduce bushfire risk across the system of control. Three (3) priorities for treatment were identified:

- ▶ Improvement of control effectiveness,
- ▶ Vegetation management, and
- ▶ Asset inspection.

### **Improve control effectiveness**

Nineteen (19) treatments were identified to improve the effectiveness of controls across the system of control. These treatments will address control effectiveness opportunities for improvement identified through the control evaluation process.

### **Vegetation Management**

There were seven (7) treatments identified that relate to improvements and additional actions that can be taken to manage vegetation adjacent to our electricity network. These treatments include:

- ▶ Evaluation of corridor treatment prioritisation based on fire suppression success,
- ▶ Identification of fall in and grow in risk using digital technologies,
- ▶ Review of network access requirements for vegetation treatment,
- ▶ Review of mechanical plant and electrical safety specifications for vegetation treatment equipment,
- ▶ Evaluation of remote desktop scoping assurance and auditing of vegetation treatment work,
- ▶ Evaluation of specification of more granular vegetation clearance space, and
- ▶ Optimisation of timing and packaging of vegetation works.

### **Asset Inspection**

There were four (4) treatments identified that relate to improvements and additional actions that will be taken to identify asset conditions that lead to failure and subsequent fire:

- ▶ Establish Early Fault Detection pilot (see details below),
- ▶ Investigate and implement process for protection pick up analysis,
- ▶ Investigate use of thermography to identify high impedance joints on rural HV feeders, and
- ▶ Identify practicable methods to assess conductor condition.

### **Establishment of Early Fault Detection pilot**

During this reporting period, we secured funding for a pilot deployment of Early Fault Detection (EFD) devices on our overhead distribution network. The trial will cover a total of approximately 300 kms of polyphase and single wire earth return (SWER) overhead high voltage (HV) power lines.

EFD detects and triangulates partial discharge (PD) that increases due to deterioration of overhead network components. Particular conditions emit a specific PD signature, which is used to alert field operations to the presence of and location of a particular condition for investigation prior to failure. Other network operators have reported that EFD has been successful in identifying overhead network conditions that could lead to a failure and subsequent fire. The detection of equipment deterioration and



subsequent repair prior to failure of a network component will reduce bushfire and public safety risk.

The objective of the pilot will be to:

- ▶ Validate the benefits of EFD on our network to inform the evaluation of a broader deployment business case,
- ▶ Develop and establish protocols for deployment and operation of EFD, and
- ▶ Develop and establish protocols for response to conditions detected by EFD.

With funding secured and a contract established for provision and support, we expect to deploy devices onto our overhead network over FY2025, as part of a trial.

#### **Establishment of FaultTamer HV Expulsion drop out fuse pilot**

During this reporting period we secured funding for a pilot deployment of S&C FaultTamer HV expulsion drop out (EDO) fuses on our network. The trial will be conducted over 4 HV feeders in 2 depot areas.

FaultTamer HV EDO fuses are a current limiting style of fuse that demonstrates in type testing reduced emissions of heated particles during fuse operations. Class A sparkless HV EDO fuses, specified on our HV electricity network, allow emission of some heated particles during fuse operation. In some conditions the emission of these very small particles can lead to fires. As a result of the improved performance of FaultTamer HV EDO fuses against the Class A sparkless type testing compared with our current specified fuse, we expect a reduction in fires resulting from fuse operation.

There may be other benefits arising from the deployment of FaultTamer HV EDO fuses that have not been included in our benefit evaluation.

The objective of the trial will be to:

- ▶ Identify any operational issues arising from the deployment of FaultTamer HV EDO fuses,
- ▶ Identify and quantify any additional benefits arising from the deployment of FaultTamer HV EDO fuses, and
- ▶ Inform the evaluation of a broader deployment of FaultTamer HV EDO fuses in our next regulatory funding proposal.

FaultTamer HV EDO fuses will be deployed on our network in FY2025 with the trial conducted over the remainder of the current regulatory period.

#### **Implementation of Bushfire Risk Priority Area Transition Project**

We have updated bushfire consequence modelling using an industry agreed approach to modelling bushfire consequence and identified that the geographic distribution of fire consequence has shifted from the previous modelling. In light of these findings, a project has been established to determine the actions required to transition the asset and vegetation inspection and maintenance programs that manage bushfire risk in our high bushfire risk areas.

We have developed a transition plan for these programs, with the most material impact being the requirement to cut corridors to remove all vegetation overhanging overhead powerlines in our highest bushfire risk areas (P1 areas). The vegetation transition plan is scheduled for implementation from FY2025 to FY2033.

Implementation of the transition plan is contingent upon funding approval of a contingent project application by the Australian Energy Regulator. Failure to secure full funding would result in a change in the delivery profile of the transition plan.

Transition of our asset management activities has occurred. The annual Pre-summer bushfire inspection program is now occurring in the new P1 areas and our asset management systems have been updated with the new areas, meaning all

FSA	AMENDMENTS / IMPROVEMENTS
	maintenance items have the new bushfire priority zone rating assigned to them based on their location.
Environment	Nil

## DESIGN, CONSTRUCTION AND COMMISSIONING

Table 10 details metrics relating to the design, construction and commissioning of new or altered network assets during the reporting period. This includes 'contestable' designs and installation, undertaken by Accredited Service Providers (ASP), which are reviewed and certified by us.

The greatest opportunity to influence network safety occurs during the planning and design phase of the network lifecycle. These metrics track the safety assessments and audits on those assessments, and safety reviews undertaken on Level 1 (work to extend or increase the capacity of the overhead and underground network) and Level 2 (work on overhead or underground service lines) ASP projects.

**Table 10: A10 Design, construction and commissioning**

PERFORMANCE MEASURE	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JUNE 2020
Designs for which Safety in Design (SiD) Reports have been completed	1,180	913	984	809	1,200
Designs for which Safety in Design (SiD) Reports have been audited	118	91	984	90	58
Contestable designs certified	1,881	1,877	1,947	1,915	1,785
Contestable level 1 project safety reviews performed	398	398	584	447	1,554
Contestable level 2 project safety reviews performed	0	0	9	0	
Project closeout reports completed for contestable projects	1,421	1,220	1,250	1,266	6,432

PERFORMANCE MEASURE	EVENT COUNT – 1 JULY 2023 – 30 JUNE 2024	EVENT COUNT – 1 JULY 2022 – 30 JUNE 2023	EVENT COUNT – 1 JULY 2021 – 30 JUNE 2022	EVENT COUNT – 1 JULY 2020 – 30 JUNE 2021	EVENT COUNT – 1 JULY 2019 – 30 JUNE 2020
Project closeout reports completed for non-contestable projects	3,237	2,906	4,541	3,736	
Project closeout reports audited for contestable projects	0	0	0	0	0
Project closeout reports audited for non-contestable project	775	1,268	4,541	3,736	

Note: In FY2022 it was asserted every Safety in Design Report issued had been reviewed by a Design Team Leader and hence audited; this is a step change in the *Designs for which Safety in Design reports have been audited* measure from the sample approach taken in previous years. We have returned to the sample approach, taking note of the difference between audit and approval.

## INSPECTIONS (ASSETS)

Table 11 details asset inspections undertaken during the reporting period and Table 12 details 'corrective action tasks' addressing conditions identified from inspections undertaken during the reporting period or within previous reporting periods, that fell due during the reporting period. Within the 'corrective action tasks' section of Table 12:

- ▶ Tasks identified are those that were reported during the reporting period,
- ▶ Tasks achieved are those that were completed during the reporting period,
- ▶ Cancelled tasks are tasks that were not required due to equipment being placed out of service,
- ▶ Open tasks are tasks that were identified prior to or during the reporting period, but that did not fall due during the reporting period, and
- ▶ Outstanding tasks are tasks that fell due during the reporting period, but that weren't completed.

**Table 11: A11 Inspections (assets)**

PERFORMANCE MEASURE	INSPECTION TASKS				
	ANNUAL TARGET	ACHIEVED	CANCELLED	OPEN	OUTSTANDING
Zone Substations	10,148	6,958	320	2,446	236
Distribution Substations <sup>13</sup>	25,911	21,887	63	951	749

<sup>13</sup> Excludes OH substations corrective tasks, OH substation corrective tasks are included in the Distribution OH row

PERFORMANCE MEASURE	INSPECTION TASKS				
	ANNUAL TARGET	ACHIEVED	CANCELLED	OPEN	OUTSTANDING
Distribution OH	493,752	423,820	7,348	48,275	22,559
Distribution UG	11,838	10,592	662	98	584
Network standalone power systems (SAPS)	0	0	0	0	0

Inspection tasks may be outstanding due to issues such as wet weather and access constraints. Outstanding inspection tasks are monitored through operational leadership and assurance forums and actioned according to risk.

**Table 12: A11 Asset corrective action tasks**

PERFORMANCE MEASURE	CORRECTIVE ACTION TASKS			
	TASKS IDENTIFIED (ALL CATEGORIES)	ACHIEVED	OPEN	OUTSTANDING
Zone Substations	3,198	2,849	705	244
Distribution Substations	9,922	7,519	18,079	749
Distribution OH <sup>14</sup>	262,081	157,457	527,450	13,549
Distribution UG	17,667	16,220	7,769	428
Network standalone power systems (SAPS)	1	1	0	0

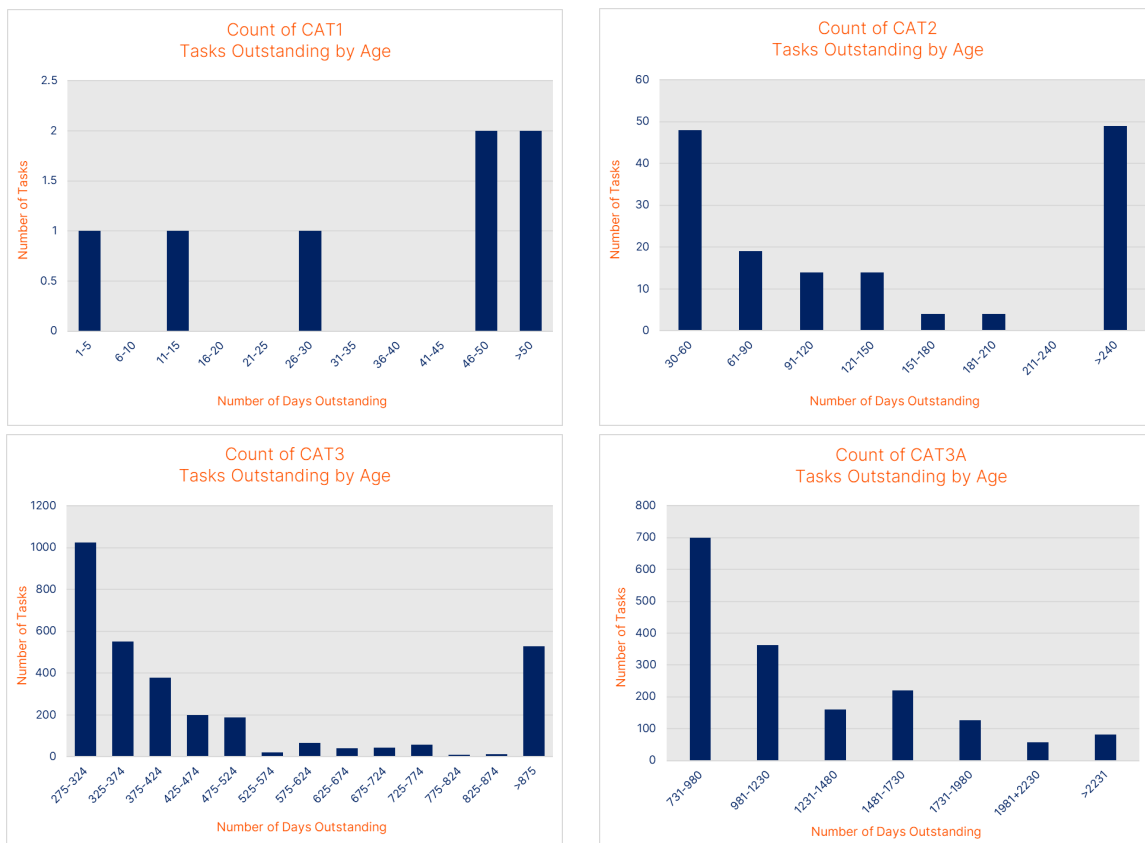
Corrective tasks are assigned a task severity rating and associated completion timeframe in accordance with the severities described in Table 22. Task completion to required timeframes is monitored through operational leadership and assurance forums and prioritised according to risk. Table 13 shows the breakdown of outstanding Distribution OH tasks by severity.

<sup>14</sup> Excludes OH substations corrective tasks, OH substation corrective tasks are included in the Distribution OH row

**Table 13: Breakdown of outstanding distribution OH tasks by severity at 30 June 2024**

SEVERITY	COUNT OF OUTSTANDING TASKS
CAT1 (48 hours)	7
CAT2 (30 days)	152
CAT3 (QLD) (6 months)	85
CAT3 (9 months)	3,115
CAT3A (2 years)	1,709
Other non-safety risk categories	8,481
<b>Total</b>	<b>13,549</b>

The graphs in Figure 6 below show the count of outstanding distribution overhead tasks by age for CAT1, CAT2, CAT3 and CAT3A severity tasks, with the x axis being number of days outstanding, and the y axis being a count of tasks. This demonstrates that we are managing overdue task age. There are tasks in the CAT1, CAT2 and CAT3 that are aged, reasons for this might include scheduling capital works to rectify a condition. Where this is the case, additional controls are implemented such as operational restrictions on switchgear. Additionally, when lower severity tasks are reinspected and reclassified the task due date is taken from the reported date of the original task. We are working to resolve this system issue to provide an accurate view of the outstanding task stack.



**Figure 6 Histograms of task age for outstanding distribution overhead outstanding tasks**

## INSPECTIONS (VEGETATION)

Table 14 details vegetation inspection tasks undertaken during the reporting period. The table includes two types of vegetation inspections; those undertaken using aerial inspection methods and those undertaken using ground-based inspection methods.

Table 14 does not include 119,124 aerial inspections carried out as part of the Pre-Summer Bushfire Inspection program across our P1 bushfire risk areas (parts of our network considered the highest bushfire risk). Table 21 in Part B of this report provides detail of our pre-summer bushfire inspection program.

Other terms used in Table 14 are similar to those used in Table 11.

**Table 14: A12 Inspections (vegetation) Aerial/Ground based**

BUSHFIRE RISK CATEGORY	POPULATION (TOTAL SPANS)	TARGET	ACHIEVED	OUTSTANDING
<b>Aerial</b>				
P1 <sup>15</sup>	0	0	0	0
P2 <sup>16</sup>	0	0	0	0
P3 <sup>17</sup>	0	0	0	0
P4 <sup>18</sup>	0	0	0	0
<b>Total</b>	0	0	0	0
<b>Ground-based</b>				
P1	104,074	44,049	34,064	9,985
P2	368,380	107,960	82,848	25,112
P3	624,083	266,580	213,306	53,274
P4	615,406	603,535	388,906	214,629
<b>Total</b>	1,711,943	1,022,124	719,124	303,000

We have developed and are implementing a vegetation inspection and treatment task backlog delivery plan to address the volume of outstanding tasks we are currently carrying. Delivery of this plan is being monitored closely, both internally and by regular reporting to IPART. The following is an extract from the latest status

<sup>15</sup> Areas considered to be high bushfire risk

<sup>16</sup> Areas considered to be moderate bushfire risk

<sup>17</sup> Areas considered to be low bushfire risk

<sup>18</sup> Areas considered non-bushfire prone

update provided to IPART (as at 30 September 2024) which identifies the progress made with respect to managing the vegetation backlog.

Essential Energy continues work on its Stream 1 plan to eliminate overdue inspection and treatment tasks in high bushfire priority (P1) areas prior to the bushfire season commencement on 1<sup>st</sup> October. Specifically, the plan targets:

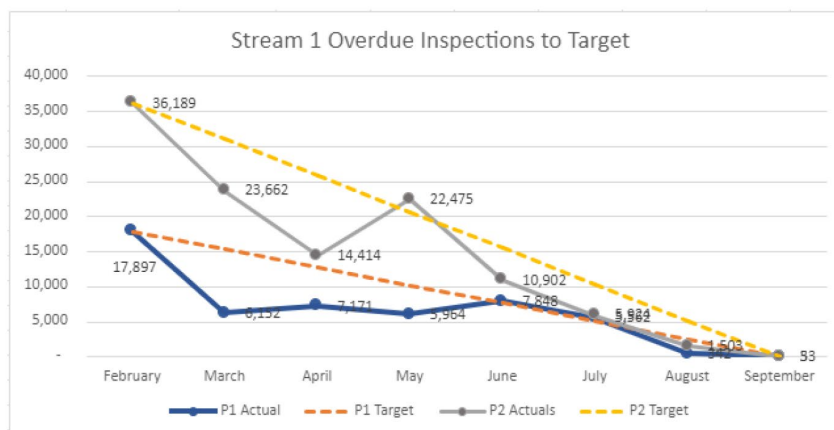
**Stream 1**

- ▶ P1 areas: all overdue inspection tasks, high risk grow-in tasks (A1, A2) and Fall-in tasks completed or in active management by 1 October 2024<sup>19</sup>
- ▶ Pre-Summer Bushfire Inspections (PSBI): all tasks identified from the P1 area flyover inspections (February-April 2024) to be completed or in active management by 1 October 2024
- ▶ P2 areas: overdue Fall-in tasks outstanding to be less than the 5% overdue threshold by 1 October 2024.

Graph 1 - both P1 and P2 overdue inspection tasks were completed by the end of September.

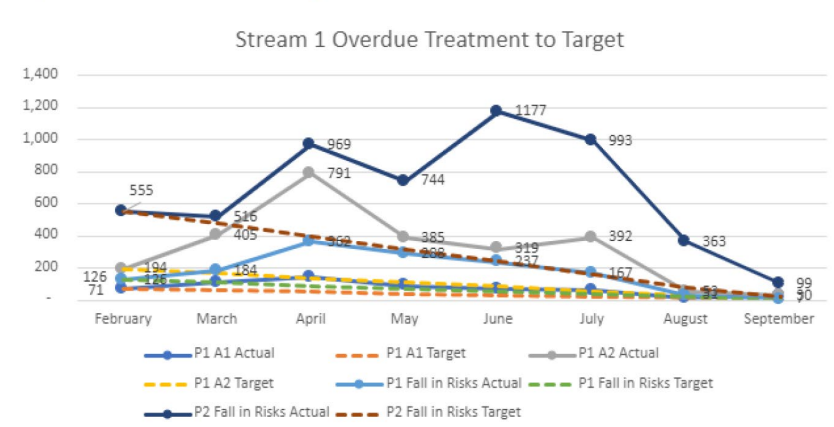
Graph 2 - overdue treatment tasks for Stream 1 have reduced in all categories.

**Graph 1: Stream 1 Overdue Inspections to Target**



Source : EE Veg Management Xugo PowerBI – 30/9/2024

**Graph 2: Stream 1 Overdue Treatment to Target**



Source : EE Veg Management Xugo PowerBI – 30/9/2024

**Figure 7 Excerpt from vegetation management update to IPART**

<sup>19</sup> Active management refers to tasks delayed due to access constraints including wet ground, police escort required etc. and are under close bushfire risk monitoring

## PUBLIC ELECTRICAL SAFETY PLANS AND ACTIVITIES

Table 15 details activities undertaken as part our Public Electrical Safety Awareness Plan (PESAP). This outlines the programs and activities initiated and performed in order to promote public safety awareness and education relating to the electricity network.

**Table 15: A13 Public electrical safety plans and activities**

NETWORK OPERATOR PUBLIC SAFETY PROGRAMS / CAMPAIGNS	DETAILS
<p>Overview – 2023-2024 Public Electrical Safety Awareness Plan (PESAP)</p>	<p>We are committed to the safety of community members across our network area to ensure everyone can live and work safely around the electricity network.</p> <p>Our annual Public Electrical Safety Awareness Plan (PESAP) seeks to raise awareness and understanding of the hazards associated with the electricity network and how to minimise risks to public safety.</p> <p>The Plan targets six key at-risk community segments: general public, agribusiness, building and construction, emergency services, aviation and transport.</p> <p>An analysis of prior year public safety incident data identified three priority areas for behaviour focused public safety campaigns during 2023-24:</p> <ul style="list-style-type: none"> <li>▶ agricultural equipment and machinery contacting overhead powerlines,</li> <li>▶ motor vehicles making contact with the electricity network, and</li> <li>▶ construction machinery contacting the underground electricity network.</li> </ul>
<p>Agribusiness Safety</p>	<p>During the year we focused on increasing network awareness and encouraging safe behaviours in the agricultural sector.</p> <p>We worked with the NSW Farmers Association and agricultural publications to deliver ‘Look up and live’ campaigns and to promote our Aerial Markers program across digital, print and targeted email newsletters. Teams attended the annual NSW Farmers Conference, AgQuip, Henty and Primex events to share safety information with agricultural sector participants.</p> <p>A research partnership with Essential Energy, the Centre for Work Health and Safety - the research arm of SafeWork NSW - is informing our understanding of agricultural worker perceptions and responses to electrical risks. A survey of 250 agricultural workers and 50 interviews commenced in May 2024. The insights gained through this project will help inform future agricultural sector safety campaigns with the intent to reduce agricultural machinery incidents through effective technical and educational interventions.</p>



NETWORK OPERATOR PUBLIC SAFETY PROGRAMS / CAMPAIGNS	DETAILS
General Public Safety	<p>This year's general public campaign focused on motor vehicle safety when coming into contact with an electricity network, with the theme 'Stay. Call. Wait' encouraging people to stay in their vehicle, call triple zero immediately, and wait for emergency services to arrive and give the all-clear to exit their vehicle. The campaign was promoted across outdoor, radio, digital and social media channels.</p> <p>Subsequent community research found 87 per cent of respondents would stay in the vehicle if they came into contact with the electricity network, an improvement on the 2023 result of 82 per cent.</p> <p>We also undertook a range of activities to raise awareness of electricity safety during bushfires, floods and storms across radio and social media.</p>
Building and Construction Safety	<p>To address building and construction sector safety, our 2023-2024 campaign encouraged operators to plan ahead and identify overhead powerline or underground infrastructure locations before starting work. The campaign was promoted through a radio, digital and social media campaign.</p> <p>Enhancing partnerships with industry groups, including the Master Builders Association, to further build engagement with this sector is a continued focus.</p>
Emergency Services Safety	<p>During 2023-2024, we refreshed our communications and educational material focussed toward the Emergency Services and first responders, including informative video content.</p>
Aviation Safety	<p>Measures to improve awareness with aviation operators was incorporated into key agribusiness sector activity, including editorial and website content.</p>
Transport and High Loads Safety	<p>Fact Sheets were refreshed and distributed to educate and inform the industry to be aware of minimum clearances and safe clearances and the availability of tools and resources to support and encourage safety within the transport sector, and those operating with high loads.</p>
Electricity Safety Week	<p>Electricity Safety Week raises awareness of electricity hazards and teaches primary school students how to be safe around electricity. Each September, schools are provided with curriculum-aligned teaching resources developed in collaboration with the Department of Education.</p> <p>In FY2024, 853 schools (94 per cent of primary schools from our network area) registered for the program. Schools benefitted from two new resources, developed jointly with Ausgrid and Endeavour Energy: a 20-minute video-on-demand for the Distance and Rural Technology Learning Platform, and a Scratch Coding project to which Code Club Australia also contributed.</p>

<b>NETWORK OPERATOR PUBLIC SAFETY PROGRAMS / CAMPAIGNS</b>	<b>DETAILS</b>
Community Research	<p>In early 2024, we undertook research of more than 750 customers to garner their level of awareness and understanding of safety around the electricity network, and ascertain the effectiveness of our public safety campaigns. Key insights indicated:</p> <ul style="list-style-type: none"> <li>▶ 97 per cent of customers would contact Essential Energy immediately and stay well clear if they see a fallen powerline.</li> <li>▶ 98 per cent of customers would think that the electricity is still 'live', dangerous, and stay clear if they saw a fallen powerline on the ground.</li> </ul>



Figure 8 Examples of Essential Energy's public safety campaign material

## INTERNAL AUDITS

Table 16 details internal audits performed on any aspects of the ENSMS during the reporting period.

**Table 16: A14 Internal audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)**

AUDIT SCOPE	SUMMARY OF IDENTIFIED NON-COMPLIANCES	SUMMARY OF ACTIONS
<p>An internal audit was conducted on our compliance to the following aspects of <i>AS 5577:2013 Electricity network safety management systems</i>:</p> <p>4.4.2 Resourcing</p>	<p>Partially effective: The management of engineering role competency requirements.</p>	<p>To review the business requirements for demonstrating engineering and other non-field-based competency requirements and develop an action plan.</p>
<p>4.4.3 Management structure</p> <p>4.4.4 Responsibilities, accountability and authorities</p> <p>4.4.5 Training and competency</p> <p>4.4.6 Consultation, communication and reporting</p>	<p>Partially effective: The implementation of <i>CEOP5050 Network Delegation Authority</i>.</p>	<p>Assess the design of <i>CEOP5050 Network Delegations Authority</i> against the defined business requirements and include in the action plan from the abovementioned action.</p>
<p>4.4.7 Emergency preparedness and response</p>	<p>Partially effective: Resourcing limitations are potentially impacting the ENSMS objectives. Audit observations related to the development of an ENSMS performance monitoring dashboard, resource demand planning for customer connections work, and commissioning resources relating to gifted assets connections work</p>	<p>Develop and endorse a Scope of Work for the ENSMS Performance and Bushfire Report dashboard</p>

## EXTERNAL AUDITS

During FY2024 there were three external audits performed:

- ▶ IPART Bushfire Risk Management Audit,
- ▶ Queensland Electrical Safety Office Electricity Safety Management System Initial Audit, and
- ▶ Queensland Electrical Safety Office Electricity Safety Management System Annual Audit.

Table 17 details external audit performance on any aspect of the ENSMS during the reporting period, sets out the findings from these audits, along with the recommendations and agreed actions.



**Table 17: A15 External audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)**

AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
ENSMS (Bushfire Risk Management)	<p>1. The auditor will assess if the implementation of Essential Energy's ENSMS is in accordance with clause 4.4 of <i>AS 5577-2013 Electricity network safety management systems (AS 5577)</i>, by assessing the pre-bushfire season vegetation management outcomes through field observations. In particular, the field observations must:</p> <ul style="list-style-type: none"> <li>a. consist of no less than 60 hours of observations in multiple operational management and vegetation management areas.</li> <li>b. involve both Essential Energy's overhead lines and private aerial consumers mains, with the specific spans to be: <ul style="list-style-type: none"> <li>i. selected by the auditor (for efficiency, spans may be adjacent to each other)</li> <li>ii. on a combination of public and private land</li> <li>iii. within bushfire prone land.</li> </ul> </li> </ul>	<p><b>Finding:</b></p> <p>The field inspections found that Essential Energy's vegetation management process failed to identify and rectify all hazardous vegetation before the start of the bushfire danger period commencing in 2023. Consequently, Essential Energy's implementation of the ENSMS was found to be non-compliant with AS-5577 clause 4.4 regarding the identification and rectification of vegetation encroachments and hazard trees.</p> <p><b>Recommendation:</b></p> <p>Essential Energy should consider what improvements can be made to the vegetation management assurance activities to improve the level of compliance with the vegetation management requirements.</p>	<p>Formal instruction is to be provided to the related vegetation service providers to improve identification of fall-in risk vegetation during inspection, and application of appropriate regrowth allowances during treatment.</p> <p>Due: 21 March 2024</p> <p>Status: Complete</p> <p>"Toolbox talks" or similar style of operational communication to be provided to all Essential Energy and contracted vegetation service provider personnel to consider site and species-specific regrowth expectations when trimming vegetation.</p> <p>Due 15 September 2024</p> <p>Status: Complete</p> <p>Strengthen auditing reporting and include trend analysis on numbers of minimum vegetation clearance encroachments and percentage of vegetation audit failures within bushfire risk assurance dashboard monitoring.</p> <p>Due: 14 June 2024</p> <p>Status: Complete</p> <p>Refresh training and competence assessment program on fall-in hazard identification to be delivered to all persons conducting vegetation inspection</p> <p>Due: 31 October 2024</p>



AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
	<ul style="list-style-type: none"> <li>c. assess whether each span of overhead line has been managed in accordance with Essential Energy's vegetation management standards and/or procedures. This includes an inspection of both grow-in hazards and fall-in hazards.</li> <li>d. take place as soon as practicable from the start of the bush fire danger period applicable to the local government area where the overhead lines being observed are located.</li> </ul>		<p>Status: On track</p> <p>Conduct an Internal Audit (through a third-party provider) of Essential Energy's in-field assurance activities, including the quantity of inspections, sample sizes, methodology and consideration of an additional auditing layer (audit the auditor).</p> <p>Due: 30 November 2024</p> <p>Status: On track</p>



AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
	<ul style="list-style-type: none"> <li>e. be conducted by persons with suitable qualifications and equipment, to the satisfaction of IPART. For example, such a person may have a Certificate II in ESI - Powerline Vegetation Control and qualifications and/or expertise in horticulture and/or arboriculture.</li> </ul>		
ENSMS (Bushfire Risk Management)	<ul style="list-style-type: none"> <li>2. In completing audit scope items above, an observation must also be made to identify and report on any hardware conditions that are visible from the ground (including using binoculars) and represent an immediate bushfire risk, including but not limited to: <ul style="list-style-type: none"> <li>a. conductors not secured to insulators (e.g. tie wires</li> </ul> </li> </ul>	Nil	Nil

AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
	<p>missing or conductors resting on crossarms).</p> <p>b. conductors within clearances of each other, other objects or the ground.</p> <p>c. broken crossarms or missing braces.</p> <p>d. poles with a significant lean (i.e. beyond the network operator's acceptable limits).</p>		
ENSMS (Bushfire Risk Management)	<p>3. The auditor will assess whether Essential Energy has amended and implemented its electricity network safety management system (ENSMS), or is progressing towards amending and implementing its ENSMS, to address the non-compliances identified in the Bushfire Risk Management – independent audit report by CutlerMerz (including any previous outstanding non-compliances), dated 14 March 2023. The auditor's assessment must include a review of Essential Energy's progress against its rectification plan and timeframes.</p>	Nil	Nil





AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
ESMS Initial Audit	All aspects of the ESMS audited in accordance with the Queensland Audit and Governance Guide.	<p>Essential Energy's Electricity Network SMS overview document CEOM8047 does not have a specific section to address Queensland Electricity Entity legislative requirements statements. It is highly recommended that a 'Queensland Entity Requirements' appendix/chapter (refer TABLE NOTES 1.) be added to the document.</p> <p>This section could reference applicable sections of the ESMS overview document to enable utilisation of the document, which has many common ENSMS characteristics, without requiring a separate Queensland Entity requirements document being generated.</p> <p>This section could also provide clarity of identifying Electricity Entity works and responsibilities.</p>	<p>Action:</p> <p>Essential Energy will update CEOM8047 ENSMS Manual to address the characteristics set out in the ESA and ESR.</p> <p>Status: Complete</p>





AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
		<p>While it is noted by the Auditors that Essential Energy is a NSW state-owned electricity infrastructure company owning and</p> <p><i>"... operates small sections of electricity network in Queensland ..."</i>,</p> <p>and the ENSMS is based upon AS5577 (NSW <i>Electricity Supply (Safety and Network Management) Regulation 2014</i> requirement) the QLD Entity legislative requirements statements must be clearly addressed.</p>	



AUDIT SCOPE	IDENTIFIED NON-COMPLIANCES		ACTIONS
	AUDIT CRITERIA	RECOMMENDATION	
ESMS Annual Audit – WHSMS and ENSMS (all aspects)	All aspects of the ESMS audited in accordance with the Queensland Audit and Governance Guide.	Amend Essential Energy's <i>Electricity Network Safety Management System (CEOM8047)</i> overview document to address the issues raised in the <i>Voltex VPE1180-RPT-001-R01 Prescribed Electricity Entity SMS Initial Audit</i> document and progress works for a QLD ESMS accredited auditor to audit the revised document toward Queensland Entity SMS compliance certification.	<p>Action:</p> <p>Essential Energy will update <i>CEOM8047 ENSMS Manual</i> to address the issues raised in the Initial Audit.</p> <p>Essential Energy will have the revised CEOM8047 audited by an accredited auditor.</p> <p>Due 30 March 2024</p> <p>Status: Complete</p>



# Part B – Bushfire Preparedness Report

Part B of the report demonstrates our bushfire preparedness, leading up to the 2024 bushfire season, covering the period 1 October 2023 to 30 September 2024.

Part B is structured as follows:

- ▶ Section 5 describes the bushfire risk profile across our supply area
- ▶ Section 6 identifies the permanent and temporary fire risk declarations by Rural Fire Service and outlines the actions taken in response
- ▶ Section 7 describes the scope of private lines ('aerial consumer mains') on bushfire prone land
- ▶ Section 8 describes the status of our pre-summer bushfire inspections, vegetation and asset maintenance tasks.

## Bushfire risk profile across Essential Energy's supply area

### IDENTIFICATION OF HAZARDOUS BUSHFIRE AREAS

Bushfire prone lands have been identified across our network footprint. The bushfire-prone lands are further segmented into bushfire risk classifications based on scientific bushfire risk modelling. The modelling considers the impact of fires, which may originate from network assets.

Bushfire Risk Priority Indicator classifications (P1, P2, P3, and P4) are applied and determine:

- ▶ Bushfire mitigation work priorities;
- ▶ Pre-summer bushfire inspection (PSBI) requirements;
- ▶ Investment program priorities; and
- ▶ Operational procedures and practices.

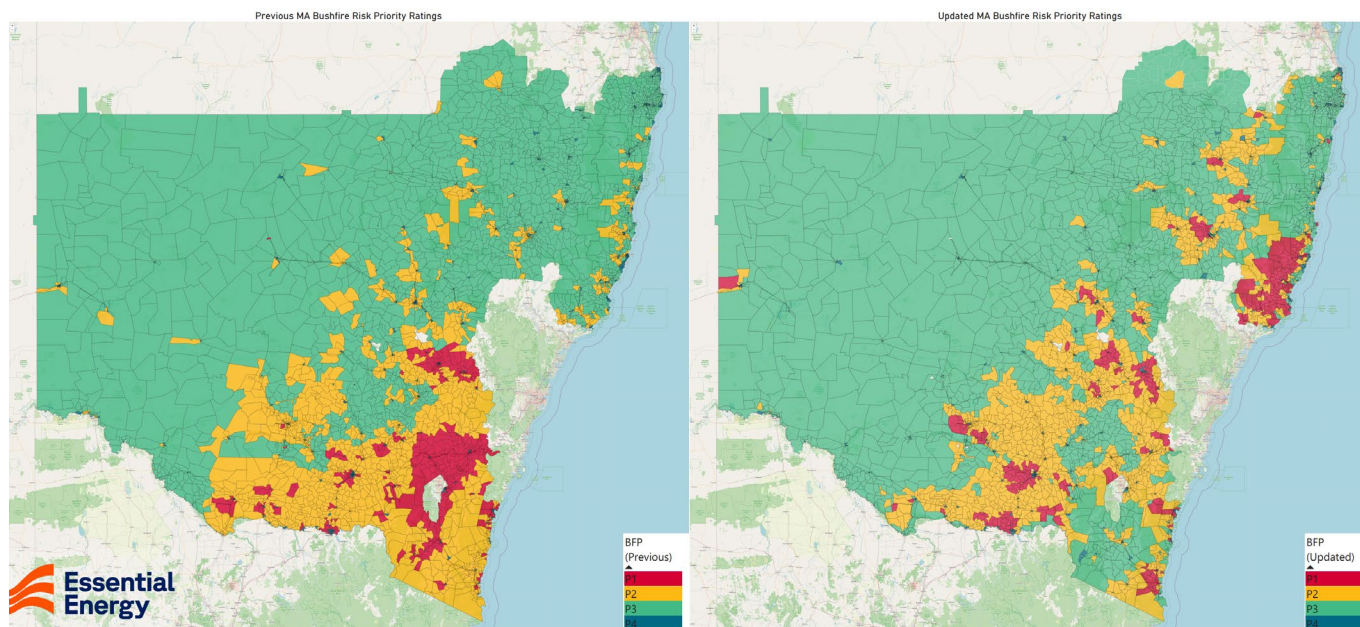
We have partnered with the University of Melbourne to update our bushfire consequence model, incorporating the industry agreed consequence values identified by Project IGNIS. This has triggered a reworking of our Bushfire Risk Priority Indicator zones which is managed by the Bushfire Priority Zone Transition (BPT) Project.

The Bushfire Risk Priority Indicator classifications are defined in Table 18.

**Table 18: Bushfire Risk Priority Indicator classifications**

BUSHFIRE RISK PRIORITY INDICATOR CLASSIFICATION	DEFINITION
P1	High risk severity
P2	Moderate risk severity
P3	Lower risk severity
P4	Non-bushfire prone

The Bushfire Priority Zone Transition (BPT) project aims to reduce bushfire risk and improve network bushfire safety. This will be achieved using revised spatial consequence mapping to reprioritise those areas of the network that represent the highest consequence of a network-initiated fire, and builds on the climate change modelling completed as part of the recent regulatory submission.



**Figure 9 Previous and updated Bushfire Risk Priority Indicator classification across our footprint**

The transition consists of three key areas:

1. Transition of the PSBI program to the updated P1 areas
2. Transition of the Assets and Operations teams (and supporting IT systems) to the updated bushfire priority allocated areas
3. Transition of vegetation management, including P1 clear-to-sky vegetation compliance in the updated P1 areas.

Internal and external stakeholder engagement, including with regulators, is underway. Information about the Bushfire Priority Zone Transition is provided on Essential Energy's website, including a facility for public feedback and questions.

[Bushfire mitigation projects | Essential Engagement \(essentialenergy.com.au\)](https://essentialenergy.com.au)

Bushfire Prevention Strategy provides an over-arching approach to managing bushfire risk. It sets out, amongst other things, the inter-relationship with the ENSMS and associated risk controls and related plans.

One of those plans is the Bushfire Risk Management Plan, which describes the activities undertaken to mitigate potential fire ignition. The Plan is published online ([essentialenergy.com.au](https://essentialenergy.com.au)) and public feedback is welcomed and included.

We use intelligence obtained from national natural hazard agencies such as the Australian and New Zealand National Council for fire and emergency services (AFAC) to inform the operational posture for an upcoming fire season. An overview of the upcoming season is provided in section 5.2 below.

## Commentary from AFAC for forthcoming bushfire season

Figure 10 shows the fire outlook for spring 2024, with our electricity network footprint having average bushfire risk for the lead into the bushfire season.



### Seasonal Bushfire Outlook Spring 2024



Figure 10 AFAC spring 2024 fire outlook (Source: AFAC)

## Permanent / temporary declaration of areas by RFS and network operator's actions

Fire season district declaration notifications from NSW RFS are monitored closely by Essential Energy.

It is noted that in our network footprint, 7 local government areas were declared on 1 August 2024, a further 16 were declared on 1 September 2024, with the remaining declared on the 1 October 2024.

Essential Energy undertakes a number of actions in preparation for the bushfire season. These include:

- ▶ Producing a pre-fire season communication plan for our employees. For example, the primary communications included information on:
  - › the early start to the Bushfire Danger Period;
  - › the procedures in place to be followed in periods of higher fire danger;
  - › how to enrol in receiving SMS Total Fire Ban updates; and

- › information on access to the RFS Hazards Near Me app, and where to contact for further information.
- ▶ A briefing on the upcoming fire season is conducted with key business leaders. This includes expected early starts to the fire danger period and the research from the Bureau of Meteorology (BOM), Australian and New Zealand National Council for Fire and Emergency Services (AFAC) and Natural Hazards Research Australia (NHRA). This provides an opportunity to refresh staff awareness of the relevant Essential Energy policies for days of elevated fire risk.
- ▶ Issuing an Essential Energy Safety Brief to employees on the early start to the fire season to ensure appropriate risk mitigation measures are put in place.
- ▶ Monitoring and reviewing of research into fires and the changing climatic conditions via relationships with organisations such as the BOM, AFAC, NHRA and universities.
- ▶ Conducting regular operational Bushfire Preparedness meetings to assess maintenance task priorities, including prioritisation of tasks associated with the annual network Pre-Summer Bushfire Inspections in high fire risk areas.
- ▶ Pre-season briefing presentations from NSW RFS management to key managers and senior leaders, including seasonal outlooks.

## Aerial consumer mains on bushfire prone private land (HV and LV)

### Low voltage (LV) private lines

Our Asset Inspectors undertake regular ground-based patrols of LV private lines as part of routine network asset inspections. Customers are notified of any maintenance tasks identified on a private line.

As an example, in the Part B reporting period 2023-2024, we inspected 28,586 private poles resulting in the identification of 1,529 private maintenance tasks that required follow up notification and consultation with our customers.

We have a dedicated private lines team that manages customer engagement regarding notifiable tasks to ensure safety related matters are dealt with. Hardship arrangements are available for customers who may have limited financial means to deal with the costs of maintenance of private lines.

We have processes in place to regularly review private line tasks to ensure they are correctly classified as private tasks and customers receive the appropriate information to deal with maintenance of their assets.

### High voltage private lines

We communicate annually with High Voltage Customers (HVCs) connected to our network about their obligations to implement a suitable safety management system or plan. This includes drawing specific attention to their obligation to maintain private electrical installations such that they mitigate the risk of these assets becoming a source of bushfire ignition.

### Activities undertaken to manage the risk of aerial consumer mains on bushfire prone private land

Table 19 details the activities undertaken to manage the risk of aerial consumer mains on bushfire prone private land. This is broken into performance measures describing activities relating to LV private lines and HVCs.

**Table 19: B1 Aerial consumer mains on bushfire prone private land (HV and LV)**

PERFORMANCE MEASURE	EVENT COUNT – 1 OCTOBER 2023 – 30 SEPTEMBER 2024		EVENT COUNT – 1 OCTOBER 2022 – 30 SEPTEMBER 2023		EVENT COUNT – 1 OCTOBER 2021 – 30 SEPTEMBER 2022		EVENT COUNT – 1 OCTOBER 2020 – 30 SEPTEMBER 2021		EVENT COUNT – 1 OCTOBER 2019 – 30 SEPTEMBER 2020	
	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL
LV private lines checked by the network operator	30,043	28,586	23,271	28,562	25,195	22,250	27,330	22,549	23,494	23,478
Number of directions for bushfire risk mitigation issued to LV customers by the network operator	N/A	1,529	N/A	1,439	N/A	1,460	N/A	1,266	N/A	1,492
Number of directions for bushfire risk mitigation issued to LV customers by the network operator that have exceeded the timeframe for rectification in the direction notice and remain unresolved	N/A	44	N/A	89	N/A	121	N/A	212	N/A	212

PERFORMANCE MEASURE	EVENT COUNT – 1 OCTOBER 2023 – 30 SEPTEMBER 2024		EVENT COUNT – 1 OCTOBER 2022 – 30 SEPTEMBER 2023		EVENT COUNT – 1 OCTOBER 2021 – 30 SEPTEMBER 2022		EVENT COUNT – 1 OCTOBER 2020 – 30 SEPTEMBER 2021		EVENT COUNT – 1 OCTOBER 2019 – 30 SEPTEMBER 2020	
	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL
HV customers <sup>20</sup> (metering point count) advised to undertake pre-season bushfire checks in accordance with ISSC 31	242	278	218	254	198	245	189	192	128	128
HV customers (metering point count) providing statements of compliance with ISSC 31	278	271	254	227	245	223	192	189	128	106
HV customers (metering point count) requiring additional risk mitigation prior to the start of the reporting year	N/A	7	N/A	27	N/A	22	N/A	3	N/A	22

<sup>20</sup> For this section HV customers includes load and generator customers



PERFORMANCE MEASURE	EVENT COUNT – 1 OCTOBER 2023 – 30 SEPTEMBER 2024		EVENT COUNT – 1 OCTOBER 2022 – 30 SEPTEMBER 2023		EVENT COUNT – 1 OCTOBER 2021 – 30 SEPTEMBER 2022		EVENT COUNT – 1 OCTOBER 2020 – 30 SEPTEMBER 2021		EVENT COUNT – 1 OCTOBER 2019 – 30 SEPTEMBER 2020	
	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL	TARGET	ACTUAL
HV customers (metering point count) where additional risk mitigation has been completed prior to start of the reporting year	N/A	6	N/A	27	N/A	22	N/A	3	N/A	0

The status of the 44 outstanding private LV tasks reported in row 3 of Table 19 is shown below. We actively manage the progress of these tasks up to and throughout the statutory Bushfire Danger Period.

**Table 20: Outstanding private LV task status**

STATUS	COUNT OF TASKS
ASP engaged and completion date confirmed	6
ASP engaged and no completion date confirmed	10
Notified that the task is complete, awaiting documentation from ASP/EC <sup>21</sup>	3
Essential Energy staff to visit to verify completion	3
Awaiting completion by Essential Energy	5
No ASP engaged	17
<b>TOTAL</b>	<b>44</b>

## Case Study - Pre-Summer Bushfire Inspections



**Figure 11 Drones are used to inspect assets as a part of our pre-summer bushfire inspection program**

In the window between the storm season (mid to late summer) and the bushfire season (late spring and summer), we conduct a predominately aerial inspection of the highest bushfire risk areas of our electricity network. Our Pre-Summer Bushfire Inspections cover our P1 bushfire risk area – approximately 8% of our network – and serve to supplement our cyclic asset and vegetation inspections in preparation for bushfire season.

The purpose of these inspections is to identify powerline assets and vegetation conditions that could subsequently lead to a bushfire ignition. Identified asset conditions with a near term risk of leading to failure, and identified vegetation tasks are addressed prior to the commencement of the statutory Bushfire Danger Period.

<sup>21</sup> Electrical contractor

# Bushfire inspections, vegetation and asset maintenance tasks

We undertake specific preparation activities ahead of the bushfire season. Tables 21 – 25 provide a summary of the leading indicators of bushfire preparedness ahead of the bushfire season. These indicators provide an insight into our preparations for the upcoming bushfire season and the discipline applied to the management of tasks that could impact the performance of the electricity network.

Table 21 describes the status of pre-summer bushfire inspections, predominately undertaken via aerial inspection methods and with inspection status as described in Table 14.

**Table 21: B2 Pre-summer bushfire inspections**

PRE-SUMMER BUSHFIRE INSPECTIONS	POPULATION (POLES)	TARGET	ACHIEVED	OUTSTANDING
Inspections	119,124	119,124	119,124	0

Table 22 describes the status of vegetation tasks as of 30 September 2024.

For Table 22 to Table 24 the following definitions apply:

- ▶ Identified – tasks that are identified through the Pre-Summer Bushfire Inspection program and other inspection programs in P1 bushfire risk priority areas;
- ▶ Achieved – identified tasks that have been completed;
- ▶ Open – identified tasks that are not yet complete, but are within the rectification timeframes for the task; and
- ▶ Outstanding – identified tasks that are not yet complete and exceed the rectification timeframes for the task. Tasks that have been identified through the Pre-Summer Bushfire Inspection program shall be completed prior to the commencement of the statutory Fire Danger Period.

Vegetation / asset task categorisation and bushfire risk priority area categorisation is used to prioritise vegetation / asset task completion to reduce the likelihood of vegetation contact with the network or asset failure.

The commentary relating to the delivery and monitoring of the vegetation inspection and treatment program that accompanies Table 14 applies to delivery and monitoring of vegetation treatment tasks.



**Figure 12 Powerlines and vegetation - balancing risk, cost, and amenity**

**Table 22: B3 Vegetation tasks**

BUSHFIRE RISK PRIORITY CATEGORY	STATUS	ENCROACHMENT CLASSIFICATION				FALL IN RISK TREES <sup>22</sup>
		A1 <sup>23</sup>	A2 <sup>24</sup>	A3 <sup>25</sup>	A4 <sup>26</sup>	
P1	Identified	589	2,047	4,248	6,699	776
	Completed	552	2,013	3,391	5,318	664
	Open	6	4	95	82	105
	Outstanding	31	30	762	1,299	7
Total	Identified	589	2,047	4,248	6,699	776
	Completed	552	2,013	3,391	5,318	664
	Open	6	4	95	82	105
	Outstanding	31	30	762	1,299	7

Table 23 shows the status of the vegetation tasks identified through the PSBI program. Of the 5 outstanding tasks, 1 remains open whilst we investigate design options to move the powerline. Note that this year’s PSBI program covered our previous and updated Bushfire Risk Priority Areas (refer Figure 9), all vegetation tasks identified through the PSBI program were treated similarly regardless of the reported Bushfire Risk Priority Area rating.

**Table 23 Status of vegetation tasks identified through the PSBI program**

BUSHFIRE RISK PRIORITY CATEGORY	PRE-SUMMER BUSHFIRE INSPECTION VEGETATION TASK STATUS			
	IDENTIFIED	ACHIEVED	OPEN	OUTSTANDING
P1	260	259	0	1
P2	355	351	0	4
P3	105	105	0	0
P4	43	43	0	0

<sup>22</sup> Fall in risk trees are blow-in/fall-in vegetation hazards as defined in ISSC3

<sup>23</sup> A1 vegetation has encroached as far as 75-100% into the minimum vegetation clearances, as defined in *ISSC3 Guide for the Management of Vegetation in the Vicinity of Electricity Assets* (ISSC3)

<sup>24</sup> A2 vegetation has encroached as far as 50-75% into the minimum vegetation clearances, as defined in ISSC3

<sup>25</sup> A3 vegetation has encroached as far as 25-50% into the minimum vegetation clearances, as defined in ISSC3

<sup>26</sup> A4 vegetation has encroached as far as 0-25% into the minimum vegetation clearances, as defined in ISSC3

Table 24 details the status of asset tasks identified through the Pre-summer Bushfire Inspection Program and other inspection programs as of 30 September 2024.

Our Bushfire Risk Management Plan requires that in P1 Bushfire Risk Priority Areas, asset tasks identified through the PSBI program are completed prior to the statutory Bushfire Danger Period and asset tasks identified through other inspection programs in P1 bushfire risk priority areas are completed within specified timeframes.

**Table 24: B4 Asset tasks**

BUSHFIRE RISK PRIORITY CATEGORY	STATUS	CAT 1 <sup>27</sup>	CAT 2 <sup>28</sup>	CAT 3 <sup>29</sup>	CAT 3A <sup>30</sup>	CAT 4 <sup>31</sup>	TOTALS
P1	Identified	1,101	720	8,799	3,781	5,398	19,799
	Completed	1,081	657	4,280	2,382	3,178	11,578
	Open	0	33	5,504	2,544	13,201	21,282
	Outstanding	0	19	371	181	895	1,466
Total	Identified	1,101	720	8,799	3,781	5,398	19,799
	Completed	1,081	657	4,280	2,382	3,178	11,578
	Open	0	33	5,504	2,544	13,201	21,282
	Outstanding	0	19	371	181	895	1,466

Table 25 shows the tasks that we identified through our PSBI program. These tasks are a subset of the tasks shown in Table 24. Note that identified tasks in this table may not sum to the values entered in completed, open and outstanding tasks cells due to tasks being cancelled.

<sup>27</sup> CAT 1 (Emergency) task to rectify asset condition that presents an immediate risk to safety, should be rectified within 48 hours

<sup>28</sup> CAT 2 (Urgent) task to rectify asset condition that is expected to deteriorate rapidly to present a risk to safety, should be rectified within 1 month

<sup>29</sup> CAT 3 (Risk – near term) task to rectify asset condition that is expected to deteriorate within the near term and present risk to safety, should be rectified within 9 months

<sup>30</sup> CAT 3A (Risk – medium term) task to rectify asset condition that is expected to deteriorate within the medium term, or tasks that present a low risk of failure, but present a high consequence of failure, should be rectified within 2 years

<sup>31</sup> CAT 4 (Condition assessment) tasks that present a low risk within the reassessment period (4.5 years)





**Table 25: Status of asset tasks identified through PSBI program**

BUSHFIRE RISK PRIORITY CATEGORY	STATUS	CAT 1	CAT 2	CAT 3	CAT 3A	CAT 4	TOTALS <sup>32</sup>
P1	Identified	13	71	518	3	0	605
	Completed	12	67	388	1	0	468
	Open	0	0	0	0	0	0
	Outstanding	0	0	110	2	0	112
P2	Identified	0	0	16	0	0	16
	Completed	0	0	15	0	0	15
	Open	0	0	0	0	0	0
	Outstanding	0	0	3	0	0	3
Total	Identified	13	71	534	3	0	621
	Completed	12	67	403	1	0	483
	Open	0	0	0	0	0	0
	Outstanding	0	0	113	2	0	115

A forced landing of a fixed wing aircraft engaged in our PSBI program resulted in our decision to suspend fixed wing aerial inspections for this year's PSBI program in the interest of the safety of the pilots, observers, and the public. This decision required a rapid pivot to alternative inspection techniques, which were conducted predominantly by line-of-sight drone. Standing up the alternative program resulted in a delayed delivery of the inspection program, leaving less time prior to the statutory Fire Danger Period to complete any tasks identified.

In addition to the delays introduced in the inspection program, we are currently experiencing delays in our works program introduced by Protected Industrial Action whilst we negotiate our Enterprise Agreement with our workforce. We have negotiated with the relevant unions to secure an agreement to exclude tasks identified through the PSBI program from any Protected Industrial Action. We forecast that the 113 outstanding CAT3 tasks will be completed by the end of October 2024.

Note that identified tasks in this table may not sum to the values entered in completed, open and outstanding tasks cells due to tasks being cancelled.

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