



Annual Electricity Network Safety Management System Performance Report

31 October 2023

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Junayd Hollis
Group Executive - Customer, Assets & Digital

Annual Performance Reporting – ENSMS

Acknowledgment of Country

Ausgrid acknowledges the Traditional Custodians of the lands where we work and live, and we pay our respects to the elders past, present and emerging. We recognise the unique cultural and spiritual relationship, and celebrate the contributions of First Nations peoples, to Australia.

Introduction

The purpose of the 2023 Annual Performance Report for the Ausgrid Electricity Network Safety Management System (ENSMS) is to provide the Independent Pricing and Regulatory Tribunal (IPART), the public, and our customers with an overview of how we have met our ENSMS objectives. This report fulfills the requirements outlined in the IPART Electricity Networks Reporting Manual (September 2022).

The information regarding the performance of Ausgrid’s ENSMS has been prepared in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014 (ESSNM). It is intended to assist stakeholders, including our customers and the public, to assess Ausgrid’s performance against its ENSMS.

The report is divided into two sections:

- Part A covers our safety performance from 1 July 2022 to 30 June 2023.
- Part B focuses on bushfire preparedness activities conducted between 1 October 2022 and 30 September 2023.

These sections have distinct timeframes to align with financial and fire season considerations, respectively.

Note: please refer to the glossary section for concise definitions and explanations of key terms, acronyms, and specialised vocabulary used within the content.

Context

Ausgrid manages and operates a network of substations, powerlines, underground cables and power poles spanning 22,275 square kilometres across Greater Sydney, the Central Coast and the Hunter Valley. Each day, we build, operate and maintain this distribution network to provide a safe and reliable energy supply to serve 1.8 million households, small and large business customers, and those who rely on and benefit from their energy supply.

Background

Ausgrid’s electricity infrastructure plays a vital role in our daily lives, so ensuring its safety is of the utmost importance. This responsibility lies at the core of what Ausgrid does.

Electricity networks come with potential safety risks that must be managed carefully. Ausgrid is committed to conducting its business in a manner that minimises the risk its assets, operations and activities pose to the health and safety of employees, contractors, visitors and the community. Managing safety risk is achieved through an integration of the Asset Management System (AMS), Health and Safety Management System (HSMS), Environment Management System (EMS), Electricity Network Safety Management System (ENSMS), processes and work practices, as well as public engagement and awareness programs. Ausgrid strives to be an industry leader by embedding a learning culture and adapting to changing operating environments and emerging risks.

We are committed to transparency, and promptly report all incidents to our industry regulator, IPART. The collection of incident data throughout the year provides us with a comprehensive overview of our safety performance. The performance indicators outlined in this report include proactive measures (indicating future performance) and reactive measures (indicating past performance) that reflect the safety of our electricity network. These metrics are in line with the expectations set by our regulator. Safety is our priority, and we are committed to keeping our electricity network secure for everyone in the community.

Yours sincerely,

Junayd Hollis
Group Executive - Customer, Assets & Digital

Your input matters

At Ausgrid, we value your input. We have developed this report to be easily accessible and comprehensible for our stakeholders and community members. If you have suggestions on how we can further improve the report, we encourage you to share your feedback by submitting an enquiry through the ‘Enquires and Complaints’ option at ausgrid.com.au/Contact-Us. Additionally, report any electrical emergencies promptly by calling 13 13 88.



A. Annual Performance Reporting – ENSMS

Part A is Ausgrid’s response to the reporting requirements in Appendix A – Annual performance reporting framework of the IPART Electricity Networks Reporting Manual – Safety management system performance measurement. This section includes the current reporting period performance measurement data for the period 1 July 2022 to 30 June 2023 (current reporting period). We have provided data for the previous periods aligned with financial years where it has been possible to do so (some measures have been impractical to shift to financial year reporting in historical periods and have been noted through the report).

Part A reports against a framework of safety performance indicators defined within the IPART Electricity Networks Reporting Manual as per Figure 1.

The information regarding the performance of Ausgrid’s ENSMS has been prepared in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014 (ESSNM). It is intended to assist stakeholders, including our customers and the public, to assess Ausgrid’s performance against its ENSMS.

Part A is structured around the four ‘Tiers’ defined in Figure 1 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)

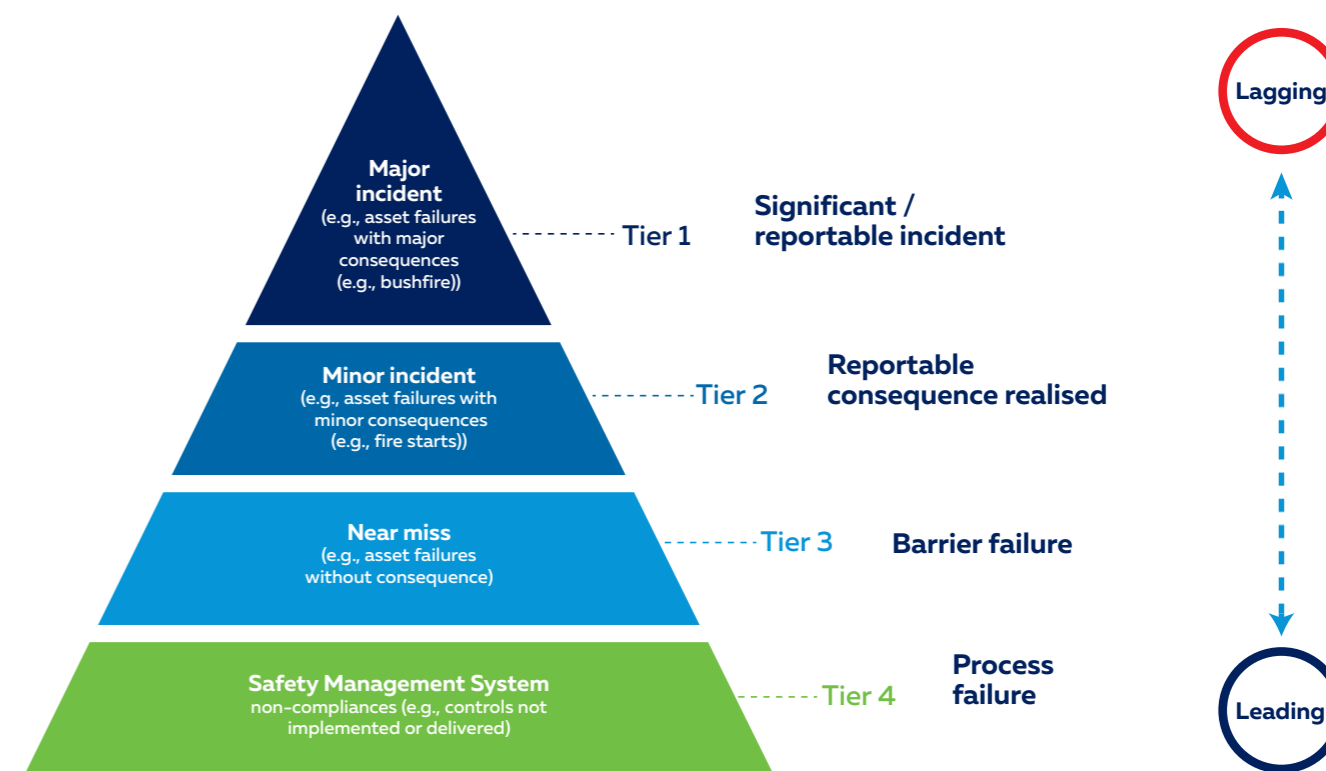


Figure 1 IPART's safety performance monitoring framework

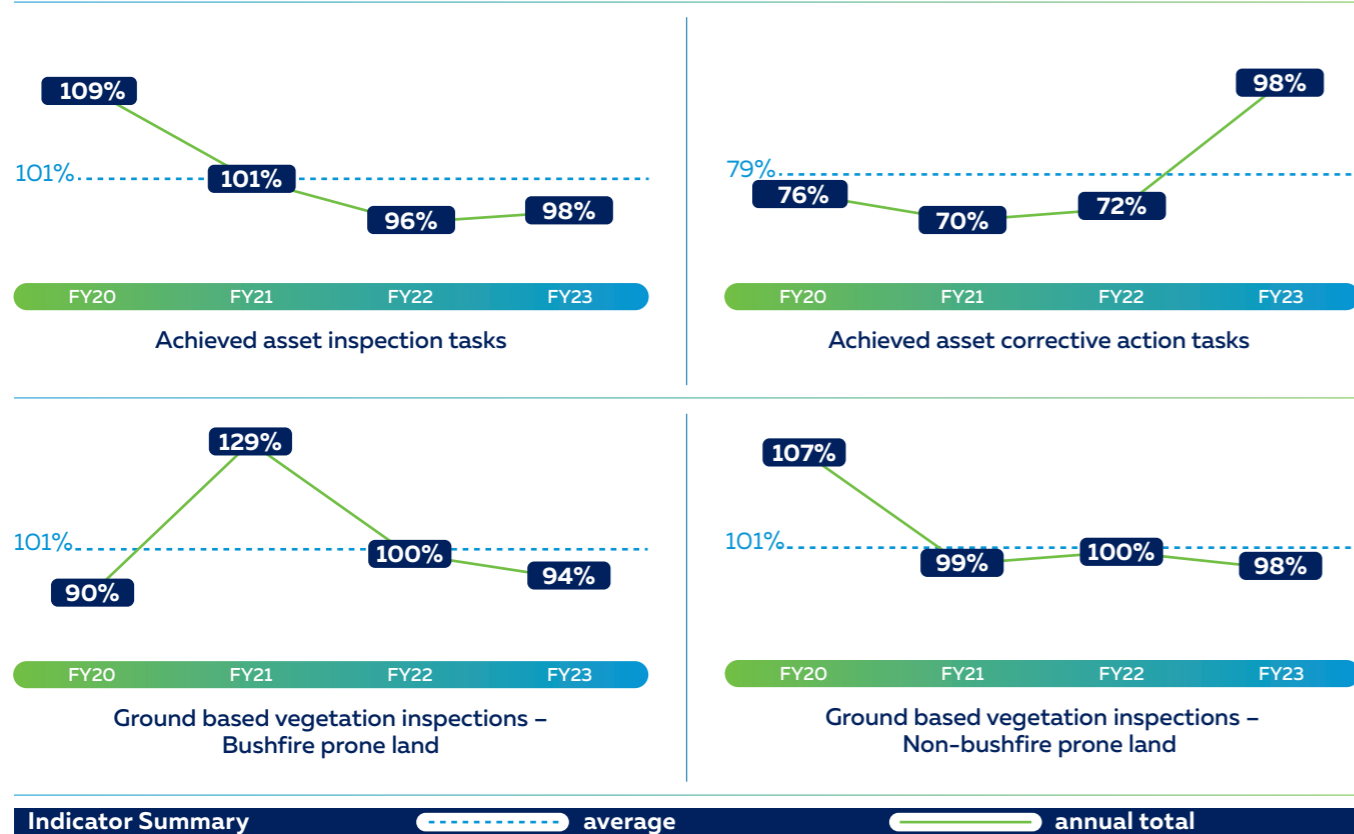
Part A – Summary

Our safety performance reflects our commitment to safety. We will provide a detailed analysis of specific performance areas and describe the actions taken to address challenges.



Indicator Summary average annual total

Indicator Summary average annual total



In 2022, Australia encountered an extraordinary year marked by a series of unprecedented extreme events.¹ The eastern region of Australia, including Ausgrid’s supply area, experienced severe rainfall, largely driven by the influence of the third consecutive La Niña event. The prolonged, intense rainfall broke numerous daily, monthly, and yearly flood and rainfall records.

In response to an electricity-related fatality in March 2022 caused by flood waters outside of Ausgrid’s network, we took proactive measures to raise awareness and educate the public about both general electrical safety and specific safety precautions during flooding. Our social media messaging now includes the message to ‘Be cautious of underground conduits and pipes, as they may contain live cables’, especially in response to anticipated flooding events. In addition, we updated installation standards to prevent water-related issues, collaborated with the Service and Installation Rules of NSW Management Committee to provide guidance on legacy installations (particularly those susceptible to flooding) and refined emergency management procedures to proactively de-energise network equipment during extreme flooding.

¹ Gillet et al., The State of Weather and Climate Extremes 2022, ARC Centre of Excellence for Climate Extremes, 2023. <https://climateextremes.org.au/stateof2022/>



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, or injuries to multiple people due to electricity, or network equipment and apparatus. Major incidents also include incidents resulting in significant loss of property including network-caused bushfires, as well as significant power outages affecting reliability and power quality.²

In FY23, there were no major incidents involving people or property. However, there were six incidents classified as major reliability and power quality incidents, which is an increase from four in FY22. These six incidents occurred mainly in the Central Coast and northern Sydney areas and were all attributed to extreme weather events. The increasing frequency of these weather events, along with the increasing dependence on electricity in our community, means Ausgrid plays a key role in supporting the resilience of communities disproportionately affected by climate change.

Table A.1 Major incidents

ESSNM Objective Population		Description of each major incident reported under the incident reporting requirement
Safety of members of the public		No recorded values in the current reporting period
Safety of persons working on network		No recorded values in the current reporting period
Protection of property	Third party property	No recorded values in the current reporting period
	Network Property ^a	No recorded values in the current reporting period
Safety risks arising from the protection of the environment (for example, preventing bushfires that may be ignited by network assets)		No recorded values in the current reporting period
Safety risks arising from the loss of electricity supply ^b		<p>On July 3, 2022, the east coast lows and low pressure trough weather systems caused incidents and interruptions that resulted in widespread adverse impacts or disruptions to the community within the Central Coast Local Government Area (LGA).</p> <p>On July 5, 2022, a network incident occurred due to adverse weather conditions, including damaging winds and heavy rainfall that resulted in widespread adverse impacts or disruptions to the community in Pennant Hills and Hornsby areas. This incident included a supply interruption from the failure of the high voltage overhead network lasting more than 2 hours to a hospital within the Hornsby Shire Council area.</p> <p>On January 5, 2023, a failure of the high voltage overhead network within the Central Coast LGA caused a supply interruption to part of a hospital lasting more than 2 hours.</p> <p>On January 29, 2023, an overhead 33kV network feeder experienced an unplanned outage of more than 2 hours at a water supply facility located in the Central Coast LGA. The interruption was caused by an unidentified issue, and the challenging terrain and adverse weather conditions made patrolling the feeder difficult.</p> <p>On February 9, 2023, network disruptions occurred during stormy conditions, leading to the classification of a Major Network Incident under Ausgrid's incident management system. This classification was due to the adverse impact or disruption caused to the community within the Sydney and Central Coast areas.</p> <p>On February 18, 2023, customers across Greater Sydney and the Central Coast experienced interruptions during the peak of a widespread storm that saw winds of up to 70 km/h at Nobbys Beach, Newcastle. Approximately 30,000 customers were still experiencing a loss of supply at 9 pm that evening.</p>

^a Network property losses are not reportable under IPART's Electricity Networks Reporting Manual - Incident Reporting requirements. For the purpose of this Reporting Manual, a Network Operator must report each event in which losses exceed \$500,000 in relation to damage caused to electricity works as defined in the Electricity Supply Act 1995.

^b As defined for major reliability incidents in IPART's Electricity Networks Reporting Manual - Incident Reporting.

² The IPART Electricity Networks Reporting Manual - Incident Reporting is available on the IPART website at www.ipart.nsw.gov.au/Home/Industries/Energy/Energy-Networks-Safety-Reliability-and-Compliance/Electricity-networks/Electricity-Networks-Reporting

³ The Ausgrid Resilience Framework can be viewed at www.ausgrid.com.au/About-Us/Future-Grid/Climate-Change-Resilience

⁴ Read more about the Merriwa Microgrid trial at www.ausgrid.com.au/About-Us/Future-Grid/Merriwa-Microgrid



Merriwa Microgrid Innovation Trial

Community engagement is crucial to determining the right approach and technology to minimise the impacts of extreme weather events on our communities. Increasing temperatures mean more extreme weather events, and this in turn increases the risk of unplanned power disruptions. We have and will continue to work with communities to understand their needs and test our Resilience Framework, trial new power generation, storage and technologies to deliver more resilient and reliable local power supply.³

A microgrid is a small network of power generation, storage and control technologies that are designed to supply a small group of consumers with electricity while operating independently of the central grid. A microgrid can operate autonomously when power supply from the main grid is disrupted by extreme weather events or is otherwise unavailable.

We are investing in a microgrid trial as part of our commitment to support local people and communities during planned and unplanned outages.⁴ The microgrid will power a community hub which will provide back-up power, essential support services and a meeting point during disruptive events.

In November 2022, we held two community workshops in Merriwa to engage with our customers and stakeholders on which critical services should be prioritised during a power outage, where the community hub should be located and its amenities. By partnering with the Upper Hunter Shire Council and the Merriwa community to co-design elements of the microgrid trial project, we can best serve the needs of the Merriwa community.





Tier 2 – Incidents

Incidents are defined as events that result in a person being hospitalised or receiving treatment from a health care professional. This category also includes events resulting in lower-level impacts to public property (including network-caused fires) and smaller power outages.

Table A.2 summarises the five incidents involving persons working on the network. These include two cases of falls, two instances of injuries related to manual handling, and one incident involving an object impacting with a body part. These occurrences predominantly took place on the Central Coast. The count of these incidents remains in line with the number reported in FY22. Notably, there were four incidents categorised as Major Reliability and Power Quality issues, in contrast to the two reported during FY22.

Table A.2 Incidents

ESSNM Objective Population	Description of each major incident reported under the incident reporting requirement
Safety of members of the public	No recorded values in the current reporting period
Safety of persons working on network	<p>On September 14, 2022, an incident occurred where a worker was using a knife to cut electrical tape for transformer wiring. The knife slipped, penetrating his glove and injuring the palm of his left hand. As a consequence, the worker underwent micro-surgery to repair nerves and tendons.</p> <p>On March 14, 2023, a worker was engaged in high voltage switching using a height stick when a sudden gust of wind caused the stick to pull his arm and shoulder unexpectedly. Subsequently, the worker underwent shoulder surgery to address a rotator cuff injury.</p> <p>On May 11, 2023, a contractor was in the process of removing formwork from a newly constructed concrete cable trench. During this task, his foot slipped off the upper edge of the trench, leading to a fall into the trench and resulting in a strain to his right knee. As a consequence, the contractor received a certification of being unfit for work.</p> <p>On April 14, 2023, a contractor was positioned on the platform of a truck-mounted Elevated Work Platform (EWP), responsible for operating the foundational controls while another operator was working at an elevated height. The worker's foot got trapped under a ladder, resulting in the loss of footing and a subsequent fall of about one meter onto a grassy surface. The worker sustained a wrist fracture and received a certification indicating their unfitness for work.</p> <p>On June 10, 2023, a worker was engaged in tasks within an EWP and in the process of transferring a cross arm to another colleague, the worker experienced a sudden snapping sensation in their right bicep/arm. Subsequently, the worker had to be hospitalised for surgical intervention to address a torn bicep.</p>
Protection of property	No recorded values in the current reporting period
Safety risks arising from the protection of the environment (for example, preventing bushfires that may be ignited by network assets)	No recorded values in the current reporting period
Safety risks arising from the loss of electricity supply ^a	<p>On July 3, 2022, a significant and widespread interruption affected customers due to adverse weather conditions stemming from an east coast low and low pressure trough. These conditions included damaging winds and heavy rainfall, which had an impact on numerous network assets within the Central Coast LGA.</p> <p>On July 5, 2022, a notable customer interruption occurred for those being supplied by the Pennant Hills and Hornsby Zone Substations. This interruption was a result of adverse weather conditions linked to an east coast low and low pressure trough, which brought about damaging winds and heavy rainfall impacting network assets within the northern Sydney region.</p> <p>On February 9, 2023, a Major event unfolded, with an estimated impact on over 15,000 customers for a duration of at least 8 hours within the Central Coast LGA.</p> <p>On February 18, 2023, spanning both widespread Sydney and the Central Coast, the situation arose as a result of extensive storm impacts.</p>

^a Note the four safety risks resulting from electricity supply interruptions were raised from Tier 2 Incidents to Tier 1 Major Incidents during their respective incident management meetings and are duplicated in **Table A.1** and **Table A.2**, as they were reported to IPART as both Tier 1 and Tier 2 events.

Tier 3 – Control Failure Near Miss

Unsafe electricity discharge can occur when electricity network assets malfunction or cease to carry out their intended functions. This risk is heightened when assets are not maintained correctly or when abnormal prolonged weather patterns cause damage to the network. While it is not financially or practically viable to eliminate the occurrence of asset failures, we employ asset management strategies to reasonably manage asset risk.

In Figure 2, we see that the overall FY23 performance highlights a reduction in annual failures relative to the 5-year historical average. Despite the impacts of La Niña this year, the higher failures seen in FY20 were reflective of the extreme heat and storm events that occurred in that year.

Table A.3 lists all functional failures that have occurred on the Ausgrid network during the reporting period. The table provides a breakdown of Ausgrid’s asset population, the number of functional failures and whether these failures resulted in a fire.

Note: As a result of a previous feeder classification issue between Transmission and High Voltage (including sub-transmission), Ausgrid has recalculated the 5-year average functional failures for these line items to better reflect the performance of these assets.

Figure 2 Annual Functional Failures ('000s)

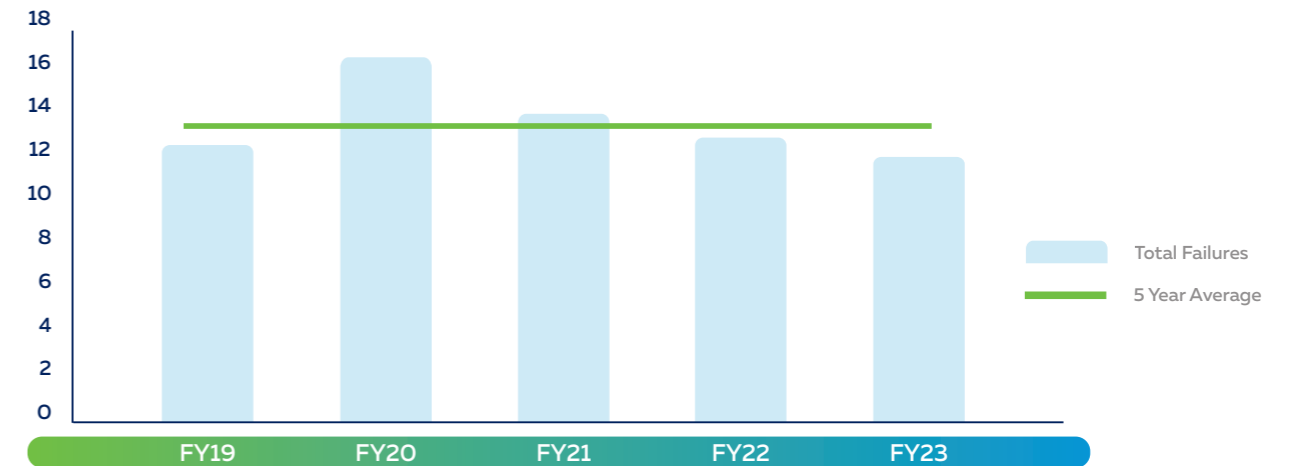


Table A.3 Network asset failures

Performance Measure	Population	5-year average annual functional failures ^{a,b}	Annual functional failures (for reporting period) ^a					
			Unassisted			Assisted		
			No Fire	Fire		No Fire	Fire	
			Contained	Escaped		Contained	Escaped	
Towers	715	0	0	0	0	1	0	0
Poles (including street lighting columns/poles & stay poles)	514,058	609	8	1	0	512	4	5
Pole-top structures	n/a ^c	658	427	2	2	159	2	3
Conductor – Transmission Overhead ^d	674 km	9	3	0	0	4	0	0
Conductor – Transmission Underground ^d	215 km	2	4	0	0	0	0	0
Conductor – High Voltage (including sub-transmission) Overhead	12,175 km	443	127	1	0	211	0	2
Conductor – High Voltage (including sub-transmission) Underground	9,677 km	295	301	0	0	2	0	0
Conductor – Low Voltage Overhead	16,554 km	1,866	805	1	0	897	0	0
Conductor – Low Voltage Underground	8,226 km	527	580	1	1	8	0	0
Service line - Overhead	708,615	7,064	2,881	4	4	2,659	1	4
Service line - Underground	265,830	206	207	1	0	6	0	0
Power transformers	549	73	84	0	0	1	0	0
Distribution transformers	35,196	154	132	0	0	27	0	0
Reactive plant	278	10	0	0	0	1	0	0
Switchgear – zone / sub-transmission / transmission	14,237	129	130	0	0	11	0	0
Switchgear – distribution (Overhead)	87,413	569	398	0	3	37	0	0
Switchgear – distribution (Ground based)	76,151	116	150	1	0	2	0	0
Protection relays or systems	80,031	311	468	0	0	2	0	0
Zone / sub-transmission / transmission SCADA system	2,939	252	254	0	0	2	0	0
Zone / sub-transmission / transmission protection batteries	860	53	54	0	0	1	0	0
Regulated SAPS (Stand-Alone Power System)	3	0	0	0	0	0	0	0

^a The functional failure figures in the table are all discrete counts of failure events inclusive of conductors.

^b The 5-year average annual functional failures value was calculated based on five financial years including the current reporting period.

^c Ausgrid does not record all individual pole top structure arrangements (e.g., cross-arms and insulators) in its corporate systems.

^d Improvements to separate Transmission and Subtransmission feeders in the failure data has resulted in a reduction in failures for Conductor - Transmission Overhead and Conductor - Transmission Underground.



Vegetation Contact with Conductors

Vegetation coming into contact with overhead powerlines can potentially cause interruptions or even initiate fires. To reduce this risk, we maintain and manage the vegetation around our network and make use of cutting-edge technologies like mobile laser scanning technology. These technologies enable the utilisation of Light Detection and Ranging (LiDAR) imagery, enhancing our ability to gather precise and comprehensive data.

Table A.4 lists the number of vegetation contact related events that have contributed to either an interruption and/or a fire event. These are split into the following categories:

- Vegetation *grow-in* refers to when vegetation has grown into the vicinity of overhead powerlines. In these situations, the vegetation has a high chance of contacting overhead powerlines in light winds or rain.
- Vegetation *fall-in* and *blow-in* refers to when dead vegetation (such as a decaying tree or branch) breaks apart and falls or blows into overhead powerlines during inclement weather. Saturated grounds due to flooding can also contribute to vegetation falling over, even for an otherwise healthy tree.

Table A.4 Vegetation contact with conductors

Performance Measure ^a	Event Count					Comments
	Current reporting period	Last reporting period	Two periods ago	Three periods ago	Four periods ago	
Fire starts – grow-in	1	2	4	2	2	The volume of fire starts due to grow-ins has been low and trending similarly in the last 5 years.
Fire starts – fall-in and blow-in	15	13	7	21	9	Fire starts due to fall-ins and blow-ins can be highly variable based on environment factors such as major weather events. Ausgrid is continuing to monitor this metric to identify if any trends are becoming evident that could support improved management strategies.
Interruption ^b – grow-in	63	64	59	74	28	The number of events occurring in the current reporting period is trending similar to previous years.
Interruption – fall-in and blow-in	1,111	1,416	1,487	2,445	1,229	The volume of fall-ins and blow-ins varies year on year depending on major weather events and generally is influenced by windstorms. For instance, the elevated figure recorded three periods ago can be attributed to specific major storm events that occurred in November 2019, as well as in January and February of 2020.

^a Vegetation hazard definitions as per the Industry Safety Steering Committee Guide for the Management of Vegetation in the Vicinity of Electricity Assets (ISSC3). ISSC3 is available on the NSW Government website for Climate and Energy Action at www.energy.nsw.gov.au/sites/default/files/2022-08/2016_11_ISSC3_GuidelineForManagingVegetationNearPowerLines.pdf

^b Includes momentary interruptions.



Contact Voltage Protection

In collaboration with a company specialising in contact voltage protection, our Network Innovation & Intelligence Team deployed an innovative vehicle as part of an eight-week trial spanning almost 2,000 km of our network area around Sydney, Gosford, Newcastle and other parts of the Central Coast and Hunter to survey our assets for stray electrical fields. Stray electric fields can indicate energised surfaces causing potential hazards to the public.

As the vehicle travels down a road at night, a detector mounted on its rear equipped with cutting-edge electric field detection technology scans Ausgrid assets such as streetlights, pillars and underground cables to look for electric fields that should not be present.

When the vehicle detects a stray electric field, the driver exits the car to measure it. If the strength of the field is above a certain level, they inform the Network Test team to verify any faults or safety hazards and raise defects through the normal business process.

Initial findings from the surveys are triaged against a prioritisation matrix and issued directly to the Network Test on-call team if an immediate safety issue is identified.

Ausgrid is currently assessing the commercial viability of expanding the trial.



Unintended Contact, Unauthorised Access and Electric Shocks

Table A.5 presents incidents related to electric shocks that do not fall under the categorisation of 'Major Incidents' or 'Incidents' as defined by IPART's Electricity Networks Reporting Manual – Incident Reporting. This table also documents situations where unintended or unauthorised contact or close proximity to the electricity network could have led to electric shocks.

We acknowledge that certain performance areas have experienced an increase in incident rates. We are addressing these through the following measures, which, along with additional items in Table Tier 4 – Control Implementation and our Public Electrical Safety Plans and Activities, reflect our strong commitment to a safety culture and continuous improvement.

Public Safety

The primary goal of our public safety campaigns is to raise awareness among our customers and the public about how to stay safe around Ausgrid's assets. By closely analysing the specifics of these incidents, we gather crucial information that significantly contributes to shaping our ongoing safety programs and priorities as part of our Public Safety Network Management Plan.⁵

Network Employee/Network Contractor Safety

We have implemented a comprehensive approach to enhance electrical safety within our organisation.

This includes:

- Workers involved in incidents have undertaken refresher training and Live Low Voltage (LV) Work Verification of Competency (VoC) assessments to align with Ausgrid's live work manual/s to prevent further incidents.
- Involved workers in incidents have delivered Toolbox Talks (short, interactive discussions centred around safety topics) to share their learnings and to increase awareness of the risks and implications from lived experience.
- Safety reminders issued to workers on the importance of wearing the required PPE, including approved protective eyewear and safety helmets when operating, testing/measuring or completing visual inspections on or near live exposed LV mains and apparatus in accordance with the Electrical Safety Rules. In addition, we mandated the use of arc rated face-shields with chin cup when opening access doors/covers/hatches/lids to equipment where live exposed LV mains and apparatus may be within minimum safe work distances of the worker.

Unauthorised Network Access (Intentional)

Due to an increase in copper theft, Ausgrid has increased focus on the risks associated with copper theft in the public safety awareness program.⁶ Ausgrid Security Operations is also working closely with NSW police and industry working groups.

⁵ Ausgrid's Public Safety Network Management Plan is available at <https://cdn.ausgrid.com.au/-/media/Documents/Regulation/Reports-plans/PESAP.pdf>

⁶ Read our May 2023 media release at www.ausgrid.com.au/About-Us/News/Copper-Theft-2023

Table A.5 Unintended contact, unauthorised access and electric shocks

Detail	Event Count					Comments
	Current reporting period	Last reporting period	Two periods ago	Three periods ago	Four periods ago	
Electric shock and arc flash incidents originating from network assets including those received in customer premises						
Public	10	4	20	14	4	In FY23, there was a rise in public shocks. Their causes were diverse, including factors such as asset failures during normal weather and storms, and defective neutrals. Out of the ten public shocks, eight occurred in domestic settings. Incidents involving network employees and contractors experiencing shocks also saw an increase, with the primary contributing factors being the absence of hazard identification or procedural compliance.
Public worker	4	5	2	10	6	
Network employee / network contractor	14	9	7	15	11	
Accredited Service Provider	1	1	2	3	0	
Livestock or domestic pet	0	0	0	0	0	
Contact with energised overhead network assets (e.g., Overhead conductor contact)						
Public road vehicle	247	252	242	239	323	The incidence rates within each category have shown positive progress from FY22 to FY23.
Plant and equipment	94	97	27	30	31	
Agricultural and other	20	24	59	57	18	
Network vehicle	1	0	0	1	2	
Contact with energised underground network asset (e.g., cable strike)⁷						
Plant and equipment	59	71	71	78	108	Contact with underground assets have decreased. Of the 72 contacts, 69 involved public workers or members of the public.
Person with hand held tool	13	28	20	25	23	
Unauthorised network access (intentional)						
Zone / Bulk Supply Point / Transmission substation / switching station	0	2	1	1	2	The increase in unauthorised network access (intentional) is primarily attributed to a surge in break and enter related incidents.
Distribution substation	5	2	0	3	6	
Towers / poles	6	5	2	2	13	
Other (e.g., communication sites)	6	1	2	1	10	
Safe Approach Distance (SAD)						
Network employee / network contractor	0	3	2	0	0	The surge in breaches of Safe Approach Distances can be largely linked to a rising incidence of copper thefts or attempted thefts, predominantly aimed at the overhead network within the Hunter area.
Accredited Service Provider	0	3	0	0	0	
Public	12	4	2	10	1	
Public Worker	9	19	27	44	15	

⁷ To increase public safety awareness of contact with energised underground and overhead assets, we have made our overhead network data available on the Look Up and Live platform. See [Table A.9](#) for more information.



Reliability and Quality of Supply

Table A.6 outlines the following occurrences:

- Network incidents not classified as Major Incidents or Incidents by IPART’s Electricity Networks Reporting Manual, resulting in hazardous network conditions (e.g., high voltage into low voltage, reverse polarity, compromised neutral integrity).
- Instances of prolonged network voltages exceeding or falling below Australian Standard AS61000.3.100-2011 limits.
- Network incidents caused by defective neutral connections due to asset defects or failures, not meeting IPART’s reportable incident criteria.

The annual variations in the data in [Table A.6](#) pertaining to sustained voltage excursions outside emergency range is statistical data using a sample-based approach. An investigation into the annual variations in the data in [Table A.6](#) pertaining to sustained voltage excursions outside emergency range is underway. Ausgrid will continue to monitor this metric to identify if any trends are becoming evident and consider alternate approaches to reduce the variability of this measure.

Table A.6 Reliability and quality of supply

Performance Measure	Event Count				
	Current reporting period	Last reporting period	Two periods ago	Three periods ago	Four periods ago
High voltage into Low voltage	26	35	45	43	36
Sustained voltage excursions outside emergency range	25	14	8	12	3
Reverse polarity ^a	0	3	1	1	3
Neutral integrity due to poor workmanship or incorrect procedure ^a	2	3	2	0	2
Neutral integrity due to asset defect or failure ^a	2	3	0	0	0

^a Events reported as incidents to IPART under People Category 4 – Significant Near Miss.

Reliability and Quality of Supply - Critical Infrastructure Incidents

Table A.7 compiles information on supply loss events for critical infrastructure, involving:

- Peer groups A1, A2, A3, and B hospitals^a
- Road tunnels on motorways with emergency evacuation systems
- Situations impacting over 5,000 people due to outages
- Other community infrastructure marked as of National, State or Regional importance by the Network Operator.

The table encompasses outages, supply quality incidents, and their consequent safety impacts on critical infrastructure. Please note that the weather related events of FY20, responsible for the elevated figure recorded three periods ago as displayed in the Summary Charts at the beginning of Part A, can be primarily attributed to major storm events that occurred in Ausgrid's area in November 2019, and January and February 2020.

Table A.7 Reliability and quality of supply - Critical Infrastructure Incidents

Type of critical infrastructure ^a (e.g., hospital, tunnel)	Minutes of supply lost	Cause	Consequential safety impacts associated with supply issue
Events and buildings where greater than 5,000 people could be affected by an outage	1,474	Asset Failure - Asset condition or defect	Twelve events have contributed to the total minutes of supply lost in this category. Among these events, five exceeded a duration of two hours, and none of these twelve events required reported a safety impact.
	26	Externally Caused (nature) - Flora / fauna	This was a single event with no associated safety impact reported.
	540	Externally Caused (people) - Third party	Two distinct events contributed to this category, and there were no reported safety impacts reported with either.
Other community infrastructure of national, state or regional significance	411	Asset Failure - Asset condition or defect	In this category, there were two separate events that made contributions, and none of them had any reported safety impacts.
	90	Self-Clear (No Cause Found)	This was a single event with no associated safety impact reported.
Peer group A1, A2, A3 and B hospitals	889	Asset Failure - Asset condition or defect	In this category, there have been ten instances contributing to the cumulative minutes of supply disruption. Out of these, eight events lasted for less than two hours, and it is worth highlighting that none of these ten incidents necessitated the reporting of safety impacts.
	220	Externally Caused (nature) - Flora / fauna	A loss of electricity supply event linked to this critical community infrastructure was reported as a Tier 1 major incident due to the safety risks it posed.
	70	Externally Caused (people) - Third party	In these two categories, there were a total of two events, each without any reported safety impacts.
	5	Forced Outage (capacity constraint) - Overloads (network abnormal)	
Rail and air transport systems where travel is affected	123	Asset Failure - Asset condition or defect	In this category, two distinct events occurred, and neither had any reported safety impacts.
	99	Externally Caused (nature) - Flora / fauna	A near-miss event associated with this significant community infrastructure and cause was reported as a Tier 1 Major incident due to the safety risks arising from loss of electricity supply.

^a The definition of critical infrastructure, supply loss and impacts are contained in IPART's Electricity Networks Reporting Manual - Incident Reporting
^b For the definitions of NSW Hospital Peer Groups, see https://www1.health.nsw.gov.au/pds/ActivePDS/Documents/IB2016_013.pdf



Network-Initiated Property Damage Events

Table A.8 outlines incidents in which damage to public or network property is recorded, with a reasonable likelihood that the network was the cause.

Table A.8 Network-initiated property damage events

Detail	Event Count					Comments
	Current reporting period	Last reporting period	Two periods ago	Three periods ago	Four periods ago	
Third party property (assets including vehicles, building, crops, livestock)						
Damage (e.g., fire, physical impact or electrical)	241	252	251	389	327	Property damage claims arise from both supply related network events (e.g., voltage variation, failed network equipment, etc.) and non-supply events (e.g., damage to property because of physical maintenance works, etc.). The volumes of claims received is low and there is no significant trend identified.
Network property (including non-electrical assets, e.g., vehicles, building)						
Damage (e.g., fire, physical impact or electrical)	22	25	24	26	19	

Tier 4 – Control Implementation

This section aligns with [Table A.9](#) in the IPART Reporting Manual and details adjustments or modifications made by Ausgrid to its formal safety assessments (FSAs) or risk treatment action plans. This includes key changes made to existing assessments or risk treatments to ensure that the relevant risk is eliminated or reduced so far as is reasonably practicable. Only key amendments and improvements to FSAs or associated risk treatments that materially impact risk are documented here. Many of the amendments or improvements improve the controls across multiple FSAs and are not duplicated in the table where they provide improvement across multiple FSAs.

Amendments and improvements to ENSMS FSAs or associated risk treatments

In line with our ongoing commitment to continual improvement to enhance its operational processes, we are refreshing the ENSMS. This initiative is designed to strengthen the ENSMS through the enhancement of a robust, clearly defined, and legally sound framework. This involves a comprehensive review of our FSAs to ensure a uniform methodology and alignment with regulatory requirements.



Public Safety

Look Up and Live

We made our overhead network data available on the Look Up and Live platform. This collaboration with Energy Queensland allows users to access powerline information on an interactive geospatial map. The platform serves as a worksite planning tool, promoting powerline safety and minimising the risk of accidents. Ausgrid joins other companies in sharing their data on the platform. Look Up and Live provides safety features such as powerline locations, safety guidelines, high load forms, and Before You Dig Australia details. The app is available for download on Google Play and Apple App Stores.⁹

Emergency Response

In consultation with other distribution network operators, Ausgrid has reviewed and refreshed the Emergency Services Electrical Safety training video to equip emergency responders with the knowledge and skills needed to safely navigate situations involving electricity network hazards.

Electricity Safety Website

We launched the Electricity Safety website (www.ElectricitySafety.com.au), an industry-first hub for comprehensive information on staying safe around electricity. It consolidates various sources into a one-stop resource for homes, worksites, and emergency response. Ausgrid's commitment to safety extends beyond the network, aiming to benefit communities nationwide, including families, emergency personnel, and construction workers.

Maintenance Programs

We continue to prioritise public safety risks related to our assets through our maintenance and replacement program. Key programs include pole and line inspection, vegetation management and the upgrading of bare wires with covered or insulated conductors. This proactive approach not only significantly enhances public and worker safety by reducing potential hazards but also plays a crucial role in building a more resilient network, thus minimising the risk of loss of supply. These programs deliver a safer and more reliable environment for the community.

⁹ The Look Up and Live tool can be viewed at www.lookupandlive.com.au

Standards

We continue to actively engage with external standards committees and associations to enhance standards and establish robust protocols and practices for efficient public safety management. Additionally, Ausgrid has implemented a new framework that aims to streamline the review of standards and make them more accessible and easier to understand.

Smart Meter Data Trial

Ausgrid is trialling the acquisition of smart meter data to increase network visibility and monitoring of our low voltage network for potential network and customer defects, including identification of high voltages from Customer Energy Resources (CER) that can lead to curtailment of solar export.

Combined with advanced analytics, this system will identify emerging safety risks. Additionally, it will help optimise the operation of the network to reduce costs and improve capacity to support customer energy resources like solar, batteries and electric vehicles.

Customer Installations

An incorrectly or inadequately connected installation can create a serious electrical hazard, especially in the homes of our customers. We developed an eLearning Module 'Connection of Installations to the LV Network' for Ausgrid workers to reinforce the importance of testing requirements outlined in Ausgrid's Network Standard 282 and introduced a new Workplace Instruction which replaces the previous procedure for service connections testing and installation.



Worker Safety

Critical Control Management

The Critical Control Management (CCM) Program conducted a thorough assessment of Ausgrid's 10 Fatal Risks. This involved finalising the recommended Critical Controls, establishing performance criteria, and conducting risk assessments. The team subsequently presented their findings to senior leadership, and Critical Controls for exposure to the discharge of electricity have now been successfully implemented. This implementation includes making modifications to de-energised work, testing procedures, operating protocols, and live work processes.

Critical Incident Mental Health Response

Ausgrid has created a Critical Incident Mental Health Response (CIMHR) Guide to address the mental health of its employees who may encounter critical incidents while working. It recognises that if such incidents are not handled properly, they can negatively affect an employee's mental well-being. To promote the health and well-being of our employees, we implemented an evidence-based mental health response strategy to ensure consistent support throughout the organisation after a critical incident occurs.

Fatigue Management

Ausgrid has launched a new Fatigue Management Procedure and app called FatigueTech. The Procedure, developed with input from experts and employees, aims to address the risks of fatigue in the workplace. FatigueTech utilises time sheet data to alert individuals when they are nearing or exceeding safe work hours, making it easier for teams to follow the Procedure.



Property Protection

Recent additions in network standards have led to comprehensive updates across various technical documents; this includes the introduction of acceptable ground movement limits which seeks to safeguard buried electrical cables from external impacts. The revisions also extend to waterproofing, flood protection and improved fire safety mechanisms for chamber substations, addressing resilience in challenging conditions. Additionally, property tenure requirements have been updated, clarifying considerations for kiosk substations, easement width, and land use restrictions.

A new set of standards emphasises the selection of community battery sites, giving special attention to environmental and safety factors, while operational guidelines are enhanced to highlight the involvement of Engineering subject matter experts and the importance of careful planning. These revisions strengthen Ausgrid's commitment to network security, safeguarding assets and improving operational efficiency through elevated benchmarks.



Environmental Safety

Updated Environmental Handbook

Ausgrid's Environmental Handbook (NS174C) forms part of our EMS and provides guidance for complying with our environmental responsibilities. The Handbook prescribes the minimum environmental controls for works carried out on our network. In FY23, we undertook a full review of its contents with many minor improvements throughout. Details of the modifications are listed in section 12 of the Handbook.

More accessible Environmental Training

Ausgrid seeks to make learning and development as accessible as possible. In FY23, we converted three more environmental courses to online. All Ausgrid environmental courses are now delivered online to replace face-to-face training. The new courses include Oil Handling and Spill Response, Discharging Water, and Erosion and Sediment Control.

Habitat Restoration and Wildlife Protection

Using an IFM Investors community grant, the area adjacent to an Ausgrid site in Lane Cove National Park was targeted for bush regeneration (0.3 hectares). In FY23, Ausgrid facilitated rehabilitation with ecological restoration experts at Dragonfly Environmental, the NSW National Parks and Wildlife Service and volunteers at the Friends of Lane Cove National Park. At our Homebush Depot, we continued our program to support native species by installing 11 new habitat boxes to replace our aging boxes. We also installed bird diverters on seven spans of overhead powerlines in the Hunter Valley, alerting birds to hard-to-see cables and infrastructure.

Heritage Learnings

Ausgrid undertook an Aboriginal Cultural Heritage Assessment and stakeholder consultation to obtain an Aboriginal Heritage Impact Permit (AHIP) for a project to upgrade two power poles in the vicinity of a midden in Davistown (Wabba clan, Kuringgai country). To share learnings and the controls we implemented to protect the midden, we invited First Nations employees and students of the local Brisbane Public School to the site. Traditional custodians of the area also shared their stories of the site's cultural significance, belonging and knowledge systems.

Recycling Initiatives

In FY23, Ausgrid developed a new user-friendly app allowing employees to search our common business wastes. The app provides details about where and how the waste should be recycled or disposed of, any licensing requirements, and links to processes and forms required as part of the process. Examples of waste diverted from landfill in FY23 include donating refurbished iPads, surplus nitrile gloves and green waste; recovering and refurbishing kiosk substations; and recycling scrap timber poles, network equipment, metals, cables, oil and streetlamps.

SF₆ Strategy

SF₆ is a potent greenhouse gas used in electrical switchgear as an insulator and arc quenching medium. Since establishing our SF₆ Strategy in 2021, we have delivered 95% of our improvement actions. In FY23, we transitioned to the most accurate method to measure gas losses, which will help to inform decision-making better and facilitate improvements in SF₆ management, such as leak identification and repair. We continue to promote SF₆ alternatives and, in FY23, we installed four SF₆-free 33kV dry air/vacuum circuit breakers at Awaba sub-transmission substation (STS). We also installed Australia's first SF₆-free distribution high-voltage switchgear in a Sydney shopping centre to gain experience with this new technology.



Loss of Supply Safety

Climate Resilience Consultations

Ausgrid's inaugural climate resilience consultations in Lake Macquarie, Central Coast, and Port Stephens engaged around 100 community participants, seeking insights on enhancing resilience during extreme weather events. Lake Macquarie residents prioritised granular risk mapping, improved reliability for retirement villages, and blackout plans for residents. The result of these consultations have been used in developing a proposed investment program to address climate change impacts and potential loss of supply in vulnerable areas within Ausgrid's network.

Network Resilience Forum

In a collaborative effort, Ausgrid participated in a Network Resilience forum with five other distribution network operators, supporting communities in adapting to climate change. The forum drew over 170 participants from regulators, local councils, community groups, and academia. Discussions covered resilience definitions, network roles, and the importance of partnerships to address community needs. The insights from Ausgrid's focus groups with diverse community members, focusing on experiences and challenges with prolonged outages from natural hazards, is informing strategies for the future grid and preparations for the 2024-29 Regulatory period, with a focus on potential loss of supply due to climate change impacts.

NECF Planned Interruptions

Ausgrid has been using SMS to notify customers of power outages affecting their premises since May 2021. Prior to August 2023, customers received an additional postal notification letter to inform them of upcoming planned power outages. Following customer preference, we no longer send notification letters for planned outages (with exceptions for Life Support Customers and customers without a registered mobile number). If the SMS fails to be received, a planned outage letter is issued if there are more than 10 days until the outage date; otherwise, the customer is contacted via phone or email.



Bushfire

Stakeholder Engagement

Ausgrid has continued its efforts to engage with stakeholders, ensuring the participation of relevant identified stakeholders throughout the FSA review and development process. During this reporting period, Ausgrid specifically focused on engaging with the NSW Rural Fire Service (NSW RFS) Bush Fire Management Committees (BFMCs) to consult on the use of Drone technology and explore more effective ways to support the NSW RFS and the community.

Through this consultation several BFMCs have provided feedback to Ausgrid, which is currently under consideration. This feedback pertains to the potential application of post-fire event asset inspections using Drones, offering benefits to all stakeholders and Ausgrid. This application of Drones aims to reduce the risk to both workforces when entering fire-affected areas and to expedite electricity supply recovery efforts.

Bushfire Preparedness

We have recently updated our Bushfire FSA and Management Program to enhance our overall preparedness. As part of these improvements, we have strengthened our hazard tree management practices and made enhancements to our Integrated Safety Management Program (ISMP) review process. These measures are aimed at ensuring better safety outcomes for our community. One significant improvement includes the establishment of a single point of contact for the NSW RFS to provide timely and essential information on upcoming hazard reduction burns. This streamlined approach will help us coordinate more effectively in the interest of safety. Furthermore, we have also developed a comprehensive procedure for assessing hazard reduction burns. The purpose of this document is to outline the process for management of organisations or individuals that are required to undertake Hazard Reduction Burns near Ausgrid assets.

Vegetation Scoping Competency

Ausgrid has introduced new requirements for vegetation contractors involved in scoping works. They must now complete the National Unit Of Competency (NUOC) course AHCARB408 (or equivalent) and be registered in Ausgrid's learning management system. Additionally, we are evaluating additional hazard tree assessment training as an extra requirement for vegetation scoping contractors. These changes aim to enhance safety and ensure that vegetation contractors meet the necessary qualifications and training standards while working on Ausgrid's projects.

Design, Construction and Commissioning

Table A.10 describes the metrics related to designing, constructing, and introducing new or modified network assets within a specific reporting period. This involves designs and installations carried out by Accredited Service Providers (ASPs), which undergo assessment and approval by Ausgrid. The planning and design stage of the network's lifecycle is crucial to network safety. The metrics monitor safety evaluations, audits of these assessments, and safety reviews for Level 1 (expanding network capacity) and Level 2 (service line work) ASP projects.

Table A.10 shows an increase in the number of safety related design, construction and commissioning measures performed in the current reporting period compared with the last reporting period in response to easing of restrictions in COVID-19 public health orders. An additional audit procedure for the Safety in Design (SiD) process and documentation has been introduced, mandating an annual audit of the SiD reports.

Table A.10 Design, construction and commissioning

Performance Measure	Current reporting period	Last reporting period	Two periods ago	Three periods ago	Four periods ago
Designs for which Safety in Design (SiD) reports have been completed	2,084	1,757	1,472	1,732	938
Designs for which Safety in Design (SiD) reports have been audited	25 ^a	1	2	17	17
Contestable designs certified	1,469	1,522	1,440	1,275	1,733
Contestable level 1 project safety reviews performed	6,763	6,089	4,926	5,145	4,992
Contestable level 2 project safety reviews performed	10,756	6,238	4,178	3,953	n/a
Non-contestable project safety reviews performed	19,285	14,588	12,355	11,465	6,461
Project closeout reports completed for contestable projects ^b	0	0	0	0	0
Project closeout reports completed for non-contestable projects	1,170	1,211	1,165	1,635	1,562
Project closeout reports audited for contestable projects ^b	0	0	0	0	0
Project closeout reports audited for non-contestable projects ^c	0	0	0	0	0

^a This update now incorporates the integration of design certification for modifications.

^b No project closeout reports are produced due to changes in Ausgrid's involvement with contestable connections and a change in the process.

^c No project closeout reports audited for non-contestable projects, as the only audit where this work is relevant was in progress at the time of the reporting period.

Inspections - Assets

Table A.11 reports Ausgrid’s inspection volumes excluding the activities primarily targeting preparation and assurance of the network for the bushfire danger period reported in Table B.3 (Vegetation tasks) and Table B.4 (Asset tasks). Inspection tasks within latitude at reporting date are classed as Open and those outside latitude are classed as Outstanding at the end of the current reporting period. Ausgrid manages all outstanding inspection/corrective tasks at weekly and monthly intervals via a combination of multi-level meetings, dashboards, reporting and analysis, work prioritisation and resourcing. Outstanding tasks from the current reporting period are prioritised at the top of the next reporting period.

Inspection tasks are only reported as achieved when all the associated corrective action tasks to address the faults of a particular asset have been identified. More inspection tasks may be achieved than planned due to approved maintenance plan variations and tasks nominally due in the future reporting period that are completed within the early half of latitude.

There was a recent rise in outstanding inspection and corrective tasks in two key areas (refer to the summary charts at the start of Part A):

- Pole and line inspections (incorporated under Distribution Overhead) saw an increase due to a shortage of qualified contractors, impacting an externally run program.
- Inspections related to transmission substation protection (Zone Substations and Distribution Substations) increased as well. These inspections are intrusive and necessitate network de-energisation, but we encountered reduced network access because of an extended rollout of the Advanced Distribution Management System (ADMS), which exceeded our initial expectations.

We recognise the significance of these services within our community and are currently taking proactive steps to address these challenges. We have initiated a recovery plan aimed at substantially expanding the pool of qualified contractors available for pole and line inspections to safeguard the reliability and safety of our network. Furthermore, we are in the process of testing alternative technologies such as non-destructive testing to enhance the efficiency and effectiveness of our pole inspection procedures.

Table A.11 Inspections (assets)

Performance Measure	Inspection Tasks				Corrective Action Tasks			
	Planned inspection tasks	Achieved	Open	Out-standing	Tasks identified (all categories)	Achieved	Open	Out-standing
Transmission Substations	9,087	9,172	181	52	1,012	749	431	359
Zone Substations	40,781	41,230	771	125	3,252	2,788	1,250	1,061
Distribution Substations	21,804	22,107	529	180	3,795	2,922	2,262	1,710
Transmission Overhead	7,076	6,343	675	58	1,145	839	1,382	703
Transmission Underground	1,024	1,039	22	11	250	270	19	7
Distribution Overhead	92,521	88,132	7,971	111	12,155	14,884	12,160	6,480
Distribution Underground	14,829	14,829	6,848	3	2,657	1,365	1,626	806
Regulated SAPS	3	4	0	0	1	1	0	0



Inspections - Vegetation

Table A.12 provides information on Ausgrid’s vegetation inspection volumes for corrective tasks, excluding activities primarily focused on preparing and ensuring network safety during the bushfire danger period, as detailed in Part B of this report. Vegetation inspection on non-bushfire prone land is undertaken through a routine vegetation management cycle that identifies vegetation encroachments for cutting that have entered into the minimum allowed vegetation clearance from the network. The objective of the cutting is to avoid any vegetation encroachment into the minimum vegetation clearance between cutting cycles as far as is reasonably practicable. Ausgrid conducts additional inspections alongside those carried out as part of our routine vegetation management program in bushfire prone areas. It is important to note that these routine inspections do not specifically focus on preparation for the bushfire danger period and are therefore separated from this table. For a comprehensive overview of the inspection targets, which encompass both routine and targeted efforts aimed at preparing for the bushfire danger period on bushfire prone land, please refer to Part B. Note that Ausgrid does not perform aerial vegetation inspections outside of bushfire prone areas.

Table A.12 below presents the completed and outstanding ground-based vegetation inspection tasks targeted for completion within the current reporting period.

Table A.12 Inspections (vegetation) aerial/ground based

Bushfire Risk Category	Population (poles)	Target	Achieved	Open	Out-standing
Aerial based					
Non-bushfire prone land ^a	0	0	0	0	0
Bushfire prone land ^a	n/a	n/a	n/a	n/a	n/a
Total	n/a	n/a	n/a	n/a	n/a
Ground based					
Non-bushfire prone land	367,023	73,005	71,811	1,101	93
Bushfire prone land	147,035 ^b	28,436	26,609	1,754	73
Total	514,058	101,441	98,420	2,855	166

^a Refer to **Table B.3** Vegetation tasks.

^b The pole population provided does not align with **Table B.2**, as the pole count in **Table B.2** is determined by the number of poles attached to spans that are required to be inspected.



Children's Safety

For over 20 years, Ausgrid has delivered Electricity Safety Week (ESW), a program designed to educate kids about how electricity works, how to use it and most importantly how to stay safe around it. The program materials were developed in partnership with the NSW Department of Education and aligns to the PDHPE syllabus for K-6, supporting the delivery of key outcomes within the Science, English, Mathematics and Drama curriculums.

In September 2022, we achieved a strong 93% participation rate with 806 schools signing up for the free ESW resource pack containing lesson booklets for the teachers, access to interactive learning modules, safety posters, stickers and a simple circuit kit. We also updated the Interactive Whiteboard Lessons with new content and visuals for better user experience and accessibility. Following the program, 98% of teachers said they were satisfied or very satisfied the program addresses key syllabus outcomes, and 91% said that the program activities help students be safer around electricity.

We also had 54 Ausgrid volunteers visiting schools across our network during ESW to deliver an interactive and engaging electricity safety presentation. The presentation focused on six key safety messages:

1. Play in open spaces away from electricity poles and powerlines
2. Stay away from electricity substations and power equipment
3. Never put a metal object in a toaster or power point
4. Keep water away from electrical appliances and power cords
5. If you see a dangerous situation, tell an adult
6. If you see a fallen powerline, stay at least 8 metres away from it and anything it may be touching

Ausgrid has proudly shared the program with other distribution network operators, and it has been great to see its expansion continues to run in primary schools across NSW and QLD, with Endeavour Energy, Essential Energy, and Energy Queensland all continuing to support the initiative.

Public Electrical Safety Plans and Activities

This section aligns with **Table A.13** within the IPART Reporting Manual and captures the various activities carried out as a part of our Public Safety Network Management Plan. It delineates the programs and initiatives that we either initiate or consistently engage in, all aimed at fostering public safety awareness and providing education pertaining to the electricity network.

Storm Safety

Our FY23 summer storm safety campaign proactively and reactively delivered safety messaging to the public to ensure safety practices and front-of-mind awareness of what to do when faced with a hazard. Our proactive media campaign included radio, addressable TV (where custom ads are shown to different households), digital display, paid social media and weather-triggered advertising across WeatherZone. Our two-week radio burst served an estimated 2.9M impressions, reaching approximately 966,000 people across Sydney, Newcastle, Gosford and the Hunter. Addressable TV delivered 527,000 impressions to customers in the Ausgrid network and WeatherZone ads delivered 3.7M impressions with a 1.24% click through rate.

Additional reactive media (e.g., radio advertising and social media posts) was implemented when significant weather events caused hazards that could affect our network for a longer duration. At times, we also deployed community messaging via Out of Home (OOH) panels on JOLT EV charging stations to deliver timely and targeted safety messaging.

Community Electrical Safety / CALD Community

Ausgrid has supported the Voices for Power 'Train the Trainer' program since 2020. In partnership with Sydney Alliance, Endeavour Energy and Jemena, this co-designed program works with community leaders to further promote electrical safety and aims to improve energy literacy. Variances in international regulations and safety practices means there is a need to promote electrical safety in the Culturally and Linguistically Diverse (CALD) community. The program also aimed to address the challenges of cultural and language barriers in traditional advertising.

Between February 2022 to February 2023, 49 community leaders were onboarded as trainers, 24 program sessions were delivered in 10 languages, and 546 community members attended training sessions. Collectively this represented 12 culturally and linguistically diverse groups and 12 Local Council areas with an estimated reach of 2,500+ people.

The Voices for Power Project model was endorsed as a 2023 Energy Charter 'Priority Initiative', with partner feedback gathered to help shape more relational-based community energy literacy efforts by other energy industry members. The program continues into 2023, with EnergyAustralia joining as a retail partner, and additional support being received from a \$50,000 Energy Consumers Australia grant to fund co-design and delivery of a new training module in 2023.

Industry Safety - Unintended Contact with Overhead and Underground Cables

Ausgrid continued to collaborate with Endeavour Energy and Essential Energy to deliver contributions to the 2022 NSW Construction Site Safety Guide. The Guide consists of two sections, namely a paid advert section and an informational section. This initiative is supported by the National Safety Council of Australia Foundation, Master Builders Association NSW, and Safe Work Australia. Each year approximately 3,000 guides are distributed to construction company members of the Master Builders Association New South Wales (MBA NSW), Tier 1, 2 & 3 construction companies in NSW, and TAFE Colleges and training institutions in NSW. MBA NSW also distributed the guides amongst active construction sites, new members and for use in on-site and off-site WHS training.

This activity primarily uses paid advertising to deliver safety messaging onsite highlighting the dangers of both overhead and underground electricity assets on worksites. This year, we leveraged our 2021 advert as the basis for the new advert panel to promote the Look Up and Live App. In addition to the advert, we also contributed to the informational section on how to stay safe around overhead powerlines.

Bushfire Risk Management

Ausgrid utilises contractors to carry out helicopter aerial patrols to identify vegetation hazards affecting our network, and our aerial patrol schedules were displayed on the website on an interactive map.¹⁰ Low voltage electrical assets located on private property as well as vegetation hazards were audited by our contract Pole and Line Inspectors. Between February and October 2023, we carried out the inspection of pole top hardware and assets with our internal drone team in the Port Stephens, Newcastle, Lake Macquarie and Central Coast LGAs, and 14,647 letters were mailed to private pole owners to inform them of the inspection schedule and their maintenance responsibilities.

To spread awareness of aerial patrols, NBN Newcastle aired a prime-time news story providing a behind-the-scenes look at the aerial patrols. Newspaper advertisements notifying customers of aerial inspections were placed in the Hunter Valley Times, Hunter River Times, Singleton Argus, Cessnock Advertiser, Maitland Mercury and the Newcastle Herald. Targeted paid social media advertisements about aerial inspections amassed over 187,000 impressions on Facebook and Instagram. In-feed organic social media posts were published across Facebook, Twitter and Instagram providing general bushfire safety messaging to customers. These posts have the highest engagement out of all of our social media, highlighting the effectiveness of this timely and relevant approach.



Other Activities

Emergency Services Electricity Safety Training Video

In December 2022, Ausgrid (in partnership with Endeavour Energy, Essential Energy and TransGrid) produced a refreshed Emergency Services Electrical Safety training video. Emergency responders are often the first to arrive to incidents involving electrical assets. Therefore, it is important to educate emergency responders to ensure they know the risks of electrical hazards and how to approach these situations so they can safely help those that they have been called to respond to.

Designed to educate a range of first responders, the project worked alongside the NSW Police Force, Fire and Rescue NSW, NSW Ambulance, VRA Rescue NSW, NSW State Emergency Service and NSW RFS to demonstrate a breadth of scenarios, potential electrical hazards and what to do to remain safe in each. The video resource provides information to prepare Emergency Services with the knowledge and skills needed to safely respond to common scenarios encountered on the job and is being used as a training resource across emergency service organisations.

Electricity Safety Website

In October 2022, Ausgrid launched www.ElectricitySafety.com.au to increase safety literacy during National Safe Work month. In an industry first, Ausgrid launched the dedicated safety website to provide an easily accessible, online resource dedicated to safety practices around electricity in the home, worksites, and emergency response situations.

The site aims to be a one-stop shop on all things safety around electricity, highlighting common and not so common risks that we all encounter every day. The website's main objective is to bring together all the various sources of information, facts, rules, dos and don'ts into one dedicated resource, available to everyone. With many different players in Australia's energy industry, there was a gap to having a clear source that could provide safety information in one spot.

The website helps us shine a spotlight on safety, calling out potential hazards for key audiences and promoting safe practices when it comes to electricity. Safety is a core value at Ausgrid, which is why we share our expertise with the community to educate everyone – whether they are in the Ausgrid network or not – on how to safely live and work around electricity.

¹⁰ View our helicopter patrol map on our website at www.ausgrid.com.au/bushfirepatrols



Internal Audits

Table A.14 captures the annual internal audit activities. An internal audit plan is developed via an interactive review with internal stakeholders to identify areas for audit emphasis, along with a review of industry and general business-identified emerging risks. These audits cover many aspects of the Ausgrid Operations, of which the ENSMS related internal audits below are a subcomponent. For each internal audit, processes and controls are reviewed and tested. Non-compliances or improvement opportunities are raised and management actions to address these are agreed along with appropriate timelines to complete the actions.

Table A.14 Internal audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit Scope	Identified Non-Compliances	Actions
<p>IPART Audit Issue Management</p> <p>An internal audit examined the historical effectiveness and consistent application of processes aimed at ensuring the timely and effective implementation of non-compliance recommendations arising from independent audits initiated by IPART.</p>	<ul style="list-style-type: none"> No instances of non-compliance were found; however, there were suggestions for areas where improvements could be made. 	<ul style="list-style-type: none"> n/a
<p>Capital Planning & Project Delivery</p> <p>Ausgrid Internal Audit assessed the critical controls that governed the capital planning and project delivery processes, with a focus on their design adequacy and operational effectiveness. Additionally, the team evaluated the overarching approach to capital planning and project management to determine if it adequately supported projects being delivered on time and within budget.</p>	<ul style="list-style-type: none"> No instances of non-compliance were found; however, there were suggestions for areas where improvements could be made. 	<ul style="list-style-type: none"> n/a

Audit Scope	Identified Non-Compliances	Actions
<p>Outage Management</p> <p>An audit was undertaken that considered the design adequacy of processes and controls in place to communicate with customers on planned and unplanned outages, and the alignment of those processes and controls with National Energy Customer Framework (NECF) requirements.</p>	<p>The following non-compliances related to customer data collection and outage communication were detected in the audit:</p> <ul style="list-style-type: none"> Failure to Engage with the Regulator (AER): Ausgrid did not engage with the regulator (AER) to enhance customer data collection by retailers, leading to ineffective communication of outage information to customers. Lack of Periodic Reports: Ausgrid did not provide periodic reports to retailers concerning customer mobile number issues. Communication Deficiencies: Ausgrid needs to improve the communication of estimated restoration times for power supply. 	<ul style="list-style-type: none"> A formal engagement with AER was initiated and continued to advocate for new regulations requiring retailers to collect, validate, maintain, and provide accessible and usable customer mobile numbers for all premises. Periodic reporting detailing missing customer mobile phone details were commenced and shared with retailers. Enhancements in the area of support staff and their processes were implemented for times of significant network events. These changes successfully demonstrated improvements in outage communications with customers during larger outage events.
<p>Network Operations Report</p> <p>An audit was undertaken to thoroughly assess and validate the methodologies and controls employed in the production of the monthly Network Operations Report. The primary aim of this audit was to provide assurance that the managerial reports accurately portrayed the foundational data derived from the underlying systems.</p>	<ul style="list-style-type: none"> No instances of non-compliance were found; however, there were suggestions for areas where improvements could be made. 	<ul style="list-style-type: none"> n/a
<p>ISO 14001 – Environmental Management System & SF₆ Gas Reporting Processes</p> <p>An audit was conducted to review and assess the practical implementation of Elements 4 and 5 of the ISO standard. The audit also involved an assessment of the effectiveness of the process for addressing previous internal audit recommendations and resolving external audit non-compliance. Furthermore, the audit encompassed a comprehensive examination of the processes related to the handling, installation, measurement, and reporting of SF₆ gas usage across the network.</p>	<p>The following non-compliances were identified within the scope of the audit:</p> <ul style="list-style-type: none"> Outstanding actions resulting from the previous external ISO 14001 system audit were identified. A key Network Guideline pertaining to the proper handling of SF₆ gas was emphasised for reinstatement. Additionally, minor administrative improvement opportunities were identified. 	<ul style="list-style-type: none"> The outstanding non-compliances from the previous external audit were addressed before the internal audit concluded. The commitment was made to reinstate the missing Network Guideline and implement the minor administrative improvements that were identified.



Audit Scope	Identified Non-Compliances	Actions
<p>Asbestos Inspections and Remediation Processes</p> <p>An audit was conducted to assess whether all office, residential, or depot locations had been inspected. In cases where asbestos was identified, it was to be confirmed whether it had been recorded in the Asbestos Register and if any identified corrective actions were completed and documented.</p>	<p>The following non-compliances were identified within the scope of the audit:</p> <ul style="list-style-type: none"> A limited number of data corrections were needed in the underlying asbestos system records. Other improvement opportunities were also recommended. 	<ul style="list-style-type: none"> The commitment was made to review the individual records identified during the audit and correct the data in the underlying systems.
<p>ISO 55001 – Asset Management System</p> <p>An audit was conducted to determine whether the documented Asset Management System satisfied the requirements of elements 7 and 8 of the ISO standard and whether Asset Management Operations were in compliance with those sections of the standard. Additionally, we assessed the completion of identified ongoing improvement opportunities.</p>	<p>The following non-compliances were identified within the scope of the audit:</p> <ul style="list-style-type: none"> Improvements in the management’s review process for actions arising from the existing Asset Management Improvement Plan. Other minor administrative improvement opportunities were also identified. 	<ul style="list-style-type: none"> An updated Asset Management Improvement Plan was developed, approved, and published. The outcomes of the prior year’s Asset Management Improvement Plan were reviewed by senior management. A new 3-year Asset Management Improvement Plan was created, reviewed, and published. The remaining identified improvement opportunities were also addressed.
<p>Low Voltage Parallels</p> <p>An internal audit was undertaken to examine the management of Low Voltage Parallels processes, specifically addressing their prompt removal upon the completion of network maintenance, defect resolution, or other asset-related work.</p>	<p>The following non-compliances were identified within the scope of the audit:</p> <ul style="list-style-type: none"> A non-compliance was identified regarding the effective capture of existing system information and functionality within proposed replacement system specifications. The need to enhance management reporting regarding existing Low Voltage Parallels was emphasised. 	<ul style="list-style-type: none"> The software development team for the new network system now includes Low Voltage management representatives in their development meetings to ensure compliance with Low Voltage Parallel requirements. Enhancements have been made to the management reporting process for Low Voltage Parallels.

Audit Scope	Identified Non-Compliances	Actions
<p>High Voltage and Low Voltage Augmentation Delivery</p> <p>The audit reviewed the end-to-end processes for the project management of the High Voltage/ Low Voltage augmentation projects. The focus was to identify causes of any delivery delays in projects and to recommend process improvements.</p>	<ul style="list-style-type: none"> No non-compliances were identified; however, improvement opportunities related to delays were observed due to Live Work interruptions and the effects of COVID-19. 	<ul style="list-style-type: none"> n/a
<p>Network Asset Maintenance Practices</p> <p>An internal audit was undertaken to assess the asset management processes utilised to set the preventative maintenance of network assets. Examples of preventative maintenance undertaken in the field were reviewed for adequate completion in accordance with their Network Technical Asset Maintenance Plan and relevant network and maintenance standards.</p>	<ul style="list-style-type: none"> No instances of non-compliance were found; however, there were suggestions for areas where improvements could be made. 	<ul style="list-style-type: none"> n/a



External Audits

Table A.15 offers information regarding independent external ENSMS audits. When these audits are directed by IPART, they follow the IPART Audit Guidelines. These guidelines outline the procedures, principles, and minimum criteria for independent ENSMS audits. Two key IPART Audit Guidelines, namely Audit Fundamentals, Process, and Findings and Audit Guideline - Electricity Networks Safety Management Systems are applicable to all IPART-directed ENSMS audits.¹¹ These guidelines serve as the foundational reference documents for ensuring the proper conduct of these audits.

Additionally, Ausgrid's Environmental Management System, which is an integral component of its ENSMS, undergoes independent external audits in accordance with the necessary requirements to maintain Ausgrid's certification to ISO 14001:2015 - Environmental management systems – Requirements with guidance for use.

Table A.15 External audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit Scope	Identified Non-Compliances	Actions
<p>Ausgrid's ENSMS bushfire risk management audit (25 July 2022)</p> <p>This audit evaluated Ausgrid's bushfire FSA and verified the alignment of risk treatments with AS 5577 standards to include:</p> <ul style="list-style-type: none"> Evaluation of Ausgrid's measures for ensuring competency in managing fall-in vegetation for bushfire risks so far as is reasonably practicable (SFAIRP). Assessment of Ausgrid's response to identified non-compliances highlighted in the March 2022 bushfire risk management and May 2022 live work management audits. 	<ul style="list-style-type: none"> The auditor found Ausgrid had not adequately identified all the causes and contributing factors that may result in fall-in vegetation hazards contacting the network, specifically inadequate training. The auditor found Ausgrid had not adequately evaluated the risk associated with fall-in vegetation hazards contacting the network, nor determined that this risk is being managed SFAIRP. 	<ul style="list-style-type: none"> Ausgrid will review and improve the ENSMS Framework and Formal Safety Assessment processes to detail how we manage network safety risks.

¹¹ Audit Fundamentals, Process, and Findings and Audit Guideline - Electricity Networks Safety Management Systems can be viewed at www.ipart.nsw.gov.au/Home/Industries/Energy/Energy-Networks-Safety-Reliability-and-Compliance/Electricity-networks/Electricity-Networks-Auditing

Audit Scope	Identified Non-Compliances	Actions
<ul style="list-style-type: none"> Evaluation of Ausgrid's response to the Coroner's General Inquiry report into the fire at Reedy Swamp Tarraganda Bega/Tathra and Energy Safe Victoria's technical reports on Powerline Bushfire Safety Program Benefits Realisation and Rapid Earth Fault Current Limiter technology. Verification of the completeness and accuracy of bushfire risk controls reported in Ausgrid's annual performance report, in line with IPART's Electricity networks reporting manual. Analysis of the alignment between Ausgrid's reported bushfire preparedness in its Annual Performance Report and field observations, including progress in asset and vegetation inspections and defect rectifications. 	<ul style="list-style-type: none"> The auditor found Ausgrid's Annual ENSMS Performance Report did not contain sufficient contextual information to enable stakeholders who may not have specialist knowledge, such as customers and members of the public, to understand the information. 	<ul style="list-style-type: none"> Ausgrid has engaged with its internal Customer Communications team to benchmark and recommend improvements to the format and review process of its Annual ENSMS Performance Measurement Report.
<p>Ausgrid's EMS surveillance audit (August 2022)</p> <p>A surveillance audit of Ausgrid's EMS in relation to ISO 14001:2015 requirements.</p>	<ul style="list-style-type: none"> No new non-compliances were identified. 	<ul style="list-style-type: none"> Three open actions from the previous 2021 audit were closed.



B. Bushfire Preparedness

Part B is Ausgrid's response to the reporting requirements in the reporting requirements in Appendix A - Bushfire preparedness of the IPART Electricity Networks Reporting Manual - Safety management system performance measurement. This section summarises Ausgrid's preparations prior to the commencement of the statutory bush fire danger period (BFDP), which begins on 1 October or earlier where the NSW RFS Commissioner declares a variation based on the recommendation of local Bush Fire Management Committees (BFMCs).

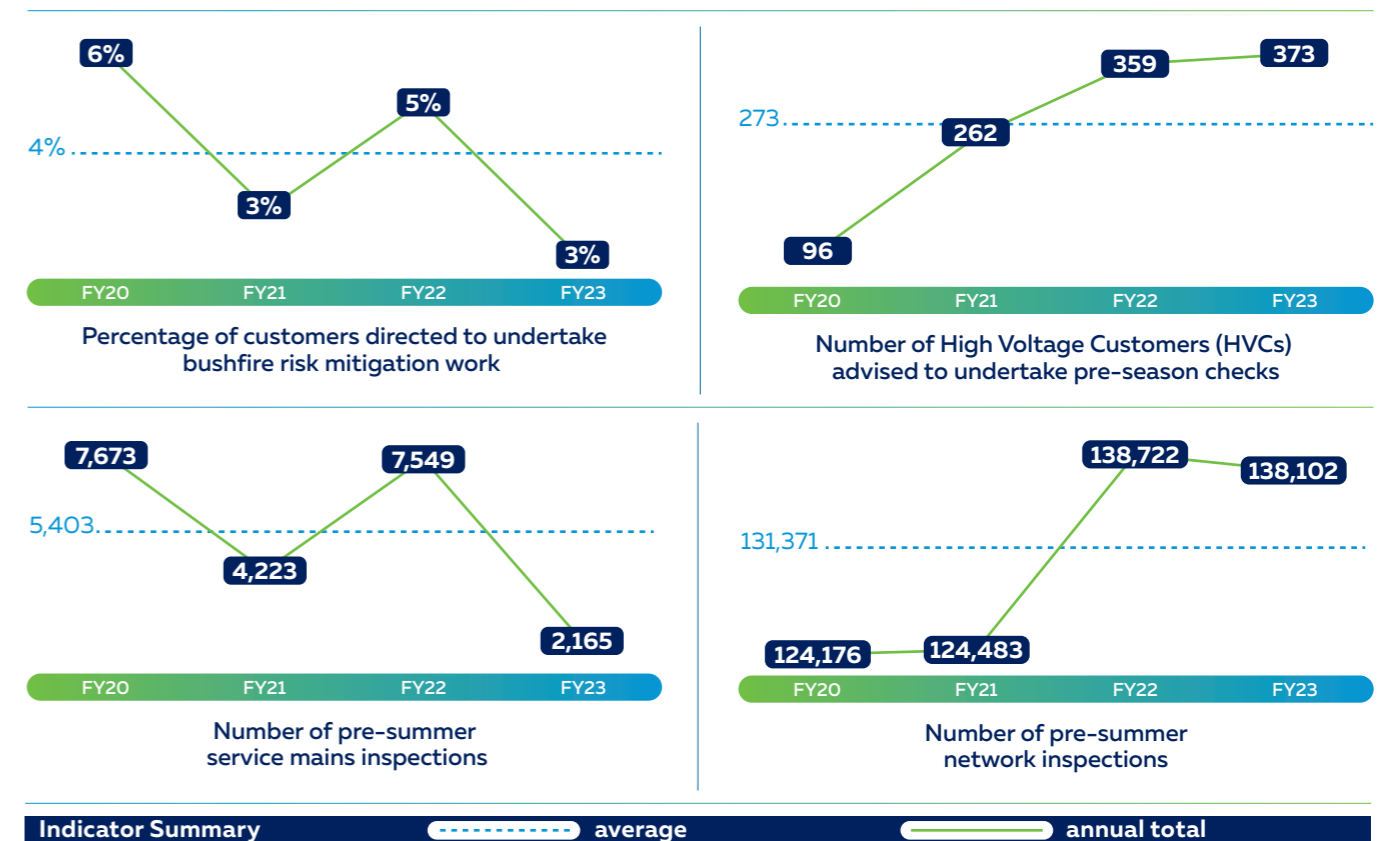
In our ongoing commitment to bushfire prevention, we at Ausgrid, along with our customers and the community, share the responsibility of managing the risk of bushfires by eliminating hazards from our electricity networks. Our collective effort safeguards life, property, and the environment.¹²



¹² For more details on how we are working together to achieve this, visit www.ausgrid.com.au/in-your-community/bushfire-prevention

Part B – Summary

Trends of the key statistics from Part B of this report and from previous reporting periods are shown below.



B.1 Bushfire Risk Profile Across Network Operator's Supply Area

Australia's climate influences have shifted significantly since last spring, with above average temperatures and below average rainfall expected for almost the entire country for the coming season. Many regions have also seen increased fuel growth due to above average rainfall throughout recent La Niña years, which is contributing to increased risk of bushfire across locations in Australia during spring 2023.

Due to high fuel loads and the forecast of warmer and drier conditions, large areas of central and northern NSW are expected to see increased risk of fire this spring. Although stocking rates (defined as the number of livestock per unit land area) continue to recover, large areas of high grass loads persist. This has affected the northern region of our network in the Upper Hunter. In the Australasian Fire And Emergency Services Authorities Council (AFAC) Spring Seasonal Outlook, high fuel loads have been noted around the Sydney Basin, parts of the coast and north of the Hunter. In the event of fires and windy weather, these high grass fuel loads can support intense and fast spreading grass fires. High forest fuel loads are evident in parts of the coast and ranges not affected by the 2019-20 fires. The forecast of warmer, and in some areas drier, conditions in these areas present increased risk of fire this season. In areas affected by the 2019-20 fires, these fuels continue to recover in response to ideal growing conditions over the last three wet La Niña years. However, the high severity fires during 2019-20 have altered the way this regrowth is structured. Some parts of the forest (for example, shrubs) are regrowing faster, while other parts are accumulating slower (surface and canopy fuels). Overall fuel loads are close to what are expected and regrowth in these areas is being monitored closely. Hazard reduction burns are still being undertaken across the Ausgrid network by NSW RFS, Fire and Rescue NSW and land managers, such as National Parks and Wildlife Service, National Parks and State Forest, and local councils.

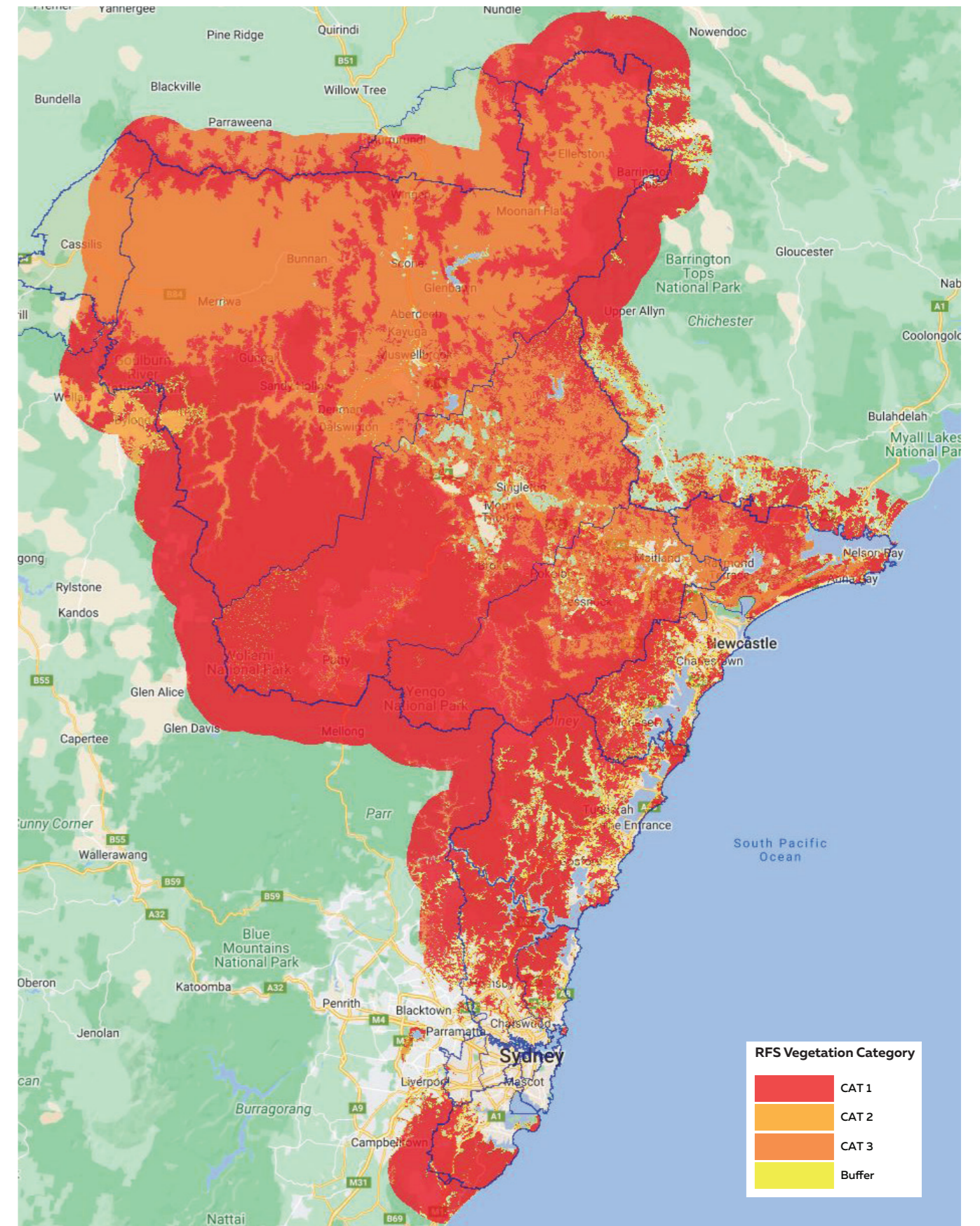
Figure 1 AFAC Spring Bush Fire Outlook 2023¹³



¹³ The entire seasonal report published by the Australian and New Zealand National Council for Australasian Fire And Emergency Services Authorities Council (AFAC) is located at www.afac.com.au/docs/default-source/bushfire-seasonal-outlook/spring-2023/afac-seasonal-bushfire-outlook_spring_2023_v1-0.pdf

Ausgrid defines bushfire prone land areas by applying the NSW RFS bushfire prone land maps to Ausgrid's supply area. These represent areas of land that can support a bushfire or are likely to be subject to bushfire attack. This also includes a buffer zone around the bushfire danger areas to mitigate the risk of fire spread. The bushfire areas within Ausgrid's supply area are shown in Figure 2. Ausgrid does not differentiate the different bushfire prone land categories or buffer areas for inspection and reporting purposes.

Figure 2 Ausgrid's network and related Bushfire Prone Land Areas



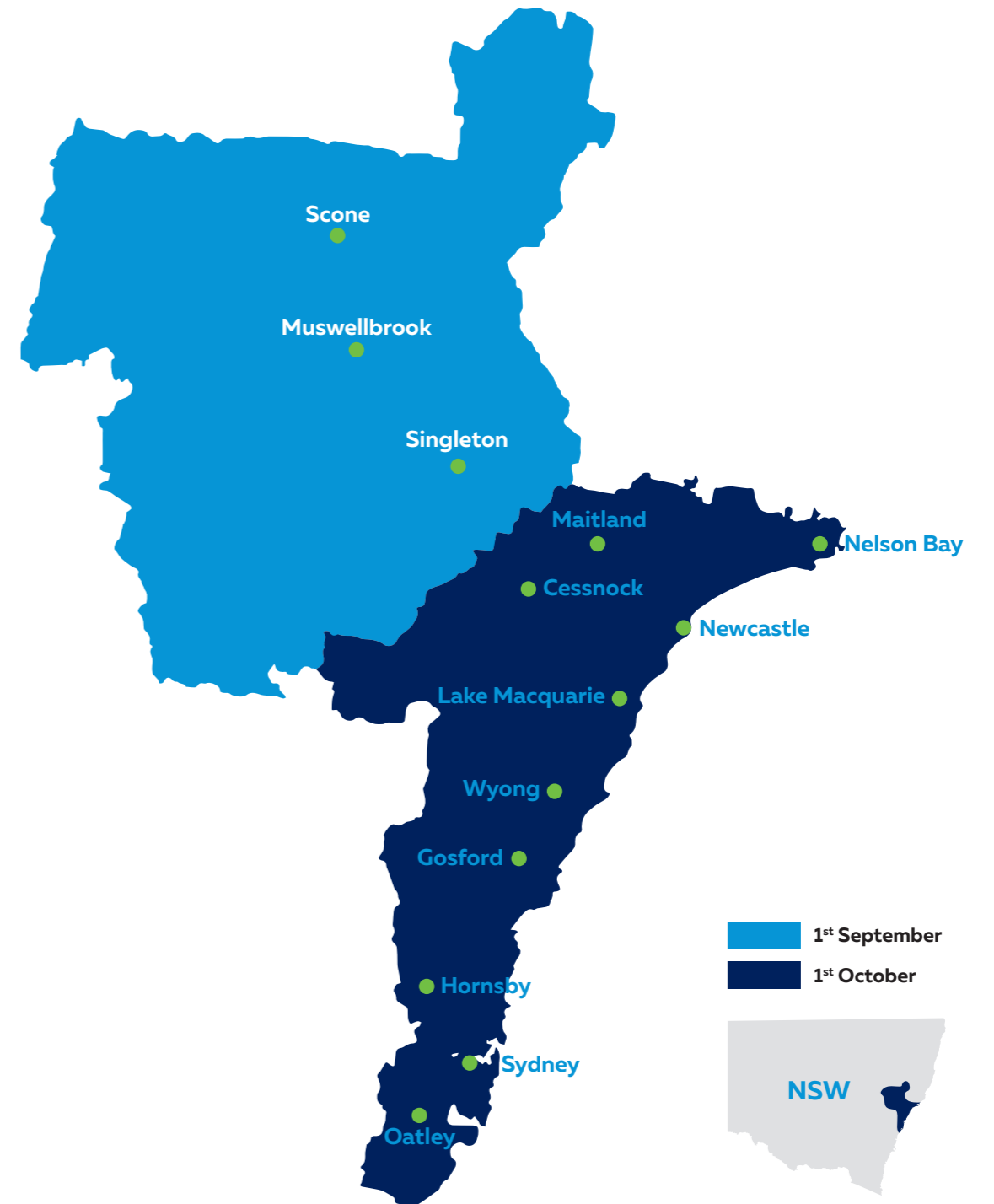


B.2 Permanent / Temporary Declaration of Areas by NSW RFS and Network Operator's Actions

The Rural Fires Act 1997 provides for a statutory BFD commencement 1 October and ending 31 March in the following year. This declaration can be varied on either a temporary (seasonal) or permanent (recurring) basis due to local climatic conditions and remains in force for the period specified unless it is revoked.

This year, no temporarily altered BFD commencement date affecting LGAs in Ausgrid's area were declared by the NSW RFS Commissioner due to local climatic conditions. Three LGAs were confirmed as having permanent variations in place commencing 1 September. The map attached below as Figure 3 illustrates the applicable BFD commencements across the Ausgrid Network.

Figure 3 BFD 2023 commencement for areas in Ausgrid's network





B.3 Aerial Consumer Mains on Bushfire Prone Private Land

Ausgrid completed private mains inspections on all identified overhead consumer mains in bushfire prone land during the period from April to August 2023. Defect notices were issued to property owners where any defect was identified. The customer has separate obligations for maintaining their installation in a safe condition and is required to address any identified bushfire risk defects within 60 days. However, if the customer does not address the defect, Ausgrid will arrange to rectify the defects and seek to recover costs. The NSW Electricity Supply Act, associated regulations, and National Energy Retail Rules allow Ausgrid to disconnect the property if there is an imminent safety hazard or inaccessibility preventing defect rectification.

Ausgrid identifies all high voltage customer sites located on bushfire prone land. These customers are requested to confirm the presence of overhead electrical installations on their sites and, if confirmed, are required to provide Ausgrid with a copy of their Installation Safety Management Plan addressing bushfire risk and a statement of compliance to indicate the site complies with the requirements of the plan. Response is required prior to the commencement of the bushfire danger period.

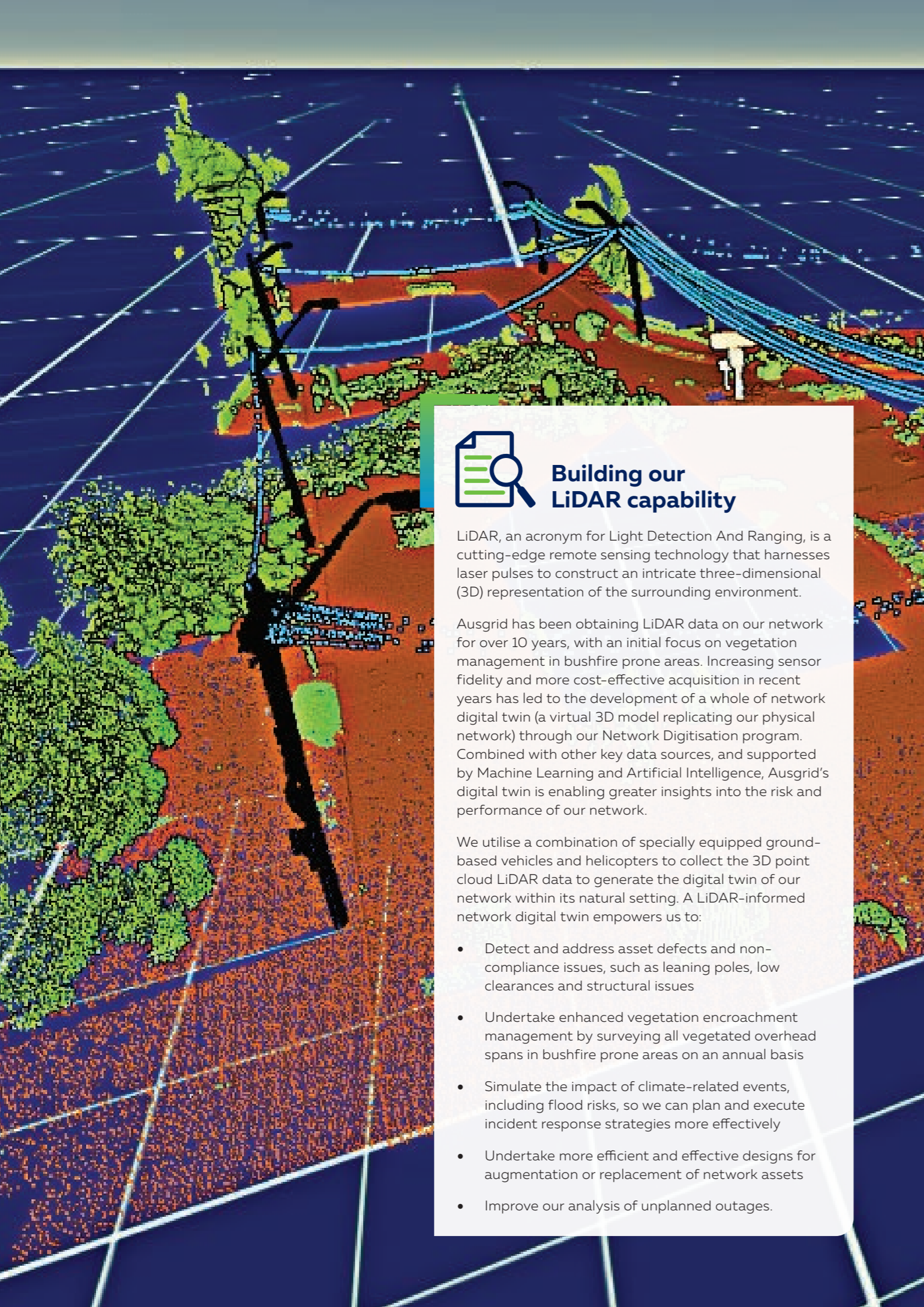
Table B.1 presents performance metrics related to private lines and consumer mains for the reporting period. The annual variation in private line assessments by Ausgrid is influenced by changes in the NSW RFS classification of bushfire prone land and changes in private networks. However, it's important to note that these variations do not indicate a change in the program's scope, as all private mains in bushfire prone land remain included in the program. The increase in customers with unresolved defects outstanding by more than 60 days is due to Ausgrid's proactive engagement, allowing them to schedule the necessary repairs within a timeframe assessed by Ausgrid as appropriate. The assessment considered the defects and established a completion timeframe to mitigate the bushfire risk. Importantly, in all instances, customers completed the necessary repairs within the specified timeframe and also before the commencement of the BFDP.

High Voltage Customers (HVCs) requiring additional risk mitigation includes those HVCs who either did not provide a statement of compliance or were found to have identified defects necessitating mitigation measures. In such cases, Ausgrid ensures that the appropriate risk mitigation steps are taken, which may involve inspections by Ausgrid. The increase in HVCs conducting pre-summer bushfire checks is due to Ausgrid's revised reporting processes, which now require all HVCs in a bushfire prone area to confirm their network construction type and, if necessary, follow ISSC 31 guidelines for pre-summer bushfire checks. Additionally, our HVCs are consistently compliant, with no HVCs requiring additional risk mitigation prior to the start of the reporting period.

Table B.1 Aerial consumer mains on bushfire prone private land

Performance Measure	Current reporting period		Last reporting period		Two reporting periods ago		Three reporting periods ago		Four reporting periods ago	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Private LV lines checked by the Network Operator	18,009	18,009	17,541	17,541	16,269	16,269	22,122	22,122	34,273	34,273
Number of directions for bushfire risk mitigation issued to LV customers by the Network Operator	n/a	456	n/a	928	n/a	558	n/a	1,366	n/a	3,502
Number of directions for bushfire risk mitigation issued to LV customers by the Network Operator that are outstanding by more than 60 days ^a	n/a	167	n/a	87	n/a	0	n/a	0	n/a	0
HV customers (metering point count) advised to undertake preseason bushfire checks in accordance with ISSC 31	373	373	359	359	262	262	96	96	77	77
HV customers (metering point count) providing statements of compliance in accordance with ISSC 31	98	98	95	95	92	92	96	96	77	77
HV customers (metering point count) requiring additional risk mitigation prior to start of the reporting period	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0
HV customers (metering point count) where additional risk mitigation has been completed prior to start of the reporting year	n/a	0	n/a	0	n/a	0	n/a	0	n/a	0

^a Refers to directions issued under section 53C of the Electricity Supply Act 1995.



Building our LiDAR capability

LiDAR, an acronym for Light Detection And Ranging, is a cutting-edge remote sensing technology that harnesses laser pulses to construct an intricate three-dimensional (3D) representation of the surrounding environment.

Ausgrid has been obtaining LiDAR data on our network for over 10 years, with an initial focus on vegetation management in bushfire prone areas. Increasing sensor fidelity and more cost-effective acquisition in recent years has led to the development of a whole of network digital twin (a virtual 3D model replicating our physical network) through our Network Digitisation program. Combined with other key data sources, and supported by Machine Learning and Artificial Intelligence, Ausgrid's digital twin is enabling greater insights into the risk and performance of our network.

We utilise a combination of specially equipped ground-based vehicles and helicopters to collect the 3D point cloud LiDAR data to generate the digital twin of our network within its natural setting. A LiDAR-informed network digital twin empowers us to:

- Detect and address asset defects and non-compliance issues, such as leaning poles, low clearances and structural issues
- Undertake enhanced vegetation encroachment management by surveying all vegetated overhead spans in bushfire prone areas on an annual basis
- Simulate the impact of climate-related events, including flood risks, so we can plan and execute incident response strategies more effectively
- Undertake more efficient and effective designs for augmentation or replacement of network assets
- Improve our analysis of unplanned outages.

Table B.2 provides information on pre-summer bushfire inspection targets and their corresponding achievements. For more than four years, there have been no outstanding pre-summer bushfire inspection tasks, even though the bushfire prone area within Ausgrid's network increased in 2022. This increase was due to the expansion of bushfire prone area in several LGAs and has led to an increased need for inspections. Ausgrid continues to improve its approach to mitigating bushfire risk of the network through the upgrading of the legacy service mains technology with a modern and more resilient construction where practicable. This can be observed in the continuing reduction in the service mains inspection target. Additionally, starting in February of this reporting period, Ausgrid transitioned to an aerial inspection using drones with improved effectiveness, over a continuous 12-month period, while maintaining the existing 3-year cycle for each bushfire capture region.

Table B.2 Pre-summer bushfire inspections

Pre-summer bushfire inspections	Population	Target	Achieved	Open	Outstanding	Comments
Aerial Vegetation	138,102 (poles)	138,102	138,102	0	0	Inspection targets are based on all poles identified that support conductor spans located partially or completely within a bushfire prone area. This includes poles that may not be situated in a bushfire prone area themselves but are essential because they support a conductor passing through such areas.
Aerial Hardware	138,102 (poles)	41,812	37,949	3,863	0	To achieve better resource planning and manage overall network risk, Aerial Hardware inspections are now undertaken over a full year using drones with a three-year cycle. Therefore, inspections are always expected to remain Open after the reporting period. However, as these are not yet due for completion, they are not reported as Outstanding.
Service Mains	134,612 (spans)	2,165	2,165	0	0	All inspections are carried out in accordance with Ausgrid's inspection program, specifically focusing on mitigating the bushfire risks associated with the type of service wire construction that presents a higher bushfire risk.
Pole Inspections	138,102 (poles)	n/a	n/a	n/a	n/a	Ausgrid does not perform dedicated pre-summer bushfire pole inspections. Instead, we follow the procedure detailed in Table A.12, outlining our routine pole inspections, aimed at efficiently reducing bushfire risks.



Job Prioritisation

We have introduced a Job Prioritisation Framework to develop granular prioritisation of work (tasks) to improve resource allocation and focus on efficient reduction of risk using multiparameter asset risk information and cost benefit analysis.

Why are we making this change? Consistently prioritising work effectively has been a challenge over the years. We have taken the opportunity to leverage our asset data and systems to prioritise tasks based on their estimated effort and reduction in risk, rather than broad categories and rigid timeframes. An approach which adheres to deadlines limits our ability to identify the best opportunities and bundle work efficiently.

So, what's changing? We've developed a model that calculates a job's priority based on the risk reduced and required cost, and we've published a new framework to guide our prioritisation process. We are currently transitioning away from categorised priorities using due dates to determine the priority of work tasks and shifting our focus to key performance indicators (KPIs) related to managing risk both at the Ausgrid level and within individual workgroups. We'll prioritise jobs requiring network access using a priority number, providing a more flexible and value-driven approach.

What's not changing? Emergency defects (Cat 1) will continue to be addressed within 48 hours as before. The prioritisation of planned maintenance activities and work that is not related to network defects will still be based on the established timeframes. We continue to report outstanding status on any bushfire task that remains open beyond a compliance date that has been established under the JPF.

The data presented in **Table B.3** provides an overview of the status of vegetation tasks prior to the commencement of the BFDP. For more than four years, there have been no unfinished pre-summer bushfire inspection tasks, even though the bushfire prone area within Ausgrid's network increased in 2022 (see Figure 2). A significant portion of these tasks are identified using aerial LiDAR technology, and in cases where LiDAR is not feasible, routine ground-based visual inspections are employed. It's important to note that Ausgrid also undertakes vegetation tasks that do not have encroachment classifications. The identification of hazard trees exclusively relies on ground-based visual methods and is limited to those situated in a bushfire prone area.

Table B.3 Vegetation tasks

Bushfire risk category	Status	Encroachment Classification A1	Encroachment Classification A2	Encroachment Classification A3	Encroachment Classification A4	No Classification	Hazard trees
Bushfire prone land	Identified	912	3,146	16,518	24,162	19,430	159
	Completed	912	3,146	0	0	19,214	140
	Open	0	0	16,518	24,162	126	19
	Outstanding	0	0	0	0	0	0

Table B.4 provides information on defects generated from routine and pre-summer inspections that are identified within or before the reporting period. Ausgrid continues to enhance its strategy of reducing the risk of bushfires caused by asset-related issues, adopting a more effective risk-based approach to prioritise asset tasks under its Job Prioritisation Framework (JPF). The notable increase in tasks (identified and completed) related to assets in a bushfire prone area in the current year, when compared to the previous annual report, can be primarily attributed to the adoption of job prioritisation. This new prioritisation system now includes an escalation of risk over time, reflecting the degradation of assets, so those that were previously assessed as low priority will increase in risk over time if left unaddressed. It's important to highlight that the count of open tasks has not significantly increased. Additionally, for more than four consecutive years, there have been no outstanding asset tasks at the commencement of the BFDP.

Table B.4 Asset tasks

Bushfire risk category	Status	CAT 1 (Emergency)	CAT 2	CAT 3	CAT 4	Totals
Bushfire prone land	Identified	1,937	1,748	5,517	4,167	13,369
	Completed	1,937	1,684	3,861	1,628	9,110
	Open	0	64	1,656	2,539	4,259
	Outstanding	0	0	0	0	0



Glossary

Term	Definition
Aerial inspection vegetation / hardware	Assessments of powerlines, poles, vegetation and other equipment undertaken with helicopters, planes and/or unmanned aerial vehicles (UAVs) fitted with LiDAR and Photographic equipment.
AFAC	Australasian Fire and Emergency Services Authorities Council.
Agricultural and other	Examples include agricultural equipment, aircraft, watercraft.
AS 5577	Australian Standard Electricity Network Safety Management Systems, 2013, published by Standards Australia.
ASP or Accredited Service Provider	Persons and organisations accredited under the NSW Government's Accredited Service Provider Scheme, established under Part 3 of the Electricity Supply (Safety and Network Management) Regulation 2014.
Asset	Encompasses all the equipment and structures required for distribution, and utilisation of electricity, including poles, wires, transformers, control systems, and more.
Assisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the equipment was subject to an external force or energy source against which the network operator's standards for design and maintenance do not attempt to control.
BFDP	The statutory bush fire danger period (BFDP), nominally 1 October or earlier where the NSW RFS Commissioner declares a variation based on the recommendation of a local Bush Fire Management Committee (BFMC). In Ausgrid's distribution area the local government areas of Muswellbrook, Singleton and Upper Hunter are on a permanent variation to nominally commence the BFDP on 1 September.
BSP	A Bulk Supply Point (BSP) refers to a location where high-voltage electricity is received from the transmission network. This point connects the higher voltage transmission system to the lower voltage distribution network, allowing for efficient distribution of electricity to homes and businesses.
Bushfire prone land	Area that has been identified by local council which can support a bushfire or is subject to bushfire attack.
Category 1 – 4 defects	<p>Category 1: Defects that pose a direct and immediate risk to the safety of the public / staff and requiring immediate rectification within 48 hours.</p> <p>Category 2: Defects that pose a risk to the safety of the public / staff and require rectification within 48 hours to 3 months.</p> <p>Category 3: Defects that pose a predictable future risk to the safety of the public / staff and require rectification within 3-12 months.</p> <p>Category 4: Defects that pose a predictable future risk to the safety of the public / staff and require reinspection before the next maintenance cycle.</p>
Conductor – LV	LV means 'low voltage' and is defined as a voltage below 1kV ac nominal.
Conductor – HV	HV means 'high voltage' and is defined as a voltage of 1kV ac nominal and above.
Conductor – Transmission	Transmission conductors form part of a transmission network. Sub-transmission conductors form part of a distribution network. Transmission and sub-transmission voltages are generally 33kV ac nominal and above.

Term	Definition
Consumers mains	Part of an electrical installation consisting of overhead conductors and support structures between the main switchboard of an electrical installation and a support structure that is the connection point with the distribution system.
Encroachment Classification A1 – A4	Vegetation encroachments into the minimum vegetation clearance as specified in ISSC3 2016 Guide for the Management of Vegetation in the Vicinity of Electricity Assets.
ENSMS	Electricity Network Safety Management System.
Fire	A state, process, or instance of combustion in which fuel or other material is ignited and combined with oxygen, giving off light, heat and flame. This includes 'smouldering' or 'smoke' events, and LV wires down events resulting in burning around the point of contact on a combustible surface. Excludes LV wires down arcing events on non-combustible surfaces. Network Scope: Applicable to any fire caused by, or impacting, a network asset.
Functional failure	Performance of a piece of equipment (or component of an asset or asset) that represents a reduction below acceptable limits of the specification for a piece of equipment resulting in reduced capability required for service. In general, a functional failure is represented by a defect condition where the equipment that is required for service can no longer perform its expected function and which results in an unplanned maintenance action to restore condition to an acceptable limit. Note: operation of protection equipment (e.g., fuse) within its design characteristics is not a functional failure.
Hazardous tree / Fall-in vegetation hazard	As per ISSC 3, visually defective vegetation (which is vegetation that is dead, dying or appears structurally unsound as identified from the perspective of the Network Asset as far as it is reasonably practicable to do so) that is outside the minimum Clearing Requirement distances from Electricity Assets and which may require pruning, cutting, or removal to obviate the risk of it falling, dropping, and contacting the assets.
High voltage into Low voltage	May also be referred to as HV LV intermix or HV injection. Typically refers to a situation where high voltage (HV) and low voltage (LV) electrical systems or components are unintentionally or improperly connected or mixed together.
ISSC 3	Industry Safety Steering Committee Guideline for the Management of Vegetation in the Vicinity of Electricity Assets, November 2016.
ISSC 31	Industry Safety Steering Committee Guideline for the Management of Private Overhead Lines, September 2019.
HSMS	Health and Safety Management System.
Incident	Defined in accordance with IPART's Electricity Network Reporting Manual - Incident Reporting, available on the IPART website.
Latitude (maintenance standard latitude)	The latitude sets the period of time before and after the Due Date within which the maintenance activity must be completed. Maintenance standards completed within this time period are defined to be completed by the Due Date. This allows for efficient maintenance planning and control.
LGA	NSW Local Government Area.
LiDAR	Light detection and ranging is a method for determining ranges by targeting an object with a laser and determining the distance using the time taken for the reflected light to reach the detector.
Major incident	Defined in accordance IPART's Electricity Network Reporting Manual - Incident Reporting, available on the IPART website.

Term	Definition
Major Event Day (MED)	A day in which the daily total system (i.e., not on a feeder-type basis) SAIDI value ("daily SAIDI value") exceeds a threshold value. The technical detail for performing the calculation is contained in Schedule 6 of Ausgrid's Distributor's License obtainable from IPART's website. MEDs are to be excluded from the network overall reliability standards and individual feeder standards. Its purpose is to allow major events to be studied separately from daily operation, and in the process, to better reveal trends in a daily operation that would be hidden by the large statistical effect of major events.
Momentary interruption	Defined as interruption to a distribution customer's electricity supply with a duration of 3 minutes or less, provided that the end of each momentary interruption is taken to be when the electricity supply is restored for any duration.
Network worker	A person who has been authorised by the network operator to plan or conduct work on or near the network. Includes persons employed by the network, persons engaged under a contract by the Network Operator, and persons authorised by the Network Operator and working for an Accredited Service Provider.
Network employee / network contractor	Includes all classes of authorised persons (network employee and network contractor). Accredited Service Provider employees are not included.
OH	Overhead.
Open (with respect to defects / tasks)	A defect / task that has not been rectified by the Network Operator at the end of the reporting period but where the time that has elapsed since being identified has not exceeded the standard time that the Network Operator has set for having the defect rectified.
Outstanding (with respect to defects / tasks)	A defect / task that has not been rectified by the Network Operator at the end of the reporting period where the time that has elapsed since being identified has exceeded the standard time that the Network Operator has set for having the defect rectified.
Peer group A1, A2, A3 and B hospitals	A hospital peer group classification applied to NSW public hospitals as defined by NSW Ministry of Health.
Plant and equipment	Cranes, elevated work platforms, cherry pickers, excavators, hand held tools, etc.
Public road vehicle	Includes plant and equipment packed up for travel (i.e., plant and equipment travelling on a public road to or from worksite).
Pole-top structures	A pole-top structure / component is any structure that is attached to a pole to support electricity mains and apparatus.
Power BI	An interactive data visualisation software product developed by Microsoft with a primary focus on business intelligence.
Power transformers	Transformers where the secondary / output voltage is 5kV ac nominal or above.
Private LV lines	Aerial consumers mains on bushfire prone private land.
Public worker	A party or parties that are conducting work that is not directly associated with the electricity network such as building work, landscaping, landfill work, excavations, road works. Includes the construction, maintenance, adjustment or dismantling of mobile plant and scaffolding.
Reactive plant	Includes reactors and capacitors.
Regulated SAPS	May be referred to as Network SAPS (includes temporary, emergency or permanent SAPS), which consist of a distribution system owned, controlled or operated, or proposed to be owned, controlled or operated, by a Network Operator.

Term	Definition
NSW RFS Vegetation Category	Vegetation Category 1: Areas of forest, woodlands, heaths (tall and short), forested wetlands and timber plantations.
	Vegetation Category 2: Rainforests, lower risk vegetation parcels, remnant vegetation.
	Vegetation Category 3: Grasslands, freshwater wetlands, semi-arid woodlands, alpine complex and arid shrublands.
	Buffers are created based on the bushfire vegetation, with buffering distance being 100 metres for vegetation category 1 and 30 metres for vegetation category 2 and 3.
Safe Approach Distance (SAD)	Encroachment into the applicable Safe Approach Distance for the type of individual involved.
SAP	Systems, Applications and Products is a business application for managing financials, logistics, human resources, assets, safety and other business areas.
Service mains / Service line	The electricity authority's conductors connecting the electricity distribution system to an individual customer's connection point (refer to the NSW Service and Installation Rules for further information on service connections and definitions).
SFAIRP	So Far As Is Reasonably Practicable. Typically referring to the requirement to ensure that risks / hazards are being eliminated (or if unable to be eliminated, minimised) so far as is reasonably practice.
SAIDI	The average derived from the sum of the durations of each sustained customer interruption (measured in minutes), divided by the total number of Ausgrid's customers (averaged over the financial year).
SAPS or Stand-Alone Power System	A system that: (a) generates and distributes electricity; and (b) does not form part of the interconnected national electricity system.
Shock	Reportable electric shocks greater than 50V rms that are to be reported to IPART and excluding those resulting from static discharge, defibrillators and where the system is nominally extra low voltage or involving the DC rail traction system.
Span	A section of overhead conductor between two supporting poles or structures. The term may also refer to the horizontal distance between the two pole attachment points.
Sustained voltage excursions outside emergency range	The Australian Standard AS 61000.3.100 defines and outlines measurement methodologies for steady-state voltage limits in public electricity systems. The main objectives of this standard are: <ul style="list-style-type: none"> Define and describe the permissible limits of steady-state voltage variation at customer connection points within public electricity systems. Establish a standardised methodology for assessing steady-state voltage parameters using power quality monitors. Recommend threshold voltage levels for the detection of voltage dips and voltage swells that align with the specified steady-state voltage limits.
Tunnel	A tunnel owned and maintained by Ausgrid to provide an underground feeder path.
UG	Underground
Unassisted failure	Any functional failure of a piece of equipment (component of an asset or asset) where the cause of the failure is of a type for which the network operator's design and maintenance standards include specific controls to mitigate against the risk of failure and which is neither an assisted failure nor a maintenance induced failure. These failures are generally caused by a deterioration of the condition of the equipment and also include overhead connection failures and vegetation within the mandatory vegetation clearance window.
XLPE	Cross-linked polyethylene insulated cable.



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