

# Endeavour Energy Public Safety Plan

## FY26

### Electrical & Public Safety



# CONTENTS

<b>1.0</b>	<b>INTRODUCTION .....</b>	<b>1</b>
<b>1.1</b>	<b>Background .....</b>	<b>1</b>
<b>1.2</b>	<b>Purpose.....</b>	<b>2</b>
<b>1.3</b>	<b>Risk identification analysis and incident data .....</b>	<b>2</b>
<b>1.4</b>	<b>Monitoring and performance.....</b>	<b>2</b>
<b>1.5</b>	<b>Public Safety Plan compliance, review and accessibility.....</b>	<b>2</b>
<b>2.0</b>	<b>Approach to Managing Identified Public Safety Risks .....</b>	<b>3</b>
<b>2.1</b>	<b>Asset Management.....</b>	<b>4</b>
2.1.1	Monitoring Concentric Neutral Solid Aluminium Conductor (CONSAC) cable for compromised neutral .....	4
2.1.2	Asset Inspections (columns & pillars) .....	5
2.1.3	Service Mains Replacement program.....	5
2.1.4	Pole Inspections and Routine Replacement.....	6
2.1.5	Low Mains Remediation program.....	7
2.1.6	Vegetation Management.....	8
2.1.7	Bushfire Mitigation – Covered Conductor Augmentation.....	9
2.1.8	Public Lighting.....	10
2.1.9	Vandalism Prevention and Asset Security.....	11
2.1.10	Traffic Blackspot Poles .....	12
<b>2.2</b>	<b>Technology.....</b>	<b>13</b>
2.2.1	Improved Data and Analytical Tools .....	13
2.2.2	Smart Meter Data Analysis.....	14
2.2.3	Digital Twin 3D Model .....	15
2.2.4	Asset Inspection Technology .....	16
2.2.5	High Voltage Distribution Protection Modernisation .....	17
<b>2.3</b>	<b>Worker Competency and Capability .....</b>	<b>18</b>
2.3.1	Competency Management (Authorisations) .....	18
2.3.2	Verification and Assurance Activities .....	19
2.3.3	Emergency response and management of battery assets.....	19
2.3.4	Workplace Instructional Resources and Ongoing Education.....	20
<b>2.4</b>	<b>Public Awareness and Community Engagement.....</b>	<b>21</b>
2.4.1	Public Safety Awareness Social Media Activities.....	21
2.4.2	Emergency Services Electrical Safety Education.....	21
2.4.3	Domestic Electric Shocks and Community Awareness .....	22
2.4.4	‘Electric Kids’ Education Program .....	22
2.4.5	Community Assistance and Support.....	23
2.4.6	Community Awareness Relating to Electro-Magnetic Forces (EMF) .....	24
2.4.7	Life Support Customers .....	25
2.4.8	Planning Resources and Asset Data .....	26
2.4.9	Collaboration with Industry Stakeholders.....	27
2.4.10	Industry Engagement and Advice .....	28

# 1.0 INTRODUCTION

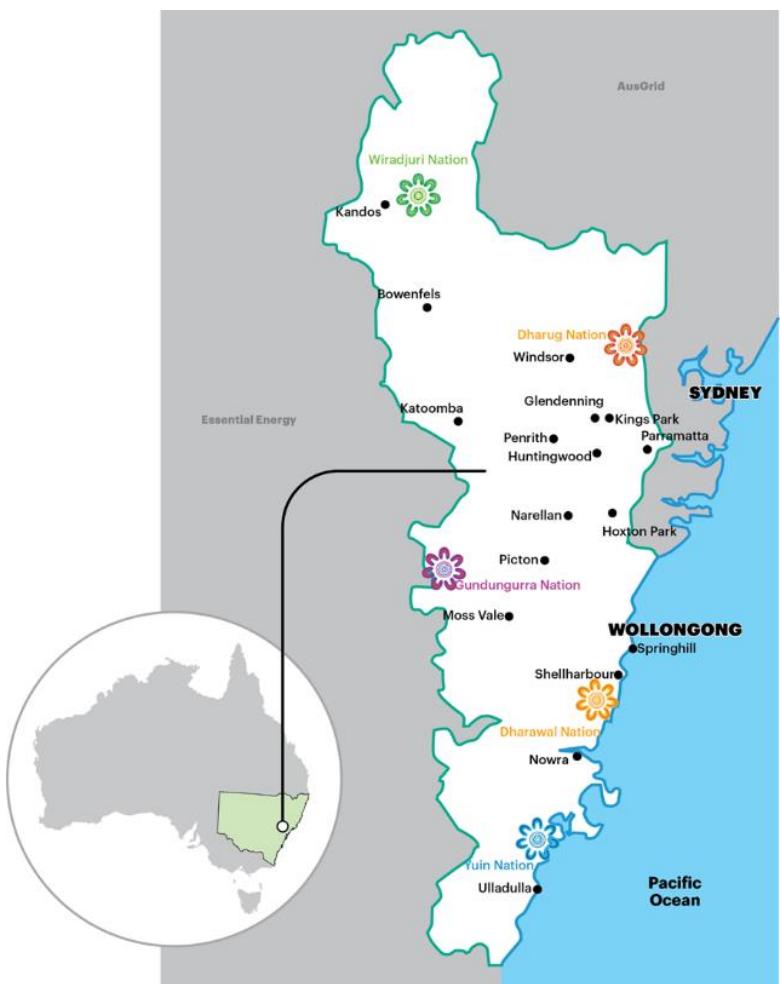
## 1.1 Background

Operation of the electricity distribution network over an area of almost 25,000 square kilometres results in risks to the public, either through their exposure to network assets in ways that are difficult to control or through our activities associated with the operation and maintenance of the network.

Our network is made up of more than 185 major substations, 416,000 power poles and 32,000 smaller substations connected by 47,000 kms (more than the distance from Sydney to London and back) of underground and overhead cables.

Endeavour Energy services the high growth regions of NSW, with the population of Greater Western Sydney forecast to grow approximately by almost one million people by 2031.

Our franchise area includes the Northwest and Southwest priority growth areas of Sydney which will see 500,000 new residents over 30 years.



These priority growth areas are the result of the biggest coordinated land release in NSW's history.

The management of the risk to public safety posed by the Endeavour Energy network has elements associated with both the management of the network assets and the ability of the company to influence the behaviour of the public in the vicinity of the network.

Under the Electricity Supply (Safety and Network Management) Regulation 2014 (the Regulation) Endeavour Energy must, as part of its Electricity Network Safety Management System, provide advice to the public about the hazards associated with its electricity network.

Endeavour Energy has developed and published this Public Safety Network Management Plan (Plan) to comply with this requirement and inform stakeholders of the associated hazards and controls in place to manage the inherent risks.

Endeavour Energy split (Safety) BR1.8 Harm to Member of the Public into two risks / hazardous events:

### 1) BR 1.8 Harm to member of the public excluding impacts with roadside assets

The risk that the network or activities associated with the construction, maintenance and operation of the network could result in harm to members of the public (including general public workers), as well as damaging property; and

### 2) BR 1.10 Member of public impact with a roadside asset

The risk that network roadside assets could result in harm to members of the public (including general public workers), as well as damaging property, in the event of a collision or asset failure.

## 1.2 Purpose

This Plan is reviewed annually and details how Endeavour Energy will invest and tailor activities to target a variety of community and industry stakeholder groups through safety awareness campaigns, educational programs, asset management practices, business processes and the promotion of safe behaviours to reduce interaction with electricity infrastructure with the ultimate goal of driving risk reduction, preventing asset damage and improving public and community safety outcomes.

The Plan has been designed to:

- raise awareness of the risks associated with the distribution and use of electricity;
- raise awareness of electrical safety amongst at-risk target groups;
- remind the public of hazardous situations involving electricity; and
- demonstrate Endeavour Energy's commitment to the safety of its community.

## 1.3 Risk identification analysis and incident data

This Plan has been developed using data and risk analysis completed as part of Endeavour Energy's Public Safety Formal Safety Assessment (FSA).

The FSA uses the following data to inform the risk profile and determine at-risk groups:

- Safety incident and hazard data;
- Asset performance data;
- Industry (Australian and international) incidents, trends, and potential emerging risks;
- Insurance claims data;
- Internal audit findings;
- SafeWork NSW and IPART incident data; and
- Regulatory obligations.

The Plan is reviewed in line with the review cycle of the FSA and where emerging risks and opportunities for improvement are identified (both proactively and reactively).

## 1.4 Monitoring and performance

Overall monitoring of the company's risk position with respect to public safety risks is monitored through the oversight provided by both the Executive and Board Audit and Risk committees, as defined in the risk management policy and procedure.

These committees review both the key risk indicators (KRIs) and the progress on the implementation of risk treatment action plans to ensure that the desired outcomes are being achieved.

The key risk indicators used to monitor public safety risks include:

- Asset Strikes resulting from interaction with a member of the public (both overhead conductors and underground cables); and
- Domestic shocks resulting from network failure.

## 1.5 Public Safety Plan compliance, review and accessibility

This Plan was prepared in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014 and AS5577-2013 Electricity Network Safety Management Systems. This Plan will be reviewed and updated as required against legislation and regulation applicable to distribution and transmission network service providers, industry standards including AS5577, Endeavour Energy strategic plans, relevant internal policies, procedures and standards, emerging risks, the Plan's effectiveness and our regulatory determination.

In accordance with the Electricity Supply (Safety and Network Management) Regulation 2014, this Plan will be made accessible to all stakeholders who are likely to be involved in its implementation and will be made available on Endeavour Energy's website.

## 2.0 Approach to Managing Identified Public Safety Risks

Each person in our distribution network area relies on safely distributed electricity to power their lives at home, in the workplace and in the community.

Under normal operating conditions, electricity is safe when used correctly, however Endeavour Energy has identified the following at-risk groups and situations that could present a danger to our community:

- Storms, bushfires, floods and other natural disasters;
- Domestic electric shocks and tingles;
- Construction activity and general plant movement near the electricity network;
- Motor vehicle incidents; and
- Vandalism and unauthorised access (intentional and unintentional).

Endeavour Energy's plan to managing public safety risks associated with our network include activities grouped across four enablers:

1. **Asset Management** – Projects, programs and other activities across the network related to the asset lifecycle that ensure the network is safe;
2. **Technology** - Initiatives based on Smart Meters and their capability to function as both a preventive and mitigative risk control for network neutral issues, in addition to other technological advancements that relate to public safety outcomes leveraging analytics and geospatial data;
3. **Worker Competency and Capability** - Activities that address the training, competency management and skill retention or development of our workers; and
4. **Public Awareness and Community Engagement** - Activities to raise our customer and stakeholder awareness of the hazards associated with electricity and our network.

Each enabler has associated activities/programs aimed at mitigating the risks to public safety.

Endeavour Energy's approach to managing public safety risks associated with our network is to take a data driven approach to understanding:

- Deficiencies in the design or condition of the asset that may pose public safety risks;
- The groups of members of the public who, because of the activities that they undertake, or other defined characteristics of the group, are at elevated risk of harm from our network; and
- The typical issues associated with the interaction of members of the public and the network that give rise to an increased risk of harm to the public.



## 2.1 Asset Management

Endeavour Energy's network design and construction standards are intended to manage a range of network safety and performance risks including the risk of contact with our assets by members of the public that results in harm.

Endeavour Energy have a Safety in Design (SiD) procedure that is written to ensure we meet obligations in the design of network assets. Safe design begins at the concept development phase of network assets (including network investment option studies) when making decisions about:

- The design and its intended purpose;
- Materials to be used;
- Possible methods of construction, operation, maintenance and end-of-life activities (e.g., dismantling, recycling, demolition and disposal); and
- What legislation, codes of practice and standards must be considered.

Over the course of the asset's life, asset condition degrades, and environmental conditions can alter, leading to a higher likelihood of harm to the public. Risks that have been identified and have management plans in place include:

- Customer shocks (caused by our network);
- Unauthorised access to network assets (padmount substations);
- Asset strikes;
- Low mains; and
- Third party impacts (inappropriately placed assets)

Our Asset Management System considers these risks in our asset inspection and maintenance regime and implements capital and operating programs to manage them.

### 2.1.1 Monitoring Concentric Neutral Solid Aluminium Conductor (CONSAC) cable for compromised neutral

CONSAC cables in service in Endeavour Energy's Low Voltage (LV) Network are 3-phase underground conductors installed up to 1981. This cable can suffer from several failure modes, the most prominent mode being the failure of the concentric neutral conductor due to moisture ingress.

The principal risk presented by the CONSAC neutral failure is shock hazards to the public and workers, and as a result, a program to replace CONSAC cable in a planned manner has been in place since 2002.

As at FY26, approximately ~247km of the CONSAC in our network has been replaced, leaving approximately ~453km in service.



Initially a proactive program, CONSAC replacement activities remain a reactive program with replacement occurring only in high risk areas where cable condition monitoring enables strategic prioritisation of replacement activities aimed at repairing or replacing faulty connections that have the potential to cause public shocks and other reliability related issues.

The CONSAC cable replacement program is a long-term initiative that continues to be strategically informed by real-time cable condition monitoring to evaluate the status of the cable's electrical neutral connectivity and anticipate potential issues that may arise. This approach enables the program to address short-term risks while also deferring the replacement of healthy cables, resulting in superior prioritisation.

## 2.1.2 Asset Inspections (columns & pillars)

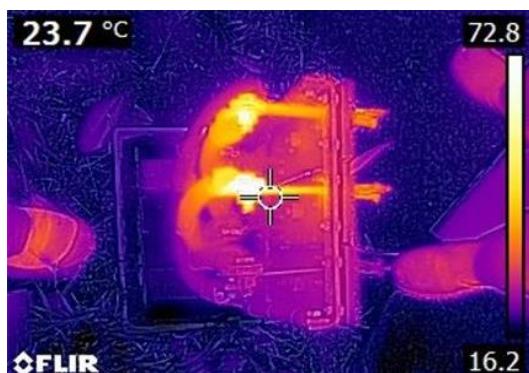
LV terminations are contained within mains and service pillars and within streetlight columns. Endeavour Energy distribution network has approximately 190,000 LV terminations.

The principal risk presented by the LV neutral termination failure is shock hazards to the public and workers.

The terminations and contacting connections of street light columns and LV pillars are required to be tested periodically to monitor for their deterioration or failures that may have occurred as a result of an event or impact



Routine external inspection of LV terminations in LV pillars and streetlight columns include external thermal inspection using infra-red camera (conducted every 4 years).



Internal visual inspections are carried out on an ad-hoc basis if:

- Thermal scans identified overheated connections or
- Any other circumstance where column cover or pillar lid is removed.

LV termination defects are recorded, and their rectification attempted on-site. If the defects cannot be rectified on site, they must be raised and prioritised as per the results of thermal scans or visual signs of heat damage.

## 2.1.3 Service Mains Replacement program

A Service main is either an overhead (OH) conductor or underground (UG) cable connecting the supplier's distribution mains to the consumer's premises (point of connection).

There are approximately 550,000 OH service mains which are currently installed in Endeavour Energy franchise area.

The two principal issues affecting overhead service mains include:

- Failures of the connectors at the point of attachment
- The loss of insulation, both at the point of attachment and on the mains themselves.

Failed connectors result in fluctuating voltages and/or loss of supply to the installation but of particular concern is the loss of the neutral connection which can lead to electrical shock hazards in the installation.



Deterioration of insulation, which results in bare conductors and connectors, presents a further risk of electrical shock hazard for the customer and their workers.

As condition data becomes available from the neutral integrity function of smart meters being installed throughout the network, the service mains replacement program will continue as a reactive replacement program based on condition data.

As at FY26, Endeavour Energy has replaced or rectified approximately 187,000 overhead (OH) service mains across our network area.

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## 2.1.4 Pole Inspections and Routine Replacement

Endeavour Energy is responsible for the operation and maintenance of approximately 430,000 poles across our franchise area.

We proactively replace poles and hardware before it can impact electricity reliability, as poorly maintained equipment can result in more frequent unplanned power interruptions or voltage fluctuations.

While some poles and equipment may look fine on the outside, it's possible they are damaged internally or below ground level, so careful inspections are needed beforehand

Every pole is inspected across our network every 5.5 years as part of a routine inspection cycle.

Inspections involve a team member digging around the base of the pole or column, measuring the wall thickness and looking for signs of rot or termites.

If our strict safety standards are not met, we'll condemn the pole and schedule a time for replacement.



It typically takes one day to complete a pole upgrade, and to undertake the work safely we must switch off power to impacted poles and wires for the duration of the job.

We may need to drop off the new pole a few days prior the commencement of work. It will be safely placed on either the footpath or nature strip and clearly marked.

In a small number of cases, we may not be able to place the new pole in the same position as the old pole and we may need to move it by 1 to 2m depending on other assets in the area including gas, water and telecommunications.

On the day you can expect to see a number of Endeavour Energy team members, along with 1-2 elevated work platforms allowing our team to work at height, and a crane borer truck to replace the old pole with a new one.

Please note, this can impact traffic flow and may require the closure of some narrow streets.

Following the completion of work, we may leave old poles onsite as they require a special vehicle to pick them up. This can take 3-5 business days, however rest assured we will soon return to collect them.

## 2.1.5 Low Mains Remediation program



Overhead conductors are designed and constructed at a sufficient height to prevent contact, however if the ground is built up (for example, by road works), or poles lean over time, the minimum safe height can be breached.

This can lead to low mains over roadways or land presenting a heightened level of risk to motorists, which Endeavour Energy's systems record as a 'high load impact'.

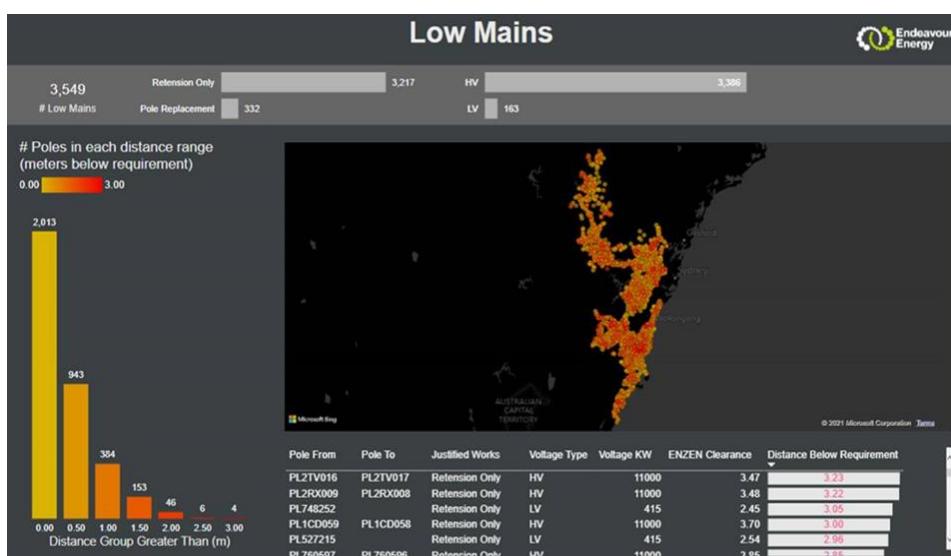
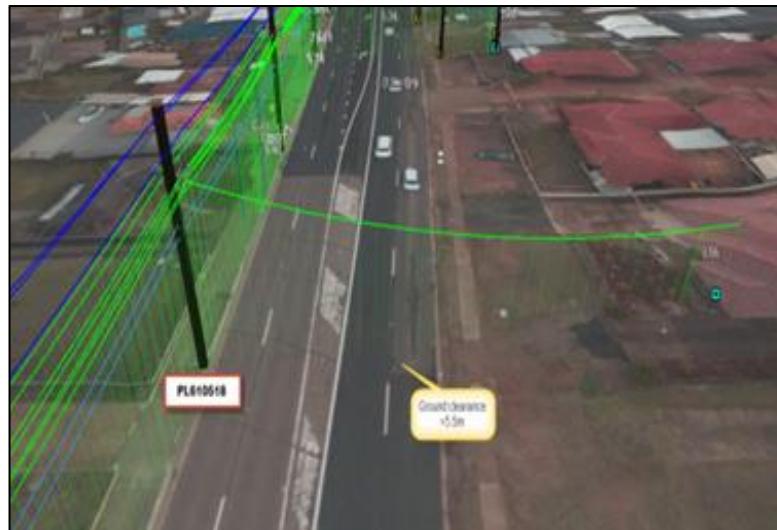
Maintenance activities to manage this include proactively identifying low mains locations through inspection activities, straightening poles, and re-tensioning conductors to increase clearances.

Additionally, the 'low mains remediation program' is an ongoing capital investment program to install additional or taller poles in situations where minimum height clearances cannot be achieved by other means.

Endeavour Energy utilise drone technology and LIDAR (vehicle mounted light based radar technology) measurement to build a 3D model of the network.

From this model, reports can be developed for clearances from the network to the ground was able to be determined.

A low mains strategy is in place detailing a risk-based approach to managing the identified defects and cost justification.



The 'Low Mains' Strategy has a risk-based approach to managing the identified defects based on cost justification.

Over time, low mains may be addressed by other planned major construction and/or refurbishment projects.

Defects that can be economically justified will be completed by FY27.

## 2.1.6 Vegetation Management

With over 33,000 kilometres of underground and overground cables, an important part of maintaining our network is the management of trees and other vegetation near power lines.

Vegetation management is primarily a control for network resilience and prevention of power supply disruptions.

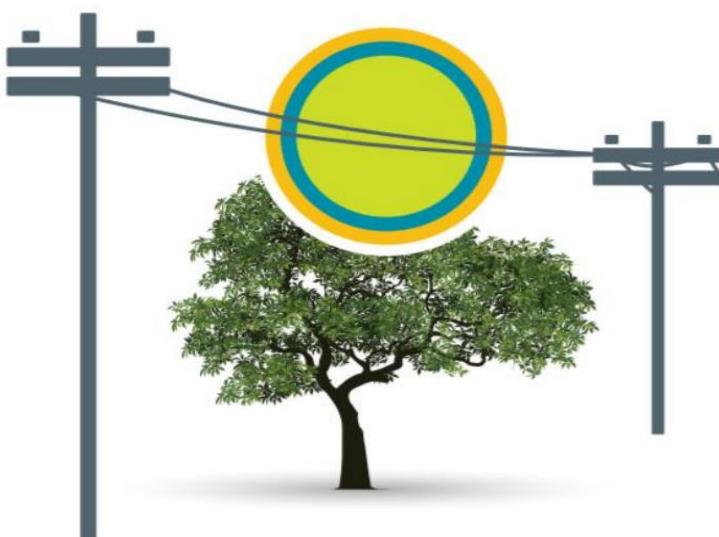
However, it also does have a significant positive impact on public safety outcomes through reduction of fallen powerlines and other connection related issues.

Our [Tree Management Plan](#) defines our approach to managing vegetation near our network in accordance with the Electricity Supply (Safety and Network Management) Regulation 2014.



This plan provides an overview of our responsibilities, tree pruning techniques, defines our policy on tree removal, and provides guidance on planting near network assets.

To execute this plan, we employ the services of trained horticulturalists, arborists and tree trimmers as part of a carefully managed twelve month cycle to continue to deliver customers a safe and reliable electricity supply.



While trimming can look severe at first, trees re-grow at a normal rate. Trimming may avoid the need to remove trees near powerlines entirely.

Vegetation management has the potential to impact on natural and cultural heritage features including aboriginal sites, non-aboriginal historic structures and relics, memorial gardens, parks, and protected or heritage listed trees.

We evaluate potential impacts before undertaking any pruning work. In some cases, alternative pruning cycles or technical options may be considered.

For further information regarding vegetation management and responsibility for vegetation on private property, please visit our website:

<https://www.endeavourenergy.com.au/safety/vegetation-management>

## 2.1.7 Bushfire Mitigation – Covered Conductor Augmentation

As part of network upgrades to improve safety, we are replacing sections of bare high voltage powerlines with covered powerlines in the high bushfire risk areas. To date we have replaced almost 600 km of powerlines including work to replace poles and increase ground clearance heights.

Endeavour Energy have cost-justified and aim to deliver between 25-40kms of covered powerline augmentation per year.

The covered powerlines aim to significantly reduce the possibility of fire caused by vegetation falling onto powerlines, wildlife faults, reduce the volume of ongoing tree trimming and reduce the likelihood of High Voltage / Low Voltage intermix faults.

This bushfire ignition risk reduction program will not only reduce the risk of foreign objects contacting the mains and starting a fire; but will improve network reliability reducing momentary outages and sustained outages from smaller branches/ foreign contact and transient faults.

Early data confirms there is improvement in reduction of foreign object outages being realised already and we will continue to collect data and assess the effectiveness of the program.



## 2.1.8 Public Lighting

Endeavour Energy operates and maintains more than 200,000 street lights across our network area on behalf of local councils, Transport for NSW and other utilities.

We recognise that lighting residential streets, main roads, pedestrian crossings and pathways helps to keep pedestrians and motorists safe during times of inadequate natural light.



Under the terms of the NSW Public Lighting Code, Endeavour Energy has developed a Public Lighting Management Plan to help maintain and improve public lighting services.

It illustrates how we manage and operate a safe and reliable public lighting network and details our commitment for further improvements in service levels and their related management strategies.

Between our scheduled maintenance, customers can play an important role in reporting street lights that are not working correctly.

Faulty street lights can be reported by calling us on 131 003.

Streetlight faults are maintained and repaired as per the NSW Public Lighting Code and reported quarterly.



## 2.1.9 Vandalism Prevention and Asset Security

Unauthorised access to and vandalism of network assets poses a safety risk for the offending individuals, Endeavour Energy workers and the community. Damage to our equipment can hinder emergency response efforts, and damage to fencing surrounding our equipment can facilitate unauthorised access to our equipment by children and other vulnerable groups, exposing these individuals to safety risk also.

Theft and vandalism not only impact on safety but have a major impact on the reliability of power supply, with significant financial impacts for our customers. To address this issue, Endeavour Energy promotes reporting of hazards and graffiti through its website, contact centre and social media platforms. Reports are assessed based on risk and potential impact on the network and appropriate actions are taken to mitigate the risks.

Endeavour Energy's construction standards consider the possibility of unauthorised access and implement appropriate mitigating controls while minimising the impact on asset function. Additionally, the company conduct periodic inspections to identify occurrences of vandalism and unauthorised access to depots and substations. All fenced locations, kiosk and pillars provide warning information to the community of the hazards associated with the equipment and unauthorised access.

Endeavour Energy provide technical information and user friendly resources and brochures on its website to inform members of the public and landowners of the risks associated with electrical infrastructure and living in proximity to our easements.

**Living with Easements**

**Common types of Endeavour Energy easements**

**Padmount Substation restriction zone**



Endeavour Energy assets are predominately located in the public domain, including approximately 14,500 padmount substations, of which more than 98% are fibreglass cubicles.

The cubicle doors that provide access to the high and low voltage switchgear in these substations and their locking mechanisms can be defeated by members of the public with the intent of causing a nuisance or attempting to steal copper. This can result in the exposure of live equipment that can be accessed by the public, presenting a significant safety hazard.

Endeavour Energy continue to explore security improvements through retrofit initiatives to existing assets in high risk locations and improved asset design for future enclosures and apparatus.

The company has also taken a proactive approach when it comes to community engagement concerning pad mount vandalism. There have been numerous public awareness campaigns that go out to the public with effective response and guidance on what to do if they see an unauthorised access attempt.

## 2.1.10 Traffic Blackspot Poles

Endeavour Energy maintain approximately 430,000 poles and respond to numerous vehicle impacts to our assets every year.

Whilst we have no control over driver behaviour, where funding permits, and cost-justified utilising available data – Endeavour Energy relocate problematic poles to a safer location via our ‘Black Spot Pole Program’.

A public safety methodology for assessment has been established to address identified locations where multiple traffic incidents involving roadside electricity assets have occurred and the cost for asset relocation can be justified.

With the assistance of crash site data provided by Transport for NSW, Endeavour Energy may relocate poles as part of a risk reduction program that incorporates a specific set of criteria to identify poles that are considered high-risk based on predetermined risk factors.

A risk-based approach to determine the cost benefit ratio to ensure that resources are utilised efficiently, while also meeting any proposed case for investment.

Note: No sites are forecast for relocation in FY26.

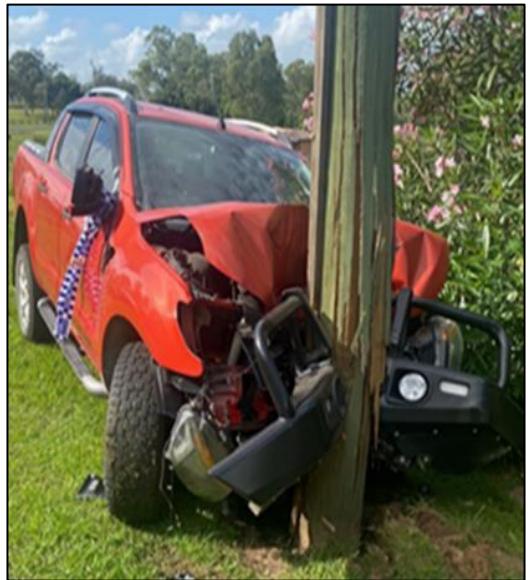
In addition to potential asset relocation sites, Endeavour Energy is progressing work to explore alternative controls with Transport for NSW, other network operators and suppliers to attempt to minimise vehicle impacts, and/or the severity of injuries sustained through signage and other crash protection technologies.

To complement the reactive response to crash site data and to better serve the best interests of the community, a proactive option has been initiated which will be progressively implemented over the course of time to install high reflective signage on poles and other assets to improve driver visibility and reduce risk.

This will be achieved via Endeavour Energy’s routine pole inspection program to gather more informative data to assist future relocation programs such as geospatial data, environmental factors and additional site specific assessment.

Over a 5.5 year cycle, each of the approximately 430,000 poles within Endeavour Energy’s franchise will be routinely inspected and include two additional checks to drive proactive data gathering:

- The distance from existing poles and curb side – where <300mm is measured the pole will be flagged and form a new data set for further assessment in accordance with existing Black Spot methodology (in the absence of the cost of injury, assumptions will be required); and
- The asset inspector will make a subjective assessment of the pole and potential vehicle obstruction risk based on the site conditions and any visible damage to the asset (this will inform the assumption made above).



## 2.2 Technology

### 2.2.1 Improved Data and Analytical Tools

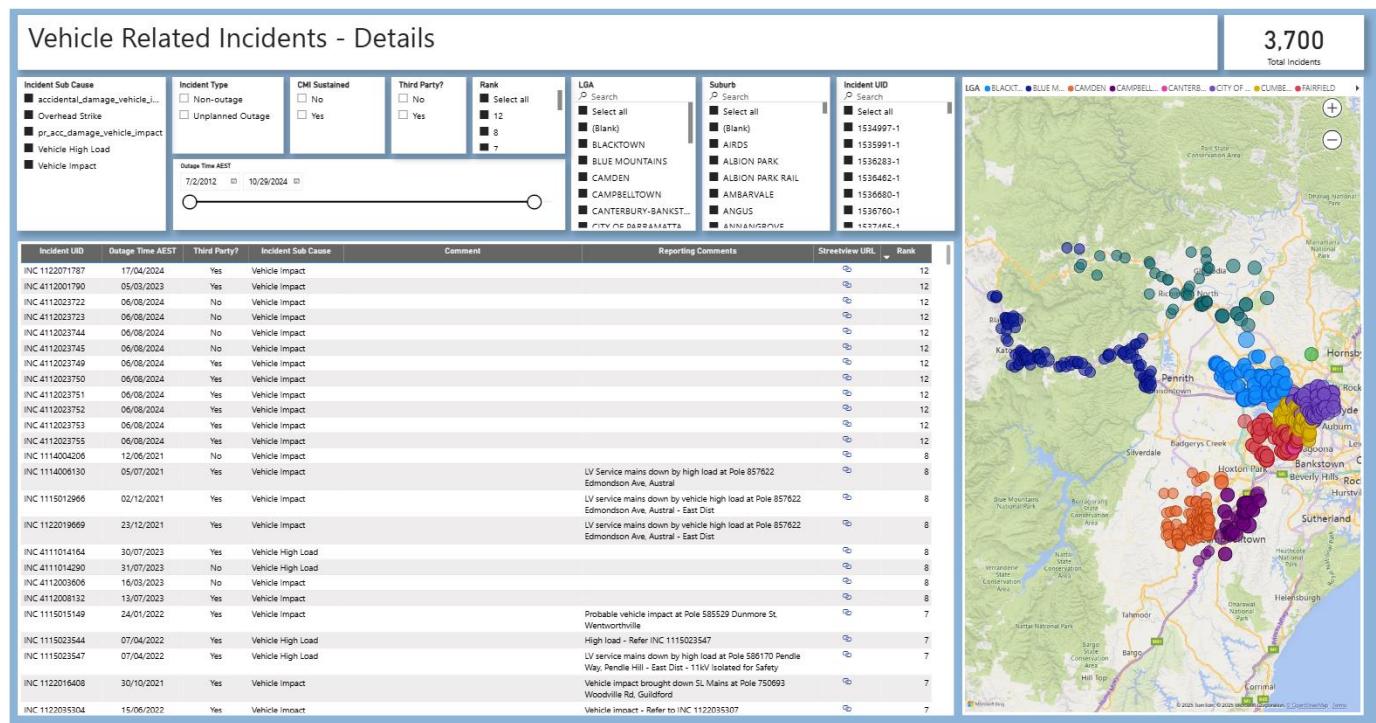
Endeavour Energy is utilising data and analytical tools to provide interactive Key Risk Indicator (KRI) reports that can identify emerging risks, trending incidents and hotspots of concern using geospatial technology and other analytical tools.

The Reporting and Insights team is exploring a multitude of internal and external data platforms including Feature Manipulation Engine (FME) which is a geospatial extract and transformation program, as well as publicly available data sources such as 'Google Point of Interest' information to map population density, people movement in public spaces and other data science insights that will assist prioritisation of defects and proactive programs.

The Public Safety Team is working to operationalise geospatial data reports that shows a geographical representations of defect locations with some analytics built within to identify 'hot spots' where repeat events are occurring within a 50m proximity.

This report utilises Artificial Intelligence and will be semi-automated over time.

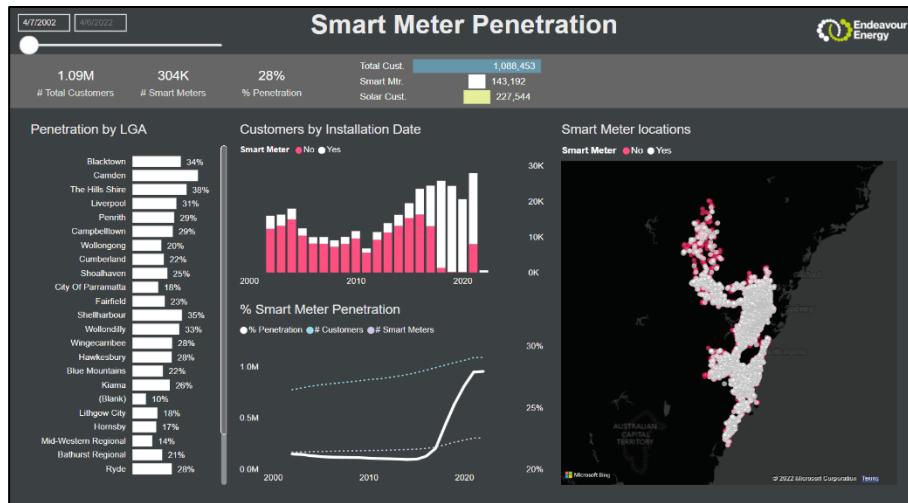
The long-term intention of this report is to inform awareness activities with the relevant local councils; and drive asset management programs internally where reactive projects can be cost-justified as these 'hot spots' are identified.



## 2.2.2 Smart Meter Data Analysis

Endeavour Energy utilises a power quality data analytical platform to assess real-time monitoring of customer installations via Smart Meters to proactively monitor and identify network conditions.

This technology enables suspected neutral connectivity issues to be proactively rectified before members of the public receive an electric shock.



Approximately 685,000 (~63%) of our customers now have a smart meter installed, out of which we currently have access to the data of 240,000 meters (~22%) penetration of Endeavour Energy's entire customer base).

By July 2026 the network is forecast to have ~800,000 smart meters and The Australian Energy Market Commission (AEMC) has finalised a reform to universalise smart meter deployment across the National Electricity Market (NEM) by 2030 likely to see 100% penetration of smart meters across NSW. Whilst these reforms are welcomed and will certainly drive further proactive measures to reduce customer shocks, this will demand significant resourcing to manage.



Since the introduction of this technology initiative in Feb 2022, 499 neutral issues have been proactively identified and rectified with the analytics having an 93.1% success rate.

Looking at the failure modes and connection related issues, majority of the issues are found downstream of our mains and apparatus

It should be noted that additional data acquired through this analytical tool will identify significantly more network related faults, and as such, will require additional resourcing to respond to, and to repair suspected customer shock sites.

To facilitate the deployment of smart meters, and obtain more non-market smart meter data, we will continue to engage and influence stakeholders, including:

- Energy retailers and metering co-ordinators;
- Regulatory and government policy makers, such as the Department of Climate Change, Energy, the Environment and Water.

### 2.2.3 Digital Twin 3D Model

Endeavour Energy have experienced a range of environmental challenges including heat waves, drought, flooding, wildfires and extreme storm conditions.

In response to these events and to enable a proactive approach to managing the network, utilising technology, we have developed a 'digital twin' of our network. This digital twin is a virtual model designed to reflect a physical object, process or system. It incorporates relational interactions with data and simulations, allowing us to better understand and manage our network.

The model includes 3D overlays based on data collected and manually calibrated through visual inspections, helicopter flights, Google Earth and the digital twin.

This information was refined over time to provide more accurate data and insights to proactively manage the network and share information with customers in the interest of public safety.



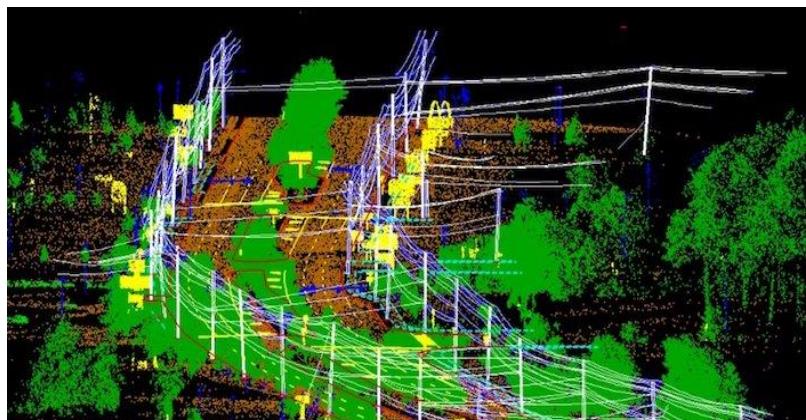
Using the physics-enabled software performing complex engineering analytics, Endeavour Energy can now manage critical assets that may be at risk from multiple factors, including high tension and encroachment risk.

With this information, we can identify high-risk and high-priority areas of the network when simulating extreme weather events such as high winds, extreme heat, rising floodwater and wildfire to understand the impact on the network and our customers.

This technology enables Endeavour Energy to have faster response times for asset inspections and drastically reduces restoration times to extreme weather affected customers.

In addition to the emergency response, Endeavour Energy has been able to utilise this modelling technology to improve existing asset management and replacement regimes.

With high quality LiDAR data already captured, we can better understand scenarios and optimise asset maintenance workflows enabling better asset replacement strategies by prioritising the highest-risk and highest-impact assets.



## 2.2.4 Asset Inspection Technology

### 2.2.5

Endeavour Energy is using data and new technology to improve public safety outcomes.

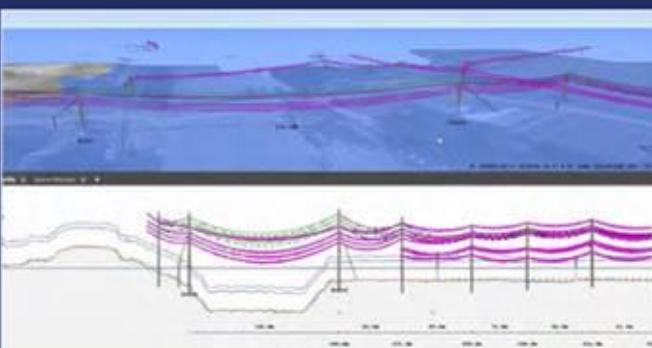
Endeavour's drone program has provided unmanned aerial capability to over 50 drone operators across all operational areas of the enterprise to assess operational circumstances and inspect assets quicker and safer.

This capability was recently put to the test after severe storms impacted power supply to 54,000 customers across our network. Within 30 mins of deployment, our drone team successfully located a critical fault on a transmission line and were able to repair it on the same day, creating significant time and cost efficiencies. Typically, crews use binoculars and drive the line to inspect for damage, however its location in heavy bush would have made this fault near-impossible to find.

LIDAR mounted drone and vehicle (LICAR) units are in operation and in combination with the Digital Twin we now have the ability to assess additions and alterations to the network compliance to standards to a high degree of accuracy, ensuring that new assets meet safety clearances, clash avoidance etc. This process is currently in pilot phase, with insights gained and the feedback now enabled between design, project and field construction teams to facilitate continuous improvement between designers and field crews, improving the safety and compliance of future projects.

The LICAR was also used last pre-summer bushfire inspection (PSBI) season to validate our growth model for vegetation defects during the summer period with approximately 1,000 vegetation defects validated with highly accurate LIDAR data, further improving our management of bushfire risk.

In addition to using the Digital Twin to maintain public safety during last year's floods we have since used incorporated this capability into our design practices to ensure future assets are flood resilient as well as raising the height of existing assets to improve flood resilience of the existing network.



**Planning for flood resilience**

The digital twin allows Endeavour Energy to identify where assets are at risk from flood waters based on any potential flood and asset loading scenario.

The twin has been used to identify assets at high risk of flooding during various scenarios. This has allowed network designers to design a flood-resilient network and identify infrastructure improvements that would reduce flood impact on the network. For example, a project was completed where the height of a sub-transmission feeder was raised by three meters to reduce the impact of power loss from future floods to customers in the Hawkesbury region by up to 40% in a 1 in 100 year flood.

**The design to raise the sub-transmission feeder height by about three metres as part of improving the flood resiliency of the network.**

By combining our digital twin and LIDAR point cloud we are using advanced analytics to route the drones autonomously through and around vegetation, capturing pole-top assets that are not visible from the current method of PSBI inspections which uses low-flying helicopters.

It is anticipated that this will provide a cheaper, safer and faster method of inspecting our assets pre-summer while also improving public safety by capturing images not possible with helicopters.

Small pole-top drone inspection trials have been successfully conducted and a large-scale pilot of 10,000 poles using this technology which commenced in June 2023 and will continue to be further developed.

## 2.2.6 High Voltage Distribution Protection Modernisation

The high voltage distribution network is where most serious electrical accidents have the potential to occur. This includes overhead powerlines, underground cables and substations apparatus.

Endeavour Energy recently completed an initial High Voltage Distribution Protection Modernisation program and continue to explore opportunities for further risk reduction in other locations. This project involved a large investment over six years to replace older protection systems with modern digital computerised system, with the goal to substantially enhance the safety of our high voltage distribution system.

These modern systems allow us to significantly reduce the duration of electrical faults, especially when the energy levels are very high. This will help to reduce the severity of injury in the cases of arc flash burns to public workers who accidentally impact our network, and electrical injuries to workers or the public who inadvertently make direct or indirect contact with our powerlines. It also reduces the likelihood of our powerlines starting a fire.

There are many network events where this initiative has already proved its worth and substantially reduced injury severity or prevented injury altogether. Moving forward, where it can be cost-justified, and on a case by case basis - additional feeders will be digitised and improved.



## 2.3 Worker Competency and Capability

### 2.3.1 Competency Management (Authorisations)

One of the predominant causes that give rise to the risk of a customer shock is a ‘reverse polarity’, i.e., the incorrect connection of active and neutral conductors of the distribution network, including service mains, during operational activities.

Endeavour Energy’s Electrical Safety Rules stipulate the requirement that: “all connections to the low voltage network must only be made after undertaking a documented testing process in accordance with Australian Standard AS4741 – Testing of connections to low voltage electricity networks, and the results must be recorded.

AS4741 requires the completion of comprehensive testing of the distribution network, and customer connections prior to energisation of an installation connected to the low voltage networks.



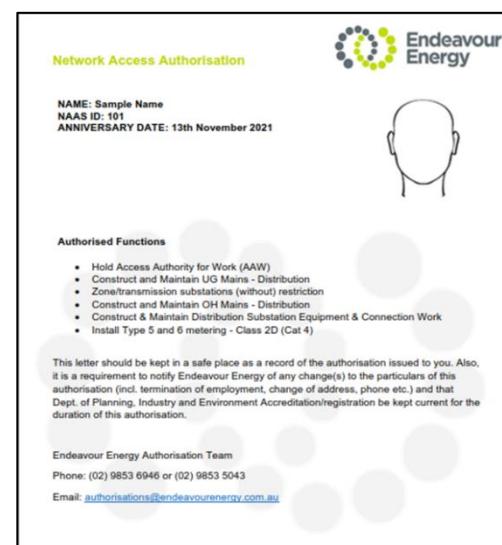
These tests include:

- Polarity testing – to confirm no transposition of active and neutral conductors; and
- Neutral integrity testing – to prove the integrity of neutral connections and identify ineffective neutral connections.

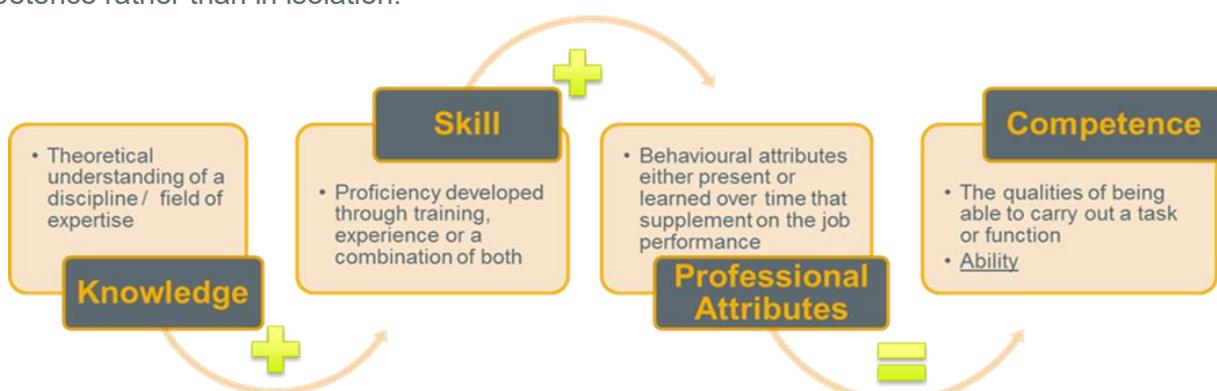
Endeavour Energy has an established framework to authorise persons to work on or near the company’s network, so that only appropriately trained and competent workers are authorised to carry out defined tasks on the network, including polarity testing.

The authorisations framework details trade, training and assessment, and refresher training and assessment requirements. An authorisation requirement for workers who complete polarity testing is to be annually re-assessed to the national unit of competency, demonstrating the ability to complete a polarity test by a qualified trainer assessor.

Competency essentially means the consistent transfer and application of knowledge and skill to the standard of performance ability required in the workplace.



Competency may be demonstrated by successful completion of theoretical and/or practical assessment of skills as nominated in the relevant procedure. Contributing factors that supplement technical competence include professional and personal attributes which should be viewed holistically in terms of competence rather than in isolation.



### 2.3.2 Verification and Assurance Activities

In accordance with Endeavour Energy's Health, Safety and Environment Assurance Plan, process audits are carried out annually on Safety Critical Processes (BR1.1 Exposure to unintended discharge of electricity and BR1.8 Harm to member of the public).

Each year, in order to provide a level of assurance and verification of compliance, a narrow focus audit assessing worker competency specifically relating to polarity and neutral integrity testing activities is undertaken.

The audit assesses three main criteria:

1. The technical understanding of polarity and neutral integrity testing processes;
2. Verification of compliance with approved testing and live LV work practices; and
3. Overall work practice impact/effectiveness.

Overall Work Practice Impact/effectiveness on a range of factors include:

- Consistency between workplace documentation / guidance and the training material;
- Practical relationship between existing workplace practices and performance expectations communicated through training delivery; and
- Connection between the frontline workforce and the development of workplace documentation / guidance.



### 2.3.3 Emergency response and management of battery assets

Grid connected batteries represent a prime opportunity to both reduce network electricity costs for customers and enable greater integration of sustainable, distributed energy resources into our network.

Through the application of highly efficient price signals that incentivise battery charging at times of high solar output and battery discharge during our evening peak, we are promoting the efficient utilisation of our network for the benefit of all.

All battery sites are designed to ensure adequate separation from adjacent structures or equipment.

The site boundary has a vegetation clearance zone around the perimeter to assist in minimising the risk of fire propagation.



Endeavour Energy has implemented emergency management plans and continues to develop capability for our field crews that aim to establish clear protocols to assist Endeavour Energy and NSW Emergency Services in adequately preparing for and responding to incidents and emergency situations associated with battery assets that could pose a threat to life, assets, or the environment.

## 2.3.4 Workplace Instructional Resources and Ongoing Education

### 2.3.4.1 Responding to Shocks, HV/LV Intermix Faults and Fallen Powerlines

Endeavour Energy continually explore opportunities to increase the technical capability of our field workers through ongoing education and provision of instructional resources to guide critical testing and investigative processes.

Company-wide education and awareness programs are rolled out to all field service centres relating to shocks investigation, responding to high voltage intermix faults and fallen powerlines. These programs include ongoing revision of the testing methodology, what equipment to be used and development of user friendly technical document guiding the end-to-end process.

The process to improve technical capability includes industry benchmarking, collaboration with subject matter experts and the design/development of technical documentation ensuring our staff are exposed to ongoing professional development and extension of knowledge/skill.

**HSE QUICK GUIDE**

**RESPONDING TO SHOCKS AND HV/LV INTERMIX FAULTS**

**Intent:** To provide field workers guidance on the testing and inspection protocols when responding to customer shocks and potential HV intermix faults.

**Responding to a suspected electric shock**

**Arrival at site and preparation**

- Apply required PPE including safety glasses and LV insulating gloves with leather cutters assuming all consumers are energised.
- Assess if anyone has received an electric shock and if so direct them to seek medical assistance immediately.
- Assess the area for any potential hazards at the time, if it has occurred before and for how long.
- Inspect the service from the network to switchboard (looking for any visible signs of damage for example, damaged connections, loose connections, obvious signs of burning and/or mechanical damage, etc).

**Note:** If there has been any serious injury and/or fatality - Make sure to take photographs and preserve any evidence and notify the Public Safety Manager immediately to proceed with the necessary regulatory requirements and to contact the police if required.

**Initial testing/inspection (front of board)**

- Test all metallic/conductive components for voltage (~6V) before opening switchboard enclosure using an independent voltmeter.
- Proceed to the customers main switch board looking at:
  - Visual inspection of all neutral and earthing connections, including the consumer connection and circuit breakers / fuses for operation.
- If responding to a reported suspected electric shock, earthing and bonding connection cables should be tested for current flow and inspected/checked:
  - Main Earth Connection / Electrode / MEN;
  - Service Neutral and Neutral Connection;
  - Waller Free Bond where applicable and any other equi-potential bonding present; and
  - Asfalt reinforcement test on any of the main earthing conductor if damage has been identified between the MEN point to the electrode <0.5Ω.

**Initial testing/inspection (back of board)**

- If equipped with a long meter – compare current flow in neutral and main active(s) as well as consumers main neutral and earth.
- Tong main Neutral and main Earth with service fuse removed to identify if there may be returning load from another source.
- If responding to a reported suspected electric shock, earthing and bonding connection cables should be tested for current flow and inspected/checked:
  - Main Earth Connection / Electrode / MEN;
  - Service Neutral and Neutral Connection;
  - Waller Free Bond where applicable and any other equi-potential bonding present; and
  - Asfalt reinforcement test on any of the main earthing conductor if damage has been identified between the MEN point to the electrode <0.5Ω.

Approved by: *Jatnika Lendka*      Approval Date: *21/07/2022*      Review Date: *As required*  
WSY0037      UNCONTROLLED IF PRINTED      Page 1 of 6

**HSE QUICK GUIDE**

**Earthling and neutral system safety principles during testing and inspection**

Simple principles to apply when managing the risk of forming part of an earthing circuit:

- All connections bonded prior to making and breaking connections;
- Completely insulated (live working procedures); or
- Completely separated (dedicated areas of electrical separation).

**Switchboard Wiring Diagram and Basic Inspection and Testing Sequence**

**Notes:**

- Test neutral link and metallic surround for voltage ensuring safety.
- Visually inspect all neutral and earthing connections for signs of damage, heat and/or corrosion.
- Compare current flow between the main neutral and neutral with long ammeter.
- Test earth resistance of the main earth connection <0.5Ω (de-energisation required for test).

**HSE QUICK GUIDE**

**Typical defects as a result of intermix**

**Earth connections**

- Earthing connections must be visually inspected for missing or failed connections, loose terminations and potential signs of burning.
- Make a reasonable attempt to locate the main earth connection to the earth electrode however, if it is not accessible, it may be assumed to be correct.
- Where possible, asf required, test continuity of the main earthing conductor if damage has been identified between the MEN point to the electrode <0.5Ω.

**Typical defects as a result of intermix**

**Switchboard (front)**

- Generally, in service fault sites, the damage will be immediately visible and most likely have a strong smell of burnt plastic - look for signs of burning, loose connections, melted or warped conductors and brittle conductor insulation.
- Under fault conditions and/or suspected fault conditions, LV working procedures and PPE must be used when accessing switchboards.

**Typical defects as a result of intermix**

**Switchboard (rear)**

- Following the same process as the front of the switchboard, in the rear behind the large panel there may be damage that is not easily visible.
- Isolate at the service fuse before removing covers to inspect for connection faults and signs of damage (grazing) to the main switch and metering equipment.

**Note:** Avoid disturbing any dust and/or swarf present in switchboard enclosures using precaution to open hinge boards or removal of any covers.

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WSY0037      UNCONTROLLED IF PRINTED      Page 2 of 6

### 2.3.4.2 Scenario Based Technical Training and Leverage of Technology

Endeavour Energy's Technical Training team continue to explore opportunities to introduce technology improvements and innovations such as virtual reality headsets into the standardised curriculum to enable realistic scenario based training and assessment interventions with critical testing and energised work practices marked as a priority area to implement.



## 2.4 Public Awareness and Community Engagement

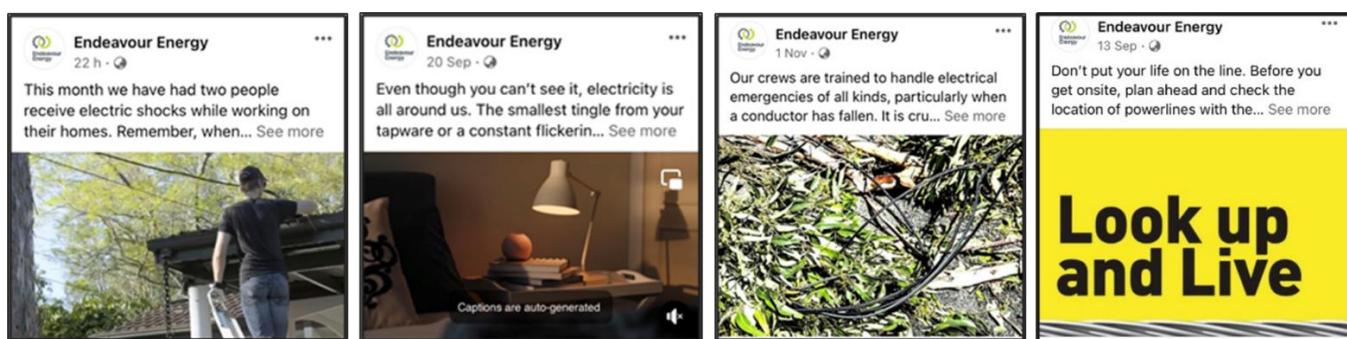
### 2.4.1 Public Safety Awareness Social Media Activities

Endeavour Energy develop a Public Safety Awareness campaign each year based on incident data and emerging trends that is focused on assisting the public to understand the hazards associated with the network and how they should be controlled.

The content of the posts can be general in nature and proactively address a broad range of risk categories for members of the public. Alternatively, the posts can be targeted to focus on key risk areas such as construction, transport, agriculture or logistics, taking into account scenario-specific or location-based risks that need to be managed.

When an incident trend is observed or new learnings are identified, reactive posts are published to help educate members of the public and public workers.

Through stakeholder engagement, exploring various mediums and creative content, we gain insight and understanding of our target audience. This approach allows us to achieve significant organic engagement and reach across the franchise area with our social media posts, whether they are proactive or reactive in nature.



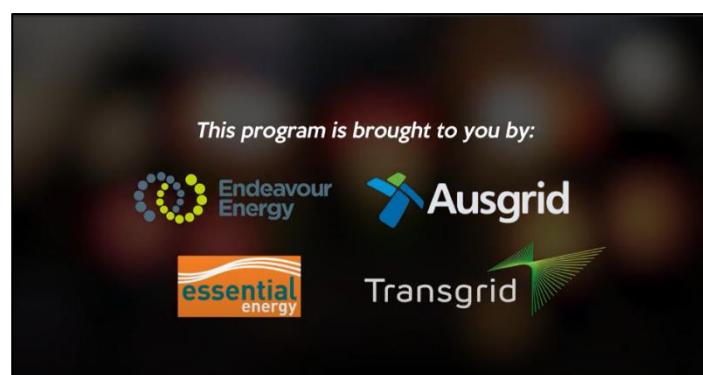
### 2.4.2 Emergency Services Electrical Safety Education

Keeping our team members and communities safe is of utmost importance to us at Endeavour Energy and we regularly engage with NSW Emergency Response agencies to provide awareness and collaborate where possible.

We teamed up with Ausgrid, Essential Energy and Transgrid, to create an Emergency Services Electrical Safety Training video and ongoing education program with the various emergency services agencies.

The video is essential viewing for emergency responders, imparting critical information about the knowledge and skills required to safely manage emergencies involving electrical networks and hazards.

This collaborative effort involved all NSW Network Service Providers, NSW Police Force, Fire and Rescue NSW, NSW Ambulance, VRA Rescue NSW, NSW State Emergency Service, and NSW Rural Fire Service.



## 2.4.3 Domestic Electric Shocks and Community Awareness

Domestic electric shocks or “tingles” can be a sign of a bigger problem. Endeavour Energy provides 24-hour 7 days a week services to the community to verify the source of a shock.

If the cause of the issue is determined to be related to Endeavour Energy’s network, Endeavour Energy will conduct necessary repairs at no cost to the customer.

If the cause is found to be associated with the customer’s private network or home wiring system, Endeavour Energy will make the site safe and advise the customer to engage the services of an accredited electrical service provider at the customer’s cost.



Endeavour Energy uses its social media platforms to communicate the risks of domestic electric shocks and emphasise that they should never be ignored. New social media creative content is developed and awareness campaigns periodically rolled out.

## 2.4.4 ‘Electric Kids’ Education Program



Initially developed by Ausgrid, the program is now delivered across NSW and QLD. Endeavour Energy has participated in this initiative for 15 years.

Over 569 schools participate each year, representing 94% of the schools in our franchise area. Based on the teachers’ feedback, around 90% expressed their belief that the Electricity Safety Week activities helped students to be safer around electricity.

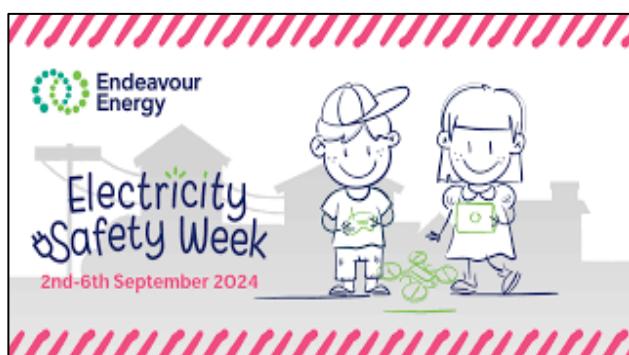
Key messages to educate the next generation include:

- Never climb a tree that is near powerlines. Look up before you climb;
- If you see fallen powerlines, stay well clear of them and tell an adult;
- Water and electricity do not mix. Never swim or go near water in an electrical storm;
- Never play near high voltage areas – substations, transformers or power stations;
- Do not put objects into power points and electrical appliances; and
- If you see a dangerous situation - stay clear and tell an adult.

Endeavour Energy is proud of its contribution to the education of primary school children in developing the [Electricity Safety Week Program](#).

This interactive program educates young people on how electricity works, how to use it and how to stay safe around it, both inside and outside the home.

The teaching resources are supported by the NSW Department of Education and aligned with the NSW Science & Technology and Personal Development, Health and Physical Education (PDHPE) syllabuses for K-6.



#### 2.4.5 Community Assistance and Support

Endeavour Energy play a critical role in the community in times of need and responding to extreme weather events and natural disasters. Liaising with customers, residents and community stakeholders can be challenging when faced with loss of power supply, limited access and other factors resulting from extreme weather.

In response to this challenge, Endeavour Energy developed a community outreach initiative with a mobile trailer set up to support the community and provide critical information in times of need.

The trailer is deployed primarily when responding to large scale network outages and responding to our community in storms, floods, fires and where power may be affected for a substantial duration of time.

Visit our [website](#) to find information and resources to help you stay safe around electricity.



Essentially the trailer is a standalone self-sufficient and mobile community information hub that can go anywhere it is needed to represent Endeavour Energy and is equipped with the following features:

- Set up to enable face to face interaction for outer lying communities
- Up to date ADMS information displayed on TV's
- Broadcasting of any news to the community
- Charging station for mobile phones/devices
- Hot water for tea and coffee making
- Microwave to assist with food heating for infant food and bottles
- Fridge for storing cold beverages for the community or our crews



## 2.4.6 Community Awareness Relating to Electro-Magnetic Forces (EMF)

Electric and magnetic fields (EMFs) are part of the natural environment and are present in the earth's core and atmosphere. These fields are also produced wherever electricity is used.

All electrical appliances such as computers, televisions, hair dryers, electric blankets and clock radios produce EMFs (including 'standby' modes), as does the electrical wiring in any home or building.

Just like electrical appliances and wiring in your home or office, electrical equipment on an electricity network, such as transformers or overhead and underground powerlines has current flowing through it and produces electric and magnetic fields (EMFs).

The debate over whether electric and magnetic fields (EMF) have any effect on human health began in the 1960s. Since then, many hundreds of scientific studies have been undertaken around the world into the effects of EMF and their possible relationship to human health.

The studies have looked at a wide variety of possible health consequences. Ausgrid relies on advice provided by health bodies to determine the status of any possible human health effects.

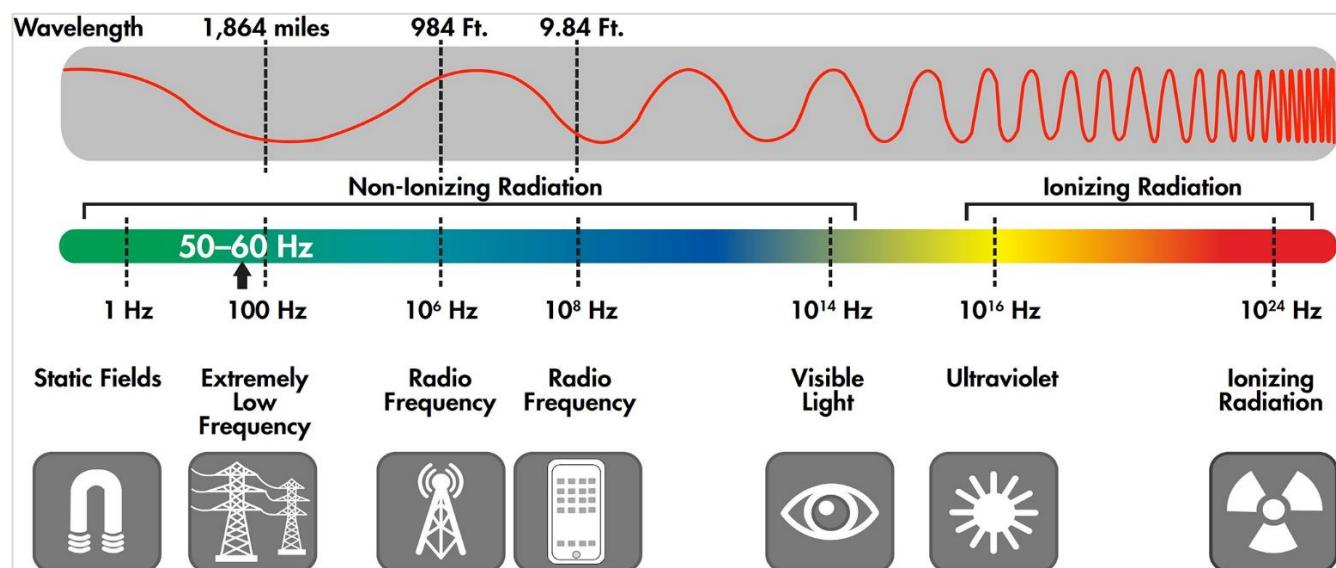


Electricity has been used in Australia for 100 years and there is no doubt that everyone in Australia is exposed to electric and magnetic fields on an ongoing basis.

Whilst the balance of scientific evidence is against EMFs resulting in adverse health effects, we recognise there are still concerns in the community about exposure and take seriously our responsibility to help address these concerns.

Endeavour Energy will continue to monitor the results of scientific studies, and the findings of reports and reviews conducted across the world.

For additional information, please visit: [Electric and Magnetic Fields | Energy Networks Australia](#)

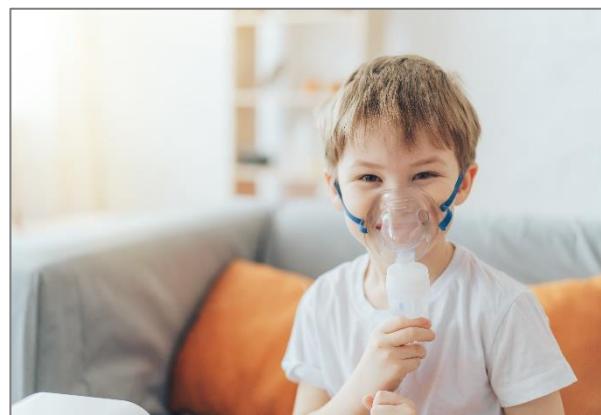


## 2.4.7 Life Support Customers

Endeavour Energy interacts with life support customers everyday through planned and unplanned outages, over the phone, online or through social media and in the field. We commit to providing our customers with valuable advice and information year-round and continue to expand on the information we can provide.

We strive to build a universal understanding amongst our community that a continuous energy supply can be compromised and that a robust back-up plan is always required. We support our customers by providing best practices around safe alternate energy supplies and new technologies as they emerge.

We also proactively communicate with our customers bi-annually with information specific to environmental factors they may be facing, with our first winter letters sent to all 37,000+ customers in our network area.



**Stay safe this winter with your life support action plan**

**How will you hear from us?**

**Planned Outages**

Every winter, it is important that as a household that relies on electricity for medical equipment, you review your life support back up plan to prepare for power outages and factor in the cold temperatures ahead.

At Endeavour Energy we do everything we can to provide a safe and reliable electricity supply, however at times unexpected problems can affect the power supply to your home. It may also become necessary, from time to time, to interrupt your power supply to undertake upgrades or planned maintenance works.

**CONTACT**  
Ph: 131 003  
[www.endeavourenergy.com.au](http://www.endeavourenergy.com.au)

**Unplanned Outages**

When planned outages need to occur, for maintenance of the network, we will notify you up to three weeks in advance by sending a notice to your nominated **physical address**. In the days leading up to your outage, we will remind you via **text message**.

**Your winter checklist**

**Update your mobile phone number**

Contact us on 131 003 or visit [www.endeavourenergy.com.au](http://www.endeavourenergy.com.au) to have your phone number updated and we will send you notifications about outages and what to expect on the day.

**Our commitment to you**

We will keep you updated about outages this winter by communicating with you in advance where possible. We need you to make sure your mobile contact number is up to date so that we can reach you and share information about upcoming and current outages.

**Endeavour Energy** | **POWER together**

[endeavourenergy.com.au](http://endeavourenergy.com.au)

**Review your back up plan**

**Understand your capabilities without electricity**

- Ensure you have contact details for your doctor or medical adviser, nearest hospital, and nearby neighbour or relative that can assist in an emergency.
- Speak to your doctor about your needs in an emergency.
- Are your medical supplies fully stocked and can you access them in an outage?
- Do you have a torch handy if an outage occurs at night?
- How long does your back up plan last for?

**Prepare your home this winter**

If you plan to stay at home during a power outage, winter temperatures may mean you should have other measures in place to make sure you and your household are comfortable, this could include:

- Ensuring doors and windows are closed. You can also use towels or linen to block drafts if needed.
- If you are expecting a planned outage, consider using a heater in advance to control temperatures in one part of the house.
- If using wood burning fires, ensure there is ample ventilation.
- If you own a generator, make sure you have fuel and never use a diesel or LPG run generator inside your home.

**Consider alternate energy solutions for emergencies**

- UPS batteries can protect your equipment from surges and provide energy for short periods of time.
- Rechargeable power banks are available from supermarkets and other retail outlets. They can be used to power small handheld devices such as phones, tablets, and digital radios.

**Always remember in an emergency to call 000.**  
Stay informed about outages by visiting [www.endeavourenergy.com.au](http://www.endeavourenergy.com.au) or calling 131 003

**Endeavour Energy** | **POWER together**

[endeavourenergy.com.au](http://endeavourenergy.com.au)

Our dedicated Life Support Advocates within the Social Programs team partner with our vulnerable customers, assisting them to understand the protections afforded to them by Endeavour Energy.

Staff across the business understand that they all have a part to play when it comes to the identification and registration of Life Support customers. Endeavour Energy as a business is continuing with its “Powering Life” program broadening the scope of protections for our customers and working within Industry forums such as [The Energy Charter](#) to best navigate the coming years for our population.

For further information, please visit: [information for life support customers](#).

## 2.4.8 Planning Resources and Asset Data

Working alongside electricity infrastructure can be dangerous if the appropriate safety control measures are not applied.

Awareness of minimum safety clearances from powerlines and other electrical assets could mean the difference between a safe, successful and well managed project and a fatal accident. Time and money on a project can be saved by ensuring that the design of home or building complies with important safety requirements without the need for additional measures.

### 2.4.8.1 Look Up and Live

The Look Up and Live app is a powerful safety tool to adequately plan and raise awareness of safe working requirements near powerlines.

This straightforward worksite planning tool enables members of public to access powerline safety information from Endeavour Energy, helping them minimise the risk of contact while working in proximity to the electricity network.



Endeavour Energy's overhead network data is published on [www.lookupandlive.com.au](http://www.lookupandlive.com.au) and provides details of pole and conductor locations, conductor voltages and safe approach distances to be maintained.

Look Up and Live is now live including every network provider in NSW (including Sydney Trains), in addition to ACT, QLD, WA, SA and parts of Victoria.

The application is fully operational, with 87,000 individual uses of the app and 7,500 downloads recorded in the last year – visit [lookupandlive.com.au](http://lookupandlive.com.au) today.

### 2.4.8.2 Before You Dig Australia

[Before You Dig Australia \(BYDA\)](http://www.byda.com.au) is a free referral service designed to assist in preventing damage and disruption to underground infrastructure networks which provide essential services to the community every day.



It provides a single point of contact to request information about all underground infrastructure networks on a project site, eliminating the need to reach out to them individually..

Endeavour Energy provide diagrams, drawings and plans of our asset data upon request to developers and constructors to assist locating and preventing damage to existing underground cables and apparatus.

The company is a member of BYDA and co-funds campaigns to actively promote the platform as an essential first step before commencing any excavation work. Endeavour Energy monitors its performance against the agreed timeframes to provide information to customers and continues to look for ways to improve end-user experience in working with the platform.

## 2.4.9 Collaboration with Industry Stakeholders

Endeavour Energy collaborates with Regulators and the construction industry on how to minimise risk when working around powerlines and other apparatus.

Endeavour Energy contributes to industry forums, supports reviews of Codes of Practice and provides regular presentations (on request) to the construction industry. These efforts aim to promote safe behaviours and improve understanding of the hazards associated with the network.



**Look up and around for powerlines**

Understand the safe approach distances on your worksite and when you need to have the power isolated.

**Look up and Live**

Download the App at [lookupandlive.com.au](http://lookupandlive.com.au)

**Make sure you know what lies beneath**

Always check before you dig. Visit [BYDA.com.au](http://BYDA.com.au) to identify cables before you start and take precautions to keep you safe.

**BEFORE YOU DIG**

**Zero Damage - Zero Harm**



Endeavour Energy will continue to leverage third party asset strike data to identify insights and trends to prioritise high-risk industry sectors as part of our broader stakeholder engagement and awareness efforts. In FY25, we facilitated face to face engagements at over 130 various industry forums and events including sessions with other utilities and work groups across the construction, logistics and infrastructure sectors.

The Public Safety team continues to explore opportunities for collaboration and sharing of creative content with other Distribution Network Service Providers (DNSPs) across the country with plans in place to collectively leverage, co-brand and deliver awareness campaigns and public safety educational material to the industry and broader community.

Within NSW there is already a matured approach to collaborate with DNSPs to extend the reach of safety promotional material to a broader audience and share creative ideas.

Ongoing projects include educational videos on public safety risks and community safety. The videos will be used for proactive communications in preparation for extreme weather events and reactive posts to help respond to customer and community queries in times of need.

**VIDEO #2 | ELECTRICAL HAZARDS IN FLOODWATERS**

**SENSOR STUDIOS**

Demonstrate: 1) Situation of flooding 2) Explain risk: Flood waters can hide hazards like fallen powerlines. 3) CTA: Never enter flood waters. Watch out for electrical hazards hidden in flooded water ways and debris. Always assume powerlines and electrical assets are live. If you see a fallen powerline stay at least 8 metres away and report them

Floodwaters can hide electrical hazards, like fallen powerlines.

Never enter flooded water ways.

Watch out for electrical hazards hidden in flooded water ways and debris. If you see a fallen powerline stay 8 metres away

**Ausgrid** **essential** **Endeavour Energy**

## 2.4.10 Industry Engagement and Advice

Endeavour Energy operates its network in some of the most densely populated suburbs of Australia.

Urban expansion and infrastructure development increases the potential for accidental exposure to the network by public workers. Accidental contact with overhead and underground powerlines increases the risk profile for the community through power outages and secondary contacts (e.g., fallen powerlines).

Damage to the network also increases Endeavour Energy's operating costs through repairs and cancelled work. While Endeavour Energy designs and constructs the network to minimise potential for harm, it is acknowledged that awareness, behaviour and risk perception influences the actions taken by groups within its community.

To combat this, Endeavour Energy provides complimentary resources to educate industries on risks specific to their undertakings. These resources include services such as BYDA, educational videos, learning material for various industries, technical advice and engagement with developers to support management of these hazards throughout the process of work.

For further information, please download our information sheet: [electrical safety for building and construction workers](#).

### 2.4.10.1 Development Applications

As per State Environmental Planning Policy (Infrastructure) 2007, Section 45 (SEPP), When reviewing or assessing Development Applications (DAs), Councils must consider the potential electricity network implications, notify Endeavour Energy and provide us with a copy of the DA.

Endeavour Energy reviews and provides safety related guidance on DAs for structures intended to be built near overhead and underground assets. On average, 1200+ DAs are reviewed each year.

Enquiries regarding feedback on DA are sent to [property.development@endeavourenergy.com.au](mailto:property.development@endeavourenergy.com.au)

Awareness of minimum safety clearances from powerlines and other electrical assets could mean the difference between a safe, successful and well managed project and a fatal accident. You may also save time and money on your project by checking that the design of your home or building complies with important safety requirements without additional measures being taken.



#### 2.4.10.2 Property Enquiries and Easement Management

Endeavour Energy provides a property enquiry service via the Central Registry of Restrictions within NSW Land Registry to assist with customer property enquiries and ensure potential public safety risks are addressed.

This service is made available to Authorised Information Brokers including Solicitors and Conveyancers. This enquiry is usually made during the purchase of a property; however, is not mandatory in NSW.

NSW Land Registry makes available A Central Register of Restriction (CRR) search provides the customer with advice of any approved proposals for new easement requirements Endeavour Energy has in regard to the property in question.

A letter stating the interest and a copy of Design drawing if the parcel is affected, both in pdf format will be sent to the customer.

The Central Register of Restrictions (CRR) is a centralised database where participating organisations (known as authorities) maintain up to date information about possible or actual interests they hold against parcels of land within New South Wales.

Enquiries can be made via: [property.enquiries@endeavourenergy.com.au](mailto:property.enquiries@endeavourenergy.com.au)

Endeavour Energy may have an interest on some private properties where distribution assets currently exist or may be located in the future. An easement is usually granted for this purpose as Endeavour Energy needs to have 24-hour access for safety, maintenance, and emergency repairs.

Electricity easements grant Endeavour Energy access rights to enter property and to control the use of land near powerlines, underground cables, and substations to maintain the safety and reliability of our network.

Easements help protect the safety of the residents living, working, and playing near powerlines. They help prevent serious incidents that could cause injury or even death. It is important to always keep the easement clear so regular maintenance, line upgrades, damage or technical faults can be attended to immediately.

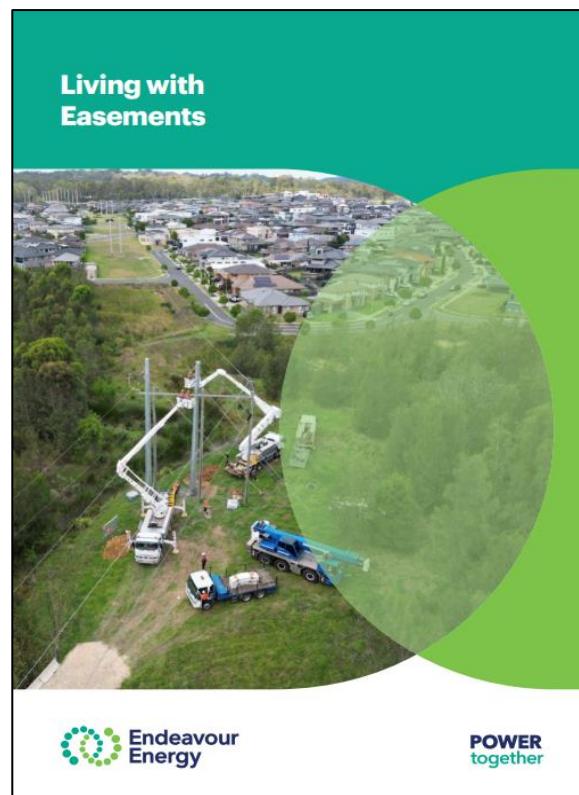
An easement will be defined and registered on your property title, to confirm details of easements on your property, contact your solicitor or the Land Titles office to find out details of easements on your property.

Alternatively, you can contact us by emailing [easements@endeavourenergy.com.au](mailto:easements@endeavourenergy.com.au).

We have developed a brochure with answers to the most commonly asked questions including what you can or cannot do in an Endeavour Energy easement as well as who to contact to obtain further information. Download a copy of 'living with easements' [here](#).

It should be noted that not all Endeavour Energy assets are protected by a registered easement, and assets on private and public land may have protection by a statutory easement provided by the Electricity Supply Act 1995 No 94.

In particular Section 53 of the Electricity Supply Act 1995 provides statutory protection for electricity works installed on land without an easement.



#### 2.4.10.3 Building and Construction

Overhead powerlines continue to be the leading asset impacted by the construction industry.

It also represents the asset category with the most hazard reports due to scaffold, cranes and other structures being built within safe clearances from the network, increasing the risk of arc or direct contact between tools or building materials and the overhead network.

This presents a significant risk to construction workers, structure occupants and the community.

Endeavour Energy provides safety advice to all applicants seeking to work within safe clearances from overhead assets, consistent with The NSW Industry Safety Steering Committee (ISSC) Guide for network operators to provide information to the construction industry for working near overhead powerlines and the [Safe Work NSW Code of Practice - Work near overhead powerlines](#).



This advice may also incorporate the implementation of critical controls such as isolations, aerial markers and installation of temporary insulation (also known as tiger tails or tarapoli) to enable third party workers to safely build and operate on scaffold and, where required, use cranes to lift over the network.

In addition to advertising campaigns, Endeavour Energy also provides complimentary educational resources on its website. These resources aim to educate the industry about the risks posed by overhead powerlines and key control measures to manage those risks.

Information about how to request these services are promoted on the Endeavour Energy website.

Specific requests for safety advice for working near electrical infrastructure can be submitted via our Connections Portal through the [Connect Online](#) page on our website.

Working alongside electricity infrastructure can be dangerous if the appropriate safety control measures are not applied. Awareness of minimum safety clearances from powerlines and other electrical assets could mean the difference between a safe, successful and well managed project and a fatal accident.

You may also save time and money on your project by checking that the design of your home or building complies with important safety requirements without additional measures being taken.

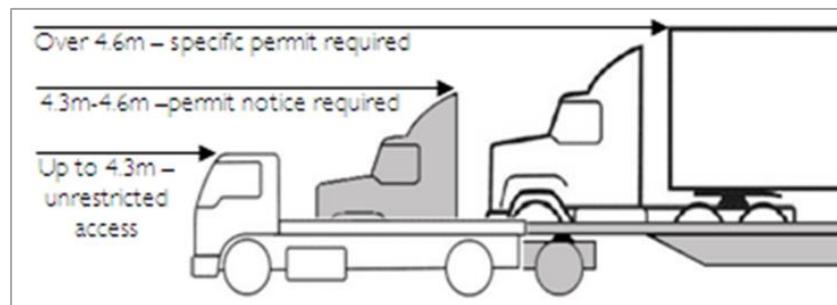
We have developed a brochure to inform anyone working on or around buildings or worksites near our network of the safe distances that must be maintained from our network assets, whether they are overhead or underground. Download a copy of 'where to draw the line on safety clearances' [here](#).

Visit our website for further information related to [building near electrical infrastructure](#).

#### 2.4.10.4 Road Transport

Endeavour Energy's network is constructed and maintained to minimum clearances to allow vehicles to safely travel below overhead powerlines.

Road vehicle heights are regulated through the Road Transport (Vehicle Registration) Regulation 2017, limiting vehicle heights to 4.3m with additional provisions for vehicles up to 4.6m using prescribed routes under a permit system.



Endeavour Energy receives requests for special transport from TfNSW where vehicles greater than 4.3m are required to travel on roads that are not dedicated high vehicle routes.

Unfortunately, Endeavour Energy still experiences a large volume of over height vehicles striking the Endeavour Energy network and communication assets which have the potential to flick up into the overhead powerlines.

These events can damage poles, cause powerlines to break, and sometimes detach facias from houses, exposing the community to additional risk. Other common causes include tipper trucks and waste removal vehicles contacting overhead powerlines when tipping loads.

Endeavour Energy also provides free educational resources on its website and social media platforms to educate the industry about the risk posed by overhead powerlines and key control measures to implement to manage the risk.



#### 2.4.10.5 Agriculture

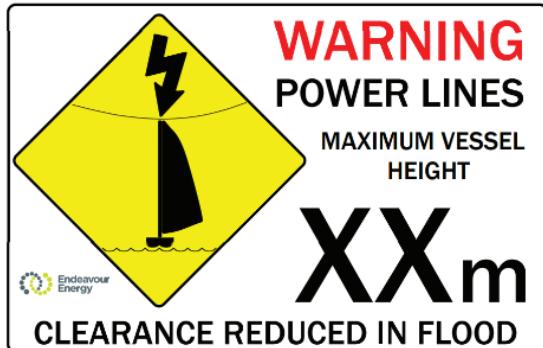
The agricultural footprint within Endeavour Energy's network area is comparatively small and contributes only a small portion of public safety related incidents.

In addition to the information shared for overhead powerlines, Endeavour Energy provides educational resources on its website and social media platforms communicating electrical hazards and key control measures to manage the risk when undertaking harvest and using over height farming equipment.



## 2.4.10.6 Marine and Boating

Endeavour Energy's network area is diverse, requiring an assortment of asset construction types to service its community. Where required we construct waterway crossings that are typically aerial designs over waterways.



Where there is a risk of contact, prominent warning signage is installed to minimise the possibility of masts contacting overhead powerlines.

Warning signage placed on the banks of waterways are consistent with the Crossing of NSW Navigable Water: Electricity Industry Code and Australian Standards AS6947: Crossing of Waterways by Electricity Infrastructure.

Extreme weather and flooding events have the potential to influence water heights and move vessels off course which increases the risk to recreational and commercial vessels contacting overhead powerlines. Boating implements such as fishing rods and yacht masts can also present a risk off the water when stowing or preparing to launch vessels where overhead powerlines may be present.

For further information, please download our information sheet: [electrical safety for boaters and yachties](#).

## 2.4.10.7 Aviation

Power lines pose a significant risk to low flying (below 60m/200ft) aircraft as they can be difficult to see, regardless of the weather conditions and can quite easily blend into the surroundings and horizon.

Endeavour Energy's pole and wire network can be difficult to see when viewed from an aircraft. That is why distribution networks present a considerable risk to low level flying activities.

This includes aerial crop management applications but also captures take-off and landing as well as refuelling and water collection for aerial firefighting (which can have additional visibility constraints due to smoke).

Other recreational activities such as hot air ballooning, hang gliding, paragliding, parasailing, parachuting, kite surfing as well as drone, kites and model aircraft operating also present risk to people and network assets when performed in proximity to overhead powerlines.

Activities that require high levels of wind present considerable risk as environmental factors can change instantaneously, blowing the operator off-course.

Endeavour Energy reviews approved allowable landing areas to ensure appropriate visual warning markers are placed on the network. Endeavour Energy also reviews the application of additional visual markers on request and supports the aviation industry with geospatial information where required.

For further information, please download our information sheet: [safety information for pilots](#).





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