Safety Management System Annual Performance Report 2017/18

September 2018

essential energy

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1. Annual performance reporting - ENSMS

The Electricity Network Safety Management System (ENSMS) is a collection of inter-related strategies, policies, procedures, Formal Safety Assessments (FSAs), plans and standards which govern the behaviour of Network Operators in relation to the safety and management of their electricity network.

Essential Energy's ENSMS and the Electrical Safety Policy (CECP8096) have been developed in light of and/or to assist in achieving/meeting the primary objective of safety network systems, which is to take all reasonable steps to ensure that the design, construction, commissioning, operation and decommissioning of the network, or any part of its network, is safe (clauses 5 and 6 of the *Electricity Supply (Safety and Network Management) Regulation 2014*).

The following systems are key to Essential Energy's ENSMS;

- Business Management System (BMS) – also called the Policy Library
- TotalSAFE - Workplace Health and Safety Management System (WHSMS).

Regular inspection and maintenance of network assets is intended and/or assists in maximising the technical life and minimise safety and network risk associated with assets. Essential Energy has engaged in a program of scheduled inspections and maintenance to systematically address the maintenance requirement of their electricity network. Additionally, Essential Energy has developed tools to facilitate maintenance to assets outside the scheduled maintenance program when required.

1.1 Safety and reliability of the network operator's network

1.1.1 Programs and activities undertaken to maintain or improve the safety and reliability of the network operator's network

Essential Energy undertakes significant programs of work aimed at maintaining or improving the safety and reliability of the network. This 'business as usual' activity includes network planning, design, construction, operation, maintenance, renewal and disposal built from many years of experience as a Distribution Network Service Provider (DNSP).

New and ongoing programs and initiatives outside of these business as usual activities are provided in Table 1.

Table 1 - Programs/Initiatives undertaken to improve safety and reliability of the network

Program/Initiative	Description	New/ Ongoing
Refresh of Network Safety and Environment and Reliability Strategies.	The Network Safety and Environment and Reliability Strategies have undergone major reviews. These now set the objectives and strategic priorities for the next 5 years to ensure Essential Energy achieves the performance objectives in these areas.	Ongoing.
Development and implementation of Asset Risk, Value and Risk-Informed Optimisation Frameworks.	The Asset Risk, Value and Risk-Informed Optimisation Frameworks set out the approach to risk-based asset management. The frameworks establish the approach to risk management and to maximising the value from investments on the network.	Ongoing.
C55 – Implementation of Asset Investment and Planning System. Risk prioritisation tool assigned at a portfolio level.	The Asset Investment and Planning System implements the Asset Risk and Value Frameworks and supports the portfolio optimisation process. This helps Essential Energy to focus investments on delivering optimal value through quantifying the benefits, risks and costs of network capital investment programs.	Ongoing.

Program/Initiative	Description	New/ Ongoing
Enterprise Asset Management System.	Essential Energy has begun the process of reviewing its Enterprise Asset Management system to improve data accuracy and asset management decision making.	Ongoing.
Risk-Based Scheduling.	Essential Energy has begun work to develop a risk-based scheduling approach that will efficiently bundle work tasks together, thereby delivering improved risk reduction per dollar invested.	New.
Updated Aerial Inspection Survey Strategy. Pre-Summer Bushfire Inspection (PSBI) program Engineering Lidar/High Definition (HD) Imagery program LiDAR Vegetation program.	This updated aerial inspection strategy allows for accurate scoping of over 60 per cent of the network including the highest bushfire risk areas on an annual basis. The strategy includes an annual visual patrol of high fire risk zones. Continuation of the Aerial Patrol & Analysis (AP&A) program, including LiDAR and HD photography, as an enhanced condition monitoring program for assets.	Ongoing.
Development of Task Rectification Priority (TRP) priority classification for all overdue tasks.	This reporting tool takes account of the safety and reliability impacts of failures and prioritises accordingly.	Ongoing.
Detailed Safety Factor Calculations for Poles.	A detailed safety factor calculation is a more comprehensive assessment of a poles condition, residual strength and serviceability. This allows a better risk assessment of individual poles following an inspection.	New.

Safety and Environmental Audits

The Health, Safety and Environment (HSE) Audit and Assurance team forms part of the HSE Risk, Audit and Investigation division. The objective of the audit and assurance program is to support and validate Essential Energy safety managements systems.

The HSE Assurance Program is designed to:

- determine whether the safety systems conform to the expected arrangements and requirements of relevant standards;
- measure the effectiveness of the safety systems in meeting the organisations objectives and targets, including preventing injury, illness or environmental harm and identifying and mitigating risks within the workplace or from activities;
- determine whether the safety systems have been properly implemented and maintained;
- assist the organisation to identify gaps in system planning arrangements, processes, procedures or instruments (tools and forms); and
- provide information to management and workers to implement illness, injury and environmental prevention strategies in response to audit findings.

Essential Energy maintains certification to AS/NZS 4801 Safety Management Systems and AS/NZS ISO 14001 Environmental Management Systems. Both standards require an internal audit process to objectively review and maintain our safety systems.

In 2017/18 the HSE audit and assurance team completed 11 major audits and follow-up audits on safety and environmental risks in 2017/18. These are listed in Table 2.

Table 2 - Audit of risk areas in 2017/18

No	Area of Audit in 2017/18
1	Bushfire Management
2	Operational Risk - 14. Exposure to environmental elements
3	Operational Risk - 18. Exposure to sound or sound pressure
4	Operational Risk - 20. Exposure to threats or acts of violence from customers and / or third parties
5	AS/NZ 4801:2001 and ISO 14001:2004 Compliance Audit Q2
6	AS/NZ 4801:2001 and ISO 14001:2004 Compliance Audit Q4
7	Contractor HSE Compliance Audit - Trenching and Under-boring Systems
8	Contractor HSE Compliance Audit - Vegetation Systems
9	Investigations audit 1 - Vehicle and Plant Pre-Operational Inspections
10	Investigations audit 2 – Vehicle Incident Trend Analysis
11	Investigations audit 3 - Asset Inspectors Hazardous Chemical Management

All actions raised from internal audits are allocated a specific timeframe and responsibility is tracked through our safety incident reporting system TotalSAFE. Identified non-compliances for 2017/18 within the ENSMS are provided in table 3.

Table 3 - Identified non-compliances within the ENSMS from safety and environmental audits

Identified non-compliances	Actions against non-compliances	Progress of actions
Exposure to Threats or Acts of Violence from External Parties Access requirements under the Electricity Supply Act.	Policies and procedures to be reviewed to ensure consistency with the Electricity Supply Act.	Policies and procedures to be reviewed to reflect access and notification requirements.
AS/NZS 4801 and ISO 14001 Compliance Audit (Element 2 - Planning) Documentation used in the Health Safety Environment Management System (HSEMS) requires review to align with new ISO14001:2015.	Complete the review of HSE environmental procedures.	Ongoing project to review and update components of the HSEMS.
IPART contracted audit of Essential Energy's ENSMS identified non-compliances with Formal safety Assessment scope, risk assessment process and stakeholder engagement.	Identified actions to be resolved within identified timeframes in 2018-19.	In progress.

Safety and Environmental Investigations

The HSE Investigations team forms part of the HSE Risk, Audit and Investigation division. Essential Energy utilises the Incident Cause Analysis Method (ICAM) to:

- identify contributing factors and latent hazards
- review the adequacy of existing controls and procedures
- report the findings
- recommend corrective actions which can reduce risk and prevent reoccurrence
- detect organisational factors that can be analysed to identify specific and reoccurring problems
- identify key learnings for distribution.

The Safety and Environmental Investigations team completed 134 ICAM level investigations. The ICAM investigations identified 214 actions to be taken in response to the various incidents, with 202 completed at the time of this report. The majority of investigation findings relate to addressing the human factors or errors associated with the incident.

In reviewing the safety and environmental investigations for 2017/18, five actions were identified as potential non-compliances within the ENSMS and are summarised in table 4.

Table 4 - Identified non-compliances within the ENSMS from safety and environmental investigations

Identified non-compliances	Actions against non-compliances	Progress of actions
Non-compliances in CEOP5125 Network Asset testing and commissioning. To address commissioning and decommissioning of network assets.	Internal review of CEOP5125 Network Asset testing and commissioning to address identified non-compliances. Treatment Action Plan aligns with this investigation	Implemented.
Non-compliances within CEOP2018 Polarity & Neutral Identification.	Internal review of CEOP2018 Polarity & Neutral Identification.	Implemented.
Non-compliances within CEOP8030 Electrical Safety Rules to ensure adequate direction is provided for all workers (including ASP workers), in relation to the requirement for a Competent Assistant working at the customer's connection point and the requirement to be attached while working at height on private assets supporting uninsulated service mains.	Internal review of CEOP8030 Electrical Safety Rules to address identified non-compliances	Ongoing. Partial changes completed in August 2017. Further amendments are due for completion by 30 November 2018.
Non-compliances within CEOP8049 Network Authorisation Requirements to ensure adequate direction is provided for ASPs in relation to required authorisations and competencies to perform the role of a competent assistant. Coverage is required for Over Head (ladder and EWP) and Under Ground.	Internal review of CEOP8049 Network Authorisation Requirements to address identified non-compliance.	Implemented.
Non-compliance within CEOM7097 Overhead Design Manual to address clearances over waterways.	Internal review of CEOM7097 Overhead Design Manual to address identified non-compliances.	Implemented.

1.2 Advice to the public about hazards associated with electricity in relation to the network operator's network

1.2.1 Programs and activities undertaken to promote the public knowledge and understanding of electrical network safety hazards

Analysis of public safety incidents forms the basis of Essential Energy's Public Electrical Safety Awareness Plan (PESAP) and has informed the development of targeted programs and campaigns to increase public awareness of potential risks associated with Essential Energy's network and reduce the occurrence of public safety incidents.

Essential Energy completes regular reviews of public safety incidents. The key criteria includes:

- risk context including latest information from SafeWork NSW;
- detailed data analysis of public safety incidents including:
  - specific industry sectors;
  - cluster location of incidents;
  - objects involved;
  - network assets involved;
  - types of workers involved; and
  - root cause analysis.
- investigation reports including ICAM analysis;
- threat/barrier diagrams.

The review assists Essential Energy in determining the effectiveness of its controls and programs. Through the preparation of the annual PESAP (CEOP8005) targeted initiatives are developed to address at-risk industry. The 2017-18 PESAP is attached as an Appendix to this report.

1.3 Management of bushfire risk relating to electricity lines and other assets of the network operator's network that are capable of initiating bush fire

1.3.1 Programs and activities undertaken to maintain or improve the management of bushfire risk associated with the network operator's network

Essential Energy has implemented and is in the process of implementing additional programs and initiatives associated with bushfire risk mitigation as set out below. This work includes the continued enhancement of existing programs initiated following a review of the Victorian Bushfires Royal Commission recommendations.

Bushfire Mitigation Capex Programs

Essential Energy has a range of Capital expenditure (Capex) programs directly related to Bushfire Mitigation. Examples include:

- Overhead substation refurbishment program
- Pole Top refurbishment programs
- Replacement of Bare Overhead Conductor program.

Bushfire Mitigation Opex Programs

Essential Energy's network Operating expenditure (Opex) is predominantly related to inspection and maintenance activities, accordingly a large component of the Opex program investment directly contributes to the mitigation of bushfire risk. Examples include:

- Public education programs and information provision (e.g. Public Safety Group information and communications to agri-businesses)
- Website information
- Operation and maintenance of protection schemes and systems
- Aerial Patrol Inspections and Analysis
- Vegetation management programs

- Lidar inspection
- Ground line pole and line inspection (including inspection of private lines)
- Zone substation maintenance
- Pole and line maintenance.

Bushfire Mitigation through Asset Management

Asset management functions also contribute to mitigation of network caused fires for both existing, and new assets, through activities such as:

- Standards and policies relating to design, planning, procurement and construction
- Adoption of industry standards, codes, and guidelines, and national or international standards
- Research and development
- Risk management practices.

Specific Bushfire Risk related programs and initiatives, new or ongoing are captured in Table 5 below.

Table 5 - Bushfire Risk related programs and initiatives (New or Improved)

Program / Initiative	Hazard (Safety / Reliability)	Description	New / Ongoing
Engagement with NSW Rural Fire Service (RFS).	Public Safety, Bushfire Risk.	Essential Energy has engaged with RFS in numerous Forums. Senior Staff from the RFS briefed Essential Energy on the upcoming Fire Season. Essential Energy has attended the RFS Pre-season Multi-Agency Briefing and Workshop and the RFS State Operations Exercise Essential Energy has representatives on the District Bush Fire Management Committees (BFMC's) who meet multiple times throughout the year to review Bushfire Hazards Essential Energy has been provided access to the RFS ICON system. This is their live operational system and includes weather forecasting, fire observations and predictions and predicted extreme fire conditions.	New/ Ongoing.
Engagement with Industry.	Public Safety, Bushfire Risk.	Essential Energy facilitated a Phoenix Fire Risk Modelling Industry day with NSW utilities, RFS and Melbourne University. The focus of the day was on improving understanding of the Phoenix Fire Modelling product and the results of recent modelling for NSW Network Operators	New.
Engagement with Industry.	Public Safety, Bushfire Risk.	Essential Energy attended and presented at the Bushfire Mitigation Industry day. This Industry day is aimed at discussing and sharing latest developments, initiatives, knowledge and emerging issues from within their organisations regarding Bushfire Mitigation.	New/ Ongoing.
Engagement with Industry.	Public Safety, Bushfire Risk.	Essential Energy attended and presented at the Utility Arborists Association of Australia Annual Conference. Topics included utility vegetation management.	New/ Ongoing.

Program / Initiative	Hazard (Safety / Reliability)	Description	New / Ongoing
Major Revision of Essential Energy's Bushfire Risk Strategy.	Public Safety, Bushfire Risk.	Commenced a review process for the Bushfire Risk Strategy including development of the Fire Formal Safety Assessment.	Ongoing.
Electricity Industry Safety Steering Committee Guideline (ISSC3) for Managing Vegetation Near Power Lines - Compliance Planned Implementation.	Public Safety, Bushfire Risk.	Essential Energy has developed and is implementing a plan to achieve ISSC3 compliance on a prioritised basis as approved by IPART.	New.
Bushfire Mitigation Index revision – based on fire modelling.	Bushfire Risk.	An updated Bushfire Mitigation Index has incorporated the new Bushfire Risk Classification from the Phoenix modelling. This allows greater understanding of the bushfire risk of the network.	Improved and Ongoing.

Identified non-compliances relating to the management of bushfire risk associated with the network both planned and in progress are captured in Table 6 below.

Table 6 - Non-compliances relating to the management of bushfire risk associated with the electricity network

Identified non-compliances	Actions against non-compliances	Progress of actions
ISSC3 non-compliance.	Compliance plan developed and provided to IPART.	Implementation on target with plan.
Bushfire directions to private customers.	New procedures implemented, and additional resources employed to achieve compliance.	In progress. Process review completed, and additional resources employed.

1.3.2 Bushfire risk management report

Essential Energy's 2016/17 Bushfire preparedness report is included as an Appendix to this report.

2. Contextual Information

2.1 Deviation from Standards

Where Essential Energy deviate from (several) industry codes, guides and standards an equivalent or better outcome is achieved. In some instances, these deviations arise simply from inconsistencies between the various codes, guides and standards. In other cases, variations are historical. Essential Energy has summarised each deviation in Table 7 below, and where necessary, how an equivalent or better outcome is achieved.

Table 7 - Deviations from Standards

Deviation Description	Justification
AS/NZS 7000:2016 Overhead line design and the associated Handbook HB331 a. Essential Energy has adopted the industry practice in electing to use the prior version of AS 1720 Timber Structures relating to strength of utility poles and not the latest version of AS 1720. Recent research by the Energy Network Association (ENA) Poles Committee confirms modern re-growth poles are not as strong as historically sourced forest poles. b. Tables 3.6 Insulated Services and 3.7 Clearance to Structures are less than the requirements of the NSWSIR's. c. Section 33.8 Country Line Crossings requirements of HB331.	a. Based on historical Industry experience, and the fact we monitor residual pole strength through its life, AS/NZS 7000 has, to date, not altered its assumption on pole fibre stress b. This is covered in a Note to the respective Tables i.e. that jurisdictional Rules apply (see also comments for AS/NZS3000) c. This section of the Handbook was included at the request of WA, is not 'normative', and the same experiences have not been evident in NSW. Adding aerial markers reduces ground clearance. d.
AS/NZS 3000 Wiring Rules. Table 3.8 Insulated Services.	As with AS/NZS 7000 the jurisdictional rules (i.e. NSWSIR's) take precedence. There are also minor variances between jurisdictions for insulated services clearances and hence Essential Energy applies three different standards in the jurisdictions it supplies. From September 2017 (Construction Advice 17-09) all new services (including replacements) shall (wherever practicable) maintain 5.5m clearance from the roadway for the full width of the carriageway, and exceptions shall be by approval only.
ISSC 29 –Guideline for Pre-Climbing and Climbing Assessment of Poles Section 12 and Appendix 3 – marking of Private Poles.	Essential Energy has chosen not to put these large yellow labels on farm poles recognising the legacy maintenance and inspection arrangements regarding LV poles on farms.
Rigging Codes (Various) – size and type of rope (e.g. 16mm fibre rope).	The Electricity Supply Industry uses polypropylene rope (of smaller size in some cases) because of its insulating properties. At one point, we had a 'formal' exemption for this under the Construction and Safety Act and Regulations of the day. Particularly in the Live HV work arena, we know exactly what loads we handle. Our tools and equipment are designed for 16mm and 12mm poly rope, and smaller in some instances such as tail ropes.

Deviation Description	Justification
DRAFT AS 3891.2 – 2017 and old EC10 – 1992 (relating to Aerial Marking).	Requires the second and third structure either side of an overcrossing to be marked with a 300mm yellow disc on the approach side. Legacy situations exist with alternate marking arrangements (e.g. first and second structure or one structure only).

2.2 Significant Community Infrastructure

For the purposes of incident reporting, Essential Energy considered the following to be significant community infrastructure:

- Albury Base Hospital
- Coffs Harbour Base Hospital
- Dubbo Base Hospital
- Lismore Base Hospital
- Manning Base Hospital
- Orange Health Service
- Port Macquarie Base Hospital
- Tamworth Base Hospital
- The Tweed Hospital, and
- Wagga Wagga Base Hospital.

3. Formal safety assessment reviews and residual risks

Essential Energy's Risk Management Policy and Procedure sets out the organisational risk framework, principles and approach to risk management and assessment.

Essential Energy's Chief Human Resources Officer and General Manager Network Services and Executive Manager Engineering are responsible for ensuring that safety risks are managed in accordance with requirements and expectations.

3.1 Classification of risk levels

Essential Energy utilises the risk rating criteria as shown in Table 8 - Common Risk Matrix in conjunction with the Table 9 - likelihood assessment. Table 10 displays the consequence assessment criteria.

Table 8 - Common Risk Matrix

		CONSEQUENCE				
		Insignificant	Minor	Moderate	Major	Severe
LIKELIHOOD	Almost Certain	Medium	Medium	High	Extreme	Extreme
	Likely	Low	Medium	High	High	Extreme
	Possible	Low	Medium	Medium	High	High
	Unlikely	Low	Low	Medium	Medium	High
	Rare	Low	Low	Low	Medium	Medium

Table 9 - Likelihood Assessment Table

	Almost Certain	Likely	Possible	Unlikely	Rare
Likelihood Criteria	Likelihood of event occurring - more than 5 times a year.	Likelihood of event occurring - more than once a year but no more than 5 times a year.	Likelihood of event occurring - more than once in 10 years but no more than once a year.	Likelihood of event occurring - more than once in 25 years but no more than once in 10 years.	Likelihood of event occurring - less than once every 25 years.

Table 10 - Consequence Assessment Table

	Insignificant	Minor	Moderate	Major	Severe
Safety	Low level injury/symptoms requiring first aid only.	Non-permanent injuries/work related illnesses requiring medical treatment.	Significant non-permanent injuries/ work related illnesses requiring emergency surgery or hospitalisation for more than 7 days.	Permanent injuries/ work related illnesses to one or more persons.	One or more fatalities Significant permanent injuries/ work related illnesses to one or more persons.
Network	**Corporate SAIDI: Note (1)** < 0.25 minute **Outage Duration to a small group of customers: Note 2** < 4 hours **Outage to 1 or more Sensitive Load Customers: Note (3)** Any event where the community/ economic impact to the customers is considered insignificant.	**Corporate SAIDI: Note (1)** 0.25 minute to 1 minute **Outage Duration to a small group of customers: Note 2** 4 to 12 hours **Outage to 1 or more Sensitive Load Customers: Note (3)** Any event where the community/ economic impact to the customers is considered minor.	**Corporate SAIDI: Note (1)** < 1 minute to SAIDI exclusion threshold **Outage Duration to a small group of customers: Note 2** 12 hours to 36 hours **Outage to 1 or more Sensitive Load Customers: Note (3)** Any event where the community/ economic impact to the customers is considered moderate.	**Corporate SAIDI: Note (1)** SAIDI exclusion threshold to 20 minutes **Outage Duration to a small group of customers: Note 2** 36 hours to 1 week **Outage to 1 or more Sensitive Load Customers: Note (3)** Any event where the community/ economic impact to the customers is considered major.	**Corporate SAIDI: Note (1)** > 20 minutes **Outage Duration to a small group of customers: Note 2** > 1 week **Outage to 1 or more Sensitive Load Customers: Note (3)** Any event where the community/ economic impact to the customers is considered severe.
	Note (1) A measure of the impact of the event on the overall System Average Interruption Duration Index (SAIDI) performance calculated using the organisation's total connected customers as the base.	Note (2) A small group of customers is generally considered to be less than 100 non-sensitive load customers.	Note (3) Sensitive load customers are customers whose supply is substantively Network reliant and where an interruption to their Network supply has the potential to cause widespread community or economic impact.		

	Insignificant	Minor	Moderate	Major	Severe
Finance	<= $250k	= $250K - $5M	= $5M - $25M	= $25M - $50M	> $50M
Compliance	Indication of interest from Regulator No fines incurred but administration costs may be payable No litigation.	Warning/ notifications from Regulator Minor financial penalties Short term duration litigation.	Medium financial penalties Medium duration litigation.	High financial penalties Lengthy litigation.	Significant financial penalties Potential jail term for individuals Extensive litigation Loss of Operational Licence.
Customer	Grade of service >75% (GOS = % of calls answered within 30 secs – Emergency Line) Minor increase in call wait time (General Enquiries) Service Other completion > 90%.	Grade of service 75%-50% Call wait time 10 to 30 minutes Service Other completion 75%-89%.	Grade of service 49%-34% Call wait time 31 to 60 minutes Service Other completion 60%-74%.	Grade of service < 35% Call wait time > 60 minutes Service Other completion 50%-59%.	No communication channels available Service Other completion < 50%.
Reputation	Public concern restricted to local complaints or intra-industry knowledge / awareness.	Attention from media and or heightened concern from local community / external stakeholders Criticism from multiple sources for one or two days.	Adverse national media/public/stakeholder attention sustained over 1-2 weeks.	Significant adverse national media/public/stakeholder' s attention sustained over 1-2 weeks Loss of confidence by State government minister Directive to amend practice received from regulators.	Significant adverse national media/public/stakeholders' outcry Sufficient outcry to cause irreparable damage to brand Ministerial enquiry / Royal Commission.
Environment	Limited localised damage to minimal area of low significance.	Minor impact on biological or physical environment or heritage item over a limited area Little or no need for remediation.	Moderate damage over a large area or affecting ecosystem, or heritage item Moderate remediation is required.	Serious widespread, long term damage to ecosystem or heritage item Significant rectification is required.	Very serious long term, wide spread impairment of ecosystem or heritage item.

3.2 Risks within the scope of the ENSMS

Table 11 provides a description of the worker, public, environmental and loss of supply risks incorporated into Essential Energy's ENSMS.

Table 11 - Business Risks within scope of the ENSMS

AS5577 Reference	AS5577 Principle	Relevant Business Risk	Business Risk Definition
1.2 a (i)	The safety of persons near or working on the network.	1.1 Exposure to unintended discharge of electricity.	An incident involving an unintended discharge of electricity on or near the network that could result in fatality or permanent injury to a worker.
1.2 a (i)	The safety of persons near or working on the network.	1.2 Exposure to hazardous chemicals / materials.	An incident involving exposure to hazardous chemicals/materials (including but not limited to asbestos, lead, acid and other chemicals, PCB, SF6, ozone and/or contaminated soil/water) in one or more forms (solid, liquid, gas and particulate) that could result in fatality or permanent injury to a worker. The event may have resulted from an incident involving loss of control, or in normal controlled activities (e.g. storage, handling, production, transport, recycling, or disposal).
1.2 a (i)	The safety of persons near or working on the network.	1.3 Fall from height.	An incident involving a fall from one level to another that could result in a fatality or permanent injury to a worker.
1.2 a (i)	The safety of persons near or working on the network.	1.4 Motor vehicle accident.	An incident involving a motor vehicle accident (during the course of work related duties) that could result in a fatality or permanent injury to a worker. This excludes work related to mobile plant.
1.2 a (i)	The safety of persons near or working on the network.	1.5 Unintended contact with mobile plant.	An incident involving unintended contact with mobile plant that could result in a fatality or permanent injury to a worker. This includes an event where mobile plant collides/contacts with other mobile plant or a fixed object or person.
1.2 a (i)	The safety of persons near or working on the network.	1.6 Struck by falling or moving object.	An incident involving an object falling from height or moving in an uncontrolled manner that could result in a fatality or permanent injury to a worker.

AS5577 Reference	AS5577 Principle	Relevant Business Risk	Business Risk Definition
1.2 a (i)	The safety of persons near or working on the network.	1.7 Incident while undertaking lifting operations.	Incident while undertaking lifting operations that could result in a fatality or permanent injury to a worker.
1.2 a (i)	The safety of persons near or working on the network.	1.8 Uncontrolled collapse of excavation work.	An incident involving unintended ground/earth movement due to Company works that could result in a fatality or permanent injury to a worker. Excludes damage to infrastructure caused by the excavation.
1.2 a (i)	The safety of persons near or working on the network.	1.9 Breach of a controlled worksite when working near or around traffic.	An incident involving a breach of a controlled worksite by company vehicles or general traffic that could result in a fatality or permanent to a worker.
1.2 a (i)	The safety of persons near or working on the network.	1.10 Exposure to Hazardous Manual Tasks.	The worker suffers body stress either from prolonged poor posture in the office environment, repetitive movements or from an incident caused by lifting, carrying or putting down objects whilst at work.
1.2 a (i)	The safety of persons near or working on the network.	1.11 Exposure to mental stress.	Worker(s) experiences trauma or similar response which impacts their mental health.
1.2 a (i)	The safety of persons near or working on the network.	1.12 Uncontrolled release of a pressurised substance.	An incident where there is an uncontrolled release of a pressurised substance which has the potential to or does cause an injury to a worker e.g. a gas release/explosion resulting in burns to a person or hydraulic pressure release resulting in injury.
1.2 a (i)	The safety of persons near or working on the network.	1.13 Slips, trips and falls.	A worker is injured as a direct result of the action of falling, kneeling or trying to recover from a slip, trip or a fall.
1.2 a (i)	The safety of persons near or working on the network.	1.14 Exposure to environmental elements (heat and cold).	A worker is injured due to exposure to extreme cold or heat environment whilst at work e.g. frostbite, hypothermia, sunstroke, dehydration, heat exhaustion.
1.2 a (i)	The safety of persons near or working on the network.	1.15 Exposure to non-ionising radiation.	A worker is exposed to non-ionising radiation (visible lasers, infrared, microwaves, radio waves and low frequency) above recommended safety thresholds.

AS5577 Reference	AS5577 Principle	Relevant Business Risk	Business Risk Definition
1.2 a (i)	The safety of persons near or working on the network.	1.16 An incident while working in a confined space.	A worker is injured or at risk as a direct result of accessing a confined space. (As defined in the NSW Work Health and Safety Regulation 2011).
1.2 a (i)	The safety of persons near or working on the network.	1.17 Striking object with part of the body.	A worker strikes an object with the part of their body. It includes rubbing or chafing.
1.2 a (i)	The safety of persons near or working on the network.	1.18 Exposure to sound or sound pressure.	A worker may be exposed to prolonged or sudden noise which Essential Energy was a contributing factor to the incident.
1.2 a (i)	The safety of persons near or working on the network.	1.19 Exposure to a biological hazard including flora/fauna.	An incident as a result of a worker exposed to a biological hazard of human or non-human origin.
1.2 a (i)	The safety of persons near or working on the network.	1.20 Exposure to threats, abuse or acts of violence from customers or third parties.	A worker has suffered as a result of exposure to abuse, threats or acts of violence by a member of the public or third party whilst at work.
1.2 a (i)	The safety of the public.	Public safety risk, including the identified hazardous events: > Failure to identify overhead electrical assets > Failure to identify underground electrical assets > Breach of worksite control by public worker or members of the public > Asset failure (due to design, inspection or maintenance issues) > Unauthorised access to network assets including electrical substations.	An incident where Essential Energy assets or work practices create an adverse impact for public workers and / or members of the public (excluding loss of supply).

AS5577 Reference	AS5577 Principle	Relevant Business Risk	Business Risk Definition
1.2 a (iii)	Safety aspects arising from protection of the environment, including protection for ignition of fires.	2.2 Major fire caused by the Network or Network activity.	A major fire caused by our Network or Network activity resulting in injury or loss of life or damage to the environment.
1.2 a (iii)	Safety aspects arising from protection of the environment.	6.1 Polluting the environment.	Leak, spill, or discharge of a contaminating substance (such as sediment, oil, fuels, contaminated water) into the environment.
1.2 a (iii)	Safety aspects arising from protection of the environment.	6.2 Unauthorised development or damage to Flora/Fauna or Heritage.	Failure to adequately prepare or comply with environmental assessment/internal guidelines thereby breaching requirements or damaging flora, fauna, or heritage without authorisation.
1.2 a (iii)	Safety aspects arising from protection of the environment.	6.3 Reportable waste and contamination incidents.	Failure to appropriately manage wastes, contaminated land, PCB's or pesticides, thereby breaching requirements.
1.2 a (iii)	Safety aspects arising from protection of the environment.	6.4 Reportable Excessive and Intrusive Emissions.	Emissions such as noise, dust/fumes breaching requirements exceeding levels acceptable to the community excluding electro-magnetic fields (EMF). The risk associated with community exposure to EMF is covered at an operational level.
1.2 a (iv)	Safety aspects arising from the loss of electricity supply.	2.1 Performance of the Network is inadequate (reliability & capacity) to meet customer supply expectations.	Outages and situations where the quality and capacity of electricity supply experienced by customers does not meet their expectations. Poor quality supply may mean an absence of supply, or the various deviations from standard supply voltage or frequency that have a negative impact on the way in which customers are able to use electricity.

3.3 Risk Evaluation Outcomes

During 2017/18, major reviews of the Worker Safety, Public Safety, Environment and Loss of Supply Formal Safety Assessments were undertaken. This section details the main outcomes from the reviews, including for those hazardous events where:

- Additional reasonably practicable controls were identified
- No additional reasonably practicable controls were identified, but the residual risk was 'Medium' or higher.

As stated in the introduction to Section 3, risks for safety are accepted as being managed SFAIRP once all known reasonably practicable measures have been or are in the process of being implemented (consistent with industry standards and practice, and economic prudency and efficiency).

Risk evaluation tables are provided for worker safety in Table 12, public safety in table 13, environmental in table 14, and loss of supply in table 15.

Table 12 - Worker Safety Risk Evaluations

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
An unintended discharge of electricity.	High.	It may be practicable to reduce the risk of contact with energised assets with additional controls to eliminate or minimise the risk SFAIRP.	1. Rollout implementation plan for CEOP5125 for Network Asset testing and Commissioning 1. Review CEOP8002 with a view to implement the Live Line setting on all new reclosers and existing reclosers as per the maintenance cycle.	1. Determined practicable. This procedure will assist in the testing and commissioning of network assets reducing the potential risk from an unintended discharge of electricity 2. Determined practicable. A pilot trial will inform the potential changes to the procedure and therefore the potential settings for all new and existing reclosers.	1. Implemented 2. Ongoing. A revised policy has completed an internal review. However, further external review is required as part of the trial and finalisation process.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
Hazardous chemicals / materials.	Medium.	It may be practicable to reduce the risk of contact with hazardous chemicals and materials with additional controls to eliminate or minimise the risk SFAIRP.	1. Monitor roll out of updated Chem-Alert program and training 2. Implement an effective asbestos management program within Essential Energy.	1. Determined practicable. This will address a February 2017 audit recommendation in relation to the use of the Chem-Alert program and training 2. Determined practicable. This action will address procedural breaches of asbestos storage and disposal practices. This will be driven by a newly created role in the form of an asbestos specialist.	1. Implemented 2. Ongoing. SafeWork NSW asbestos containing fuse removal exemption has been obtained. Policies, user guides and training has been developed to allow workers to safely undertake this work and the improvement program has now begun work on a naturally occurring asbestos review.
Falling from height.	High.	It may be practicable to reduce the risk of working at heights with additional controls to eliminate or minimise the risk SFAIRP. Improvement opportunity - halo ladder attachment required to improve safety of working at heights around awnings. Improvement opportunity – partial effective control measures such as safely securing positioning ladders.	1. Complete trial for halo ladder attachment to improve safety of working at heights around awnings 2. Complete telecommunications site audits in accordance with 2017/18 audit schedule, include non-compliances in future work programs and update the Fixed Ladder register accordingly.	1. Determined practicable. The trial will determine if this ladder does improve safety when specifically working around awnings 2. Determined practicable. Specific program of work to ensure compliance with fixed ladder register.	1. Ongoing. A prototype is currently being trailed. An evaluation process will be completed following the trail to assess implementation 2. 2017/18 schedule implemented.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
Driving.	High.	It may be practicable to reduce the risk of driving with additional controls to eliminate or minimise the risk SFAIRP. Communication and safety incidents can be difficult in rural and remote locations. Improvement opportunity to automatically identify a vehicle roll-over. Improvement opportunity to ensure drivers have the necessary driver training and skills to complete the work they have been employed to do. Better application of fair and just culture in relation driver safety incidents.	1. Implement GPS/vehicle telemetry solution to track vehicle location, speed, notify of impact or roll-over and other safety metrics 2. Establish risk profile for drivers and implement tailored solutions e.g. defensive driver training 3. Review the application of fair and just culture in relation to driver incidents.	1. Determined practicable. An opportunity to improve safety through technological improvement 2. Determined practicable 3. Determined practicable.	1. Ongoing. A Significant program redesign was required to meet quality and variability challenges. Rollout commenced in specific locations within Essential Energy which will continue in 2018-19 2. Ongoing. External partnerships developed. Further leveraging of external partnership is required in unison with DriveSafe vehicle intelligence data. This will be completed as systems come online 3. Ongoing. To be completed in line with DriveSafe program of work in 2018-19.
Falling or moving objects.	High.	It may be practicable to reduce the risk from falling or moving objects with additional controls to eliminate or minimise the risk SFAIRP. Drop Zone and No-go Zone management activities are undertaken in accordance with the relevant sections for managing on site risks. An	Review standards for drop zones and implement outcomes of the review in managing onsite risks.	Determined practicable. Partially ineffective controls identified in the risk analysis.	Ongoing. As part of the Critical Control Framework review being undertaken in 2018/19 the risk controls for NFR 6 will be analysed to determine the most effective critical controls and identify any that need modifying or removal.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
		improvement opportunity exists to review standards for drop zones to ensure onsite risks are managed.			
Breach of a controlled worksite working near or around traffic.	Medium.	It may be practicable to reduce the risk from breach of a controlled worksite working near or around traffic with additional controls to eliminate or minimise the risk SFAIRP. Improvement opportunity to increase worker understanding of when external contractors are required to be engaged by Essential Energy to traffic control a worksite.	Review and update the Traffic Control policy for application to specific job types. Implement outcomes of the review.	Determined practicable.	Ongoing. The responsibilities and controls for traffic management have been developed into a training package that has been made available for all Essential Energy employees. This information will be reflected into relevant procedures in 2018-19.
Exposure to mental stress/ traumatic event.	Medium.	It may be practicable to reduce the risk from mental stress with additional controls to eliminate or minimise the risk SFAIRP. Improvement opportunity to develop a health and wellbeing framework to address evaluation findings and workplace survey results.	Develop a health and wellbeing framework.	Determined practicable. Organisational context in terms of restructure activities, leadership changes, new technology.	Ongoing. Mental health is one of the key pillars of the health and wellbeing framework. This work will continue to be reviewed from a mental wellbeing and risk perspective in 2018-19.

Table 13 - Public Safety Risk Evaluation

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
Failure to identify overhead electrical assets.	High.	It may be practicable to reduce likelihood of contact with overhead conductors (particularly in relation to low spans) in the following areas: > General public > Agribusiness (particularly grain industry) > Transport > Building / construction / demolition > Aviation (particularly crop dusters and leisure gliders).	1. These include, Decommission overhead assets > Partial removal or relocation of at risk assets (poles and wires) > Erect fences and barriers around electrical network assets (create public exclusion zones) > Underground targeted at risk assets > Improve visibility of powerlines Reconfiguration of network protection operation (Implement Remote earth fault current limiting - REFCL) 2. Deliver targeted safety campaigns based on the 2016/17 public safety incident data in	1. It is not reasonably practicable to remove network assets on a large scale. However, options could be applied to targeted high-risk assets. which include: > Targeted asset removals > Improved targeting of high risk low spans e.g. using LiDAR and High Definition photography > Targeted undergrounding of high risk assets > Installation of Hi-vis markers to overhead conductors > REFCL – dependent on findings from trials in Victoria.	1. Ongoing. Strategic programs identified as part of the refreshed Network Safety & Environment Strategy. Analysis of conductor strikes completed. The Low Span Rectification Strategy has been reviewed and a trial on the North Coast is currently underway as part of the implementation process. Strategy documents and a design portal are being developed as part of this process with implementation scheduled for 2018/19. 2. Implemented.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
			accordance with the plan (PESAP).		
Failure to identify underground electrical assets.	High.	It may be practicable to reduce likelihood of contact with underground cables in the following areas: > General public > Transport > Building / construction / demolition sector.	1. Remove/Decommission underground assets 2. Deliver targeted safety campaigns based on the 2016/17 public safety incident data in accordance with the plan (PESAP).	1. It is not reasonably practicable to remove large sections of UG network. However, targeted removal or relocation may be an option for high risk assets 2. Determined practicable.	1. Ongoing. Strategic programs identified as part of the refreshed Network Safety & Environment Strategy 2. Implemented.
Breach of worksite control by public worker or members of the public.	High.	Determined that overall controls are working effectively for this public safety risk, but additional or recalibrated controls are being considered to address NFR 9 Breach of a controlled worksite when working near or around traffic.	Prevention of public access near all powerline work activities, including during fault and emergency works.	Whilst it is not reasonably practicable or excessively inconvenient to the public to exclude them completely where work sites exist, partial exclusion through appropriate traffic control measures is a commonly accepted approach. The extent of exclusion depends on risk factors (e.g. work type and environmental conditions). Breach of defined	Not applicable.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
				worksites by the public is very rare.	
Asset failure / inspection and maintenance issue.	High.	It may be practicable to reduce likelihood of asset failures inspection and maintenance issues.	1. Investigate methods to prioritise low span defects in cultivated land areas. (This is related to the control discussed for the threat scenario Failure to identify overhead electrical assets) 2. Establish process and system to identify low span defects in cultivated land areas across the footprint (low clearance maps).	1. Determined practicable 2. Determined practicable.	1. Ongoing. Analysis of conductor strikes completed. A trial on the North Coast is currently underway as part of implementation process 2. Ongoing. This action is impacted by the trial above. Strategy documents and a design portal are being developed as part of this process with implementation scheduled for 2018/19.
Asset failure / design issues.	High.	It may be practicable to reduce likelihood of vehicle impact with roadside poles.	Prepare a priority list of black spot pole sites in consultation with the RMS and address on a case by case basis.	Determined practicable.	Implemented. Outcomes ongoing with the RMS.
Unauthorised access to network assets including	High.	Current controls for Unauthorised access to large scale network	Remove/Decommission electrical network assets.	This threat is considered to be SFAIRP. Essential Energy embarked on a	Not applicable.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
electrical stations depots and pole yards.		assets including electrical stations depots and pole yards are considered to minimise SFAIRP the risk.	Erect fences and barriers around all electrical network assets which exceed current industry standards.	wide scale refencing program several years ago which included installation of high security fencing around ground substation sites. It is not considered reasonably practicable to decommission substations to eliminate the hazard or change current fencing standards.	

Table 14 - Environmental Risk Evaluation

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
Polluting the environment.	Medium.	It may be practicable to reduce the risk of workers polluting the environment. The 2017/18 risk evaluation identified that the control for storing PCB waste requires improvement.	Implement a risk-based approach to comply with AS 1940 in relation to existing oil storage facilities. Ensure new oil storage facilities comply with the design standards in AS 1940.	Determined practicable. This approach will assist in ensuring existing oil storage facilities comply with AS 1940 wherever practicable.	Implemented. Tool developed to enable risk assessment approach to calculating splash angles in AS 1940.
Reportable unauthorised development or damage to flora, fauna or heritage.	Medium.	SFAIRP has been achieved for reportable unauthorised development or damage to flora, fauna or heritage.	Cease all (or in high risk areas) maintenance, inspection and operational activities on network assets in environmentally sensitive areas.	It is not reasonably practicable to implement this control at this time as it is grossly disproportionate to the benefit – does not maintain a responsible, prudent and sustainable cost, or acceptable solution for customers. Notwithstanding, partial elimination options including those identified could be applied to targeted high-risk areas such as cease work in highly sensitive environmental areas	Not applicable.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
				where alternate options are available.	
Inappropriate management of waste and contaminated materials.	Medium.	It may be practicable to reduce the risk of workers inappropriate management of waste and contaminated materials. The 2017/18 risk evaluation identified that the control for following company rules for oil management requires improvement.	Finalise the development of an overarching oil management document and identify gaps in supporting documentation.	Determined practicable. This procedure will ensure a documented and consistent business-wide approach to oil management.	Ongoing. The overarching oil management document is 80 per cent complete. Finalisation is scheduled for 2018/19.
Emissions causing nuisance to the community.	Low.	SFAIRP has been achieved for Emissions causing nuisance to the community.	Never work outside standard work hours; 7am – 5pm.	It is not reasonably practicable to implement these controls at this time on mass, as it is grossly disproportionate to the benefit – does not maintain a responsible, prudent and sustainable cost, or acceptable solution for customers. Notwithstanding, partial elimination options including those identified	Not applicable.

Hazardous event	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
				could be applied to targeted high-risk areas.	

Table 15 - Loss of Supply Risk Evaluation

Threat Scenario	Current residual risk	Would it be reasonably practicable to implement additional controls, or calibrate existing controls, to further reduce the risk?	Potential controls to eliminate or minimise threat	Comments on elimination or minimisation practicability	Status
Flora and fauna.	Low.	It may be practicable to reduce the likelihood of incidents relating to flora.	1. Undergrounding the network or fully insulating 2. Enhancement of the Vegetation program for more effective compliance with ISSC3 clearances.	1. It is not economically viable to eliminate the risk by undergrounding or insulating the whole network, but component sections can be targeted for undergrounding and insulating as part of the strategic planning process 2. Determined reasonably practicable.	1. Not applicable 2. Ongoing. Plan for ISSC3 compliance agreed with IPART.

4. Safety Risk Management Actions

The following table provides a summary of the ENSMS risk management actions completed for 2017/18. Full details are provided in Tables 12 – 15 above.

Table 16 - Risk Management Actions – open, completed and raised

Criteria	Number
Number of risk management actions within the ENSMS scope that were raised in the reporting year.	20
Number of open safety risk management actions within the ENSMS scope from any reporting year.	12
Percentage of safety risk management actions within the ENSMS scope completed by the due date within the reporting year.	40%

5. Compliance with Directions

Essential Energy was not issued with any directions by IPART under clause 13 of the Electricity Supply (Safety and Network Management) Regulation 2014 during 2017/18. Table 17 below provides the status of any directions issued by IPART.

Table 17 - Data on Directions issued by IPART

Total number of directions issued by IPART	Total number of directions outstanding	Number of directions outstanding not complied with by the due date
0	0	1

6. Outstanding directions not complied with

Essential Energy has one direction outstanding that was not complied with by the due date. The Direction was issued by IPART on 5 August 2016 and required Essential Energy to amend its Safety Management System to address the minor non-compliance of Audit Criteria 13[1] identified in the Bushfire Risk Mitigation Audit of NSW Electricity Operators, Essential Energy audit report dated 31 March 2016. The date that Essential Energy was required to comply with the notice was the 30 November 2017. The Direction also required two subsequent audits to be conducted to provide assurance that the changes had been made and implemented. The second stage audit involved an audit of our 2017 Bushfire Preparedness report with the audit report submitted to IPART in November 2017. The report identified that our vegetation encroachments were not achieving compliance with ISSC3 Guideline for Managing Vegetation Near Powerlines. Essential Energy submitted to IPART in April 2018 an implementation plan to achieve compliance with ISSC3, with this plan being accepted by IPART in July 2018. Essential Energy is implementing the actions in the plan and is currently on schedule to achieve compliance with ISSC3 for:

- P1 areas by 1 October 2018,
- P2 areas by October 2020, and
- P3 areas by October 2021.

[1] IPART Electricity Networks Audit Guideline - Audit criteria 13 – The asset management system allows for adequate maintenance and monitoring of assets associated with bushfire risk (Clause 6 of the *Electricity Supply (Safety and Network Management) Regulation 2014*)

7. Statistical Reporting

7.1 Network Asset Failures

Table 18 below shows Essential Energy's asset category population or length and the associated asset failure details. Essential Energy does not apply target functional failure rates for most asset categories but have provided these where applicable.

Table 18 - Network Asset Failures

Asset Type	Asset population or length	Target functional failure rate	Conditional failures past due in the reporting year	Functional Failures			
				Unassisted		Assisted	
				No Fire	Fire	No Fire	Fire
Pole/tower	1,382,438	N/A	775	94	16	253	33
Pole top structures / components[2]	1,774,712	N/A	3,332	441	9	371	9
Conductor – Transmission / sub-transmission[3]	11,209 km's	N/A	28	12	2	16	1
Conductor – High Voltage[4]	149,610 km's	N/A	499	317	3	393	20
Conductor – Low voltage[5]	26,202 km's	N/A	38	291	2	219	2
Service wire[6]	722,297	N/A	279	1,704	6	821	16
Primary plant – power transformers[7]	736	N/A	153	0	0	0	0
Primary plant – distribution transformers	140,983	N/A	301	108	1	444	4
Primary plant – reactive plant[8]	163	N/A	7	0	0	0	0
Primary plant – switchgear	15,502	N/A	110	1	1	0	0

[2] Pole top structures/components are any structure that is attached to a pole to support electricity mains and apparatus

[3] Transmission and sub-transmission is voltages 33kV AV nominal and above

[4] High voltage is voltage 1kV nominal and above up to 33kV AC nominal

[5] Low voltage is voltages below 1kV nominal

[6] A service wire is the wire connecting a distribution network to a private installation

[7] Primary Plant – Power Transformers are transformers where the secondary/output voltage is 5kV nominal or above

[8] Reactive Plant is reactors and capacitors

Asset Type	Asset population or length	Target functional failure rate	Conditional failures past due in the reporting year	Functional Failures			
				Unassisted		Assisted	
				No Fire	Fire	No Fire	Fire
Secondary plant – protection equipment[9]	5,417	0.05 (99.5% reliability)	54	0	0	0	0
Secondary plant - SCADA	358	0.05 (99.5% reliability)	18	0	0	0	0
Secondary plant – substation batteries	696	N/A	13	0	0	0	0

7.2 Encroachment on Network Assets

Essential Energy has developed an implementation plan for ISSC3 compliance as agreed with IPART to achieve clearance issues identified. A significant amount of work is occurring to comply with the implementation plan, with the Priority 1 (P1) bushfire areas the first milestone to be completed by October 2018.

Vegetation encroachments on our network both inside and outside Bushfire prone areas by defect category[10] as well as encroachments as a result of third parties are captured in Table 19 below.

Table 19 - Vegetation

Criteria	Inside Bushfire prone areas[10]	Outside Bushfire prone areas
Category A1 defects	2,697	7,867
Category A2 defects overdue	504	400
Category A3 & A4 defects overdue	1,148	744
Total vegetation encroachments as a result of third parties	0	0

[9] Note that proper operation of fuses does not constitute a functional or conditional failure. Mal operation of fuses is regarded as a functional failure

[10] Essential Energy categorises vegetation defects as a percentage of encroachments into the minimum vegetation clearance by A1-A4. These are A1 ≥75%, A2 ≥50% and <75%, A3 ≥25% and <75%, A4<25%

Low Ground Clearance inspections and defects are captured in Table 20 below.

Table 20 - Ground Clearance

Criteria	Inside Bushfire prone areas[11]	Outside Bushfire prone areas
Number of OH[12] spans for which inspections were planned	130,794 (Lidar)	57,761 (Asset Inspector)
Number of OH spans for which inspections became overdue	0	20,974
Number of OH spans for which LIDAR[13] inspections became overdue	0	0
Number of defects identified[14]	3,081	13
Number of defect rectifications that became overdue	38	0
Total ground clearance encroachments as a result of third parties	52	0

Clearance to structures defects both inside and outside Bushfire prone areas and encroachments as a result of third parties are captured in Table 21 below.

Table 21 - Clearance to Structures

Criteria	Inside Bushfire prone areas	Outside Bushfire prone areas
Category 1 defects	0	0
Category 2 defects overdue	0	0
Category 3 & 4 defects overdue	0	0
Total structure encroachments as a result of third parties	12	31

Rural encroachments are generally farm sheds, silos etc that reduce clearances.

Urban encroachments are most commonly associated with work on buildings – roofing, painting, extensions etc.

[11] EE defines Bushfire prone as “rural” network. EE does not rely on report by RFS/LGA definition

[12] Overhead

[13] Light Detecting and Ranging

[14] A ground clearance defect is where power lines are below the minimum safe height of that power line. Where the operating context is changed and the minimum safe height is reduced below the height of the power lines.

7.3 Unauthorised Access to the Network

The information provided in table 22 below relates to the number of times in 2017/18, where there has been unauthorised access to the Essential Energy Network, being either Essential Energy employees, contractors or other parties. These incidents are all logged and reported through the TotalSafe system, which is Essential Energy's reporting tool to capture Health, Safety and Environmental incidents.

Table 22 - Unauthorised access to the network

Criteria	Network Operator	Accredited Service Providers	General Public
Major substations and switching stations	0	0	0
Distribution substations, regulators, switches and associated equipment	0	1	14
Electricity mains outside major substations	0	0	0
Communications equipment outside major substations	0	0	0

7.4 Customer Safety Reporting

As shown in Table 23, there were 231 reported shocks attributed to the Essential Energy Network in 2017/18. The result is an increase of 27 per cent (49 more) compared to the current year.

The major cause continues to be Faulty Over Head Service Joints (79) and Faulty Over Head Mains Joints (48). When combined, 54 per cent of the joint failures were caused by Faulty Line Tap connectors. Essential Energy's ongoing service mains replacement program will assist in addressing faulty line tap connections as these are replaced with Insulation Piercing Connections.

When comparing overhead and underground joint failures, 65 per cent of joint failures where attributable to overhead connections, while underground connections account for just 11 per cent of the total failures.

There was a total of 338 shocks reported in 2017/18 attributable to customer installations.

Table 23 - Customer safety reporting

Criteria	Number
Number of customer shocks from installations caused by the ENO's electricity network	231

8. Appendix

Public Electrical Safety Awareness Plan 2017/18

Annual Bushfire Risk Management Report 2016/17

PUBLIC ELECTRICAL SAFETY AWARENESS PLAN 2017-18

essential energy

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Our ongoing commitment to public safety

At **Essential Energy**, nothing is more important than ensuring the safety of customers, contractors, employees and the communities we serve.

As one of Australia's largest electricity distribution networks, we perform an essential service across regional, rural and remote NSW and take our responsibilities very seriously. This includes ensuring we make people aware of the dangers associated with the electricity network and how to live safely around it.

Each year, we review our plans to promote safety messages within our business and to the wider community. We then publish these plans in our annual Public Electrical Safety Awareness Plan **(PESAP)** to actively address areas of public safety concern and adapt our campaigns and activities to any new safety trends that emerge.

This **PESAP** outlines our initiatives and activities for 2017-18. It explains what we will do this year to ensure safety in and around the network is always top of mind.

We have developed the activities in this **PESAP** by analysing statistics from the past 12 months and trends in previous years, which we collect using our detailed incident reporting process. Through this analysis, we have identified groups and locations that we believe are at highest risk, enabling us to develop targeted communications built around relevant safety messages for those industries and geographies.

We treat every safety incident within our network seriously. To make sure we apply industry best practice, we reviewed our reporting criteria for 2016-17 and have added some new sectors for 2017-18 as well as increasing our data analysis resources. This means additional types of incidents are now reported through our **TotalSAFE** reporting platform, so some sectors and incident types have more reportable events than before.

As well as promoting safety messages to at-risk groups, we are also educating the next generation on how to behave safely around electricity. Our **School Safety Program** targets primary school students in our network service area through educational activities and lessons developed in conjunction with the Department of Education. The program culminates in September each year with the popular Electricity Safety Week. This year, 895 primary schools in our area (97%) registered to take part in the program, giving 83,000 students access to important safety messages.

Our **Customer Advocacy Group** also played an essential role in developing this year's Plan by providing objective feedback on our safety planning and we are grateful for the Group's continued input.

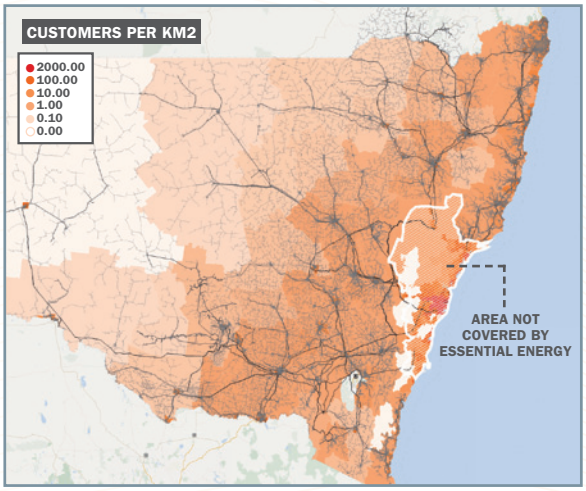
The PESAP is an important cornerstone in our commitment to striving for zero harm and we welcome your feedback which can be provided by emailing **public.safety@essentialenergy.com.au**

John Cleland
Chief Executive Officer

David Nardi
General Manager Safety, HR and Environment

Essential Energy's network

We deliver essential electricity network services to over **800,000** homes and businesses in **1,500** regional, rural & remote communities across extremes of terrain and climate.

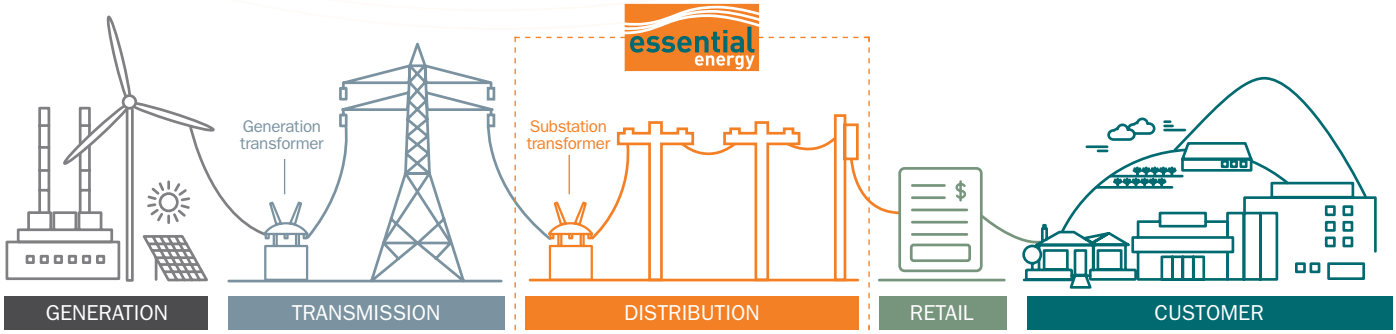


Essential Energy is a NSW Government-owned corporation that builds, operates and maintains one of Australia's largest electricity networks. It spans 95 per cent of NSW and parts of southern Queensland. We deliver essential electricity network services to over 800,000 homes and businesses in 1,500 regional, rural and remote communities.

Our territory covers extremes of climate and terrain. It includes humid coastal environments in the north, semi-arid desert in the far west, alpine peaks in the south and a grain belt that crosses central NSW. As a vast network spread across a range of environments, it presents us with unique challenges.

Whether we are conducting day-to-day business or dealing with something unexpected, our focus is always on safety. The network is regularly inspected and maintained, and upgraded as required. We record and analyse public safety incidents associated with it then use the information to develop and implement targeted public safety strategies, as you can see in this document.

This continual focus ensures our safety performance keeps improving and the network is reliable, secure and sustainable. At the same time, we strive to deliver real reductions in customers' distribution network charges.



Essential Energy Responsibility

1.38m
power poles - which equates to 1.6 power poles for every customer.

>800,000
customers.

186,690 km
of overhead powerlines – equivalent to driving around Australia 13 times.

41 million km
travelled by the Essential Energy fleet yearly.

737,000
square kilometres of network.

361
zone substations and 139,000 distribution substations.

4.8
customers to fund every 1km of overhead powerlines.

95%
of NSW & parts of southern Queensland.

1,442
powerlines with 10 longer than 1,000km, the longest spanning 1905km

Our commitment to safety excellence

Essential Energy's business is built on five key values and associated behaviours, and our commitment to safety excellence is woven through them.

Every day, we get closer to our ultimate goal of zero harm for employees, contractors, customers and the communities we serve.

SAFETY EXCELLENCE

> Put safety as your number one priority
> Do not participate in unsafe acts, and challenge unsafe behaviours
> Think before you act
> Lead by example
> Take responsibility for the health and safety of yourself and others.

RESPECT FOR PEOPLE

> Treat all people with repect, dignity, fairness and equality
> Demonstrate co-operation, trust and support in the workplace
> Practice open, two-way communication.

CUSTOMER AND COMMUNITY FOCUS

> Deliver value and reliable service to our customers and communities
> Use resources responsibly and efficiently
> Be environmentally and socially responsible.

CONTINUOUS IMPROVEMENT

> Look for safer and better ways to do your job
> Improve our financial performance
> Support innovation to add value to our business.

ACT WITH INTEGRITY

> Act honestly and ethically in everything you do
> Be accountable and own your actions
> Follow the rules and speak up.

Our commitment to customers

Essential Energy's Customer Commitment Statement was developed using global research and in consultation with employees and customer representatives. It is displayed in all our corporate offices and depots.

The Statement explains how we put our customers at the heart of everything we do by listening to and respecting them, and by delivering on our promises. Safety is an essential element of this commitment.

Our employees play an important role in delivering the quality customer experiences embodied in our Customer Commitment Statement. Last year, we launched a Customer Care Essentials campaign that provides critical information and tools to help employees focus on our customers and reminds them of customer service and safety basics.

OUR CUSTOMER COMMITMENT STATEMENT

We will listen to and respect our customers, safely deliver on our promises and place customers at the centre of everything we do.

Our job, as a poles and wires business, is to deliver electricity safely, reliably and efficiently.

Our commitment to customers is that we will:

LISTEN:

> to understand their needs
> to act on and address their feedback
> to provide service that is courteous, fair and professional.

RESPECT:

> their safety and well-being
> their diversity and the communities in which they live
> their property and privacy.

DELIVER:

> on our promises
> information that is clear and timely
> our services efficiently and be easy to deal with.

PESAP

This **PESAP** outlines the key initiatives and campaigns that Essential Energy is undertaking throughout 2017-18 to raise electrical safety awareness in our communities and across key industry sectors.

Our key objectives are to:

- Raise awareness and improve understanding in the general community and in priority industry sectors about safety hazards associated with the electrical distribution network.
- Foster positive, proactive association with our communities to increase awareness about electrical safety.
- Identify areas of risk and implement strategies to prevent incidents resulting from interaction with the network.
- Demonstrate Essential Energy's commitment to the safety of everyone interacting with our network.

The **PESAP** is updated every year to reflect our latest incident analysis, ensuring our electrical safety awareness programs target appropriate at-risk industry groups. By providing transparent reporting on the types of incidents occurring across our network, we hope to reduce incidents involving members of the public by engaging with the communities and industry sectors that are most at risk.

Grain Harvest safety collateral

OUR SAFETY REPORTING OBLIGATIONS

New South Wales

For public safety incidents in NSW, we report notifiable events including Serious Electricity Works Accidents (SEWA) to the Independent Pricing and Regulatory Tribunal (IPART) in accordance with the Electricity Networks Reporting Manual, May 2017.

Notifiable events

A notifiable event occurs whenever:

- Electricity works are involved i.e. any electricity powerlines or associated equipment, or electricity structures that form part of a transmission or distribution system (known in the industry as electrical mains and apparatus).
- Incidents or near misses involving network operator employees or contractors relating to bushfire risk management work within private electrical installations.

SEWA

A subset of notifiable events, a SEWA is defined in the Electricity Supply Act 1995 (NSW) (ES Act) as:

- An accident in which electricity works are involved, as a consequence of which a person: dies, suffers permanent disability, is hospitalised, receives treatment from a health care professional or is unable to attend work for any period of time.

SafeWork NSW grants us permission to disturb the site of a SEWA on behalf of IPART.

Queensland

For public safety incidents in Queensland, we report serious electrical incidents and dangerous electrical events to the Queensland Electrical Safety Office, in accordance with the requirements of the Queensland Electrical Safety Act 2002.

Serious electrical events

A serious electrical event is an incident involving electrical equipment where a person:

- Is killed by electricity.
- Receives a shock or injury from electricity, and is treated for the shock or injury by or under the supervision of a doctor.
- Receives a shock or injury from electricity at high voltage, whether or not the person is treated for the shock or injury by or under the supervision of a doctor.

Dangerous electrical events

A dangerous electrical event is an incident when:

- A person, for any reason, is electrically unsafe around high voltage electrical equipment, even if the person does not receive an electric shock or injury.
- Significant property damage is caused by electricity or something originating from electricity (e.g. electrical fire).
- Unlicensed or unsafe electrical work is carried out.
- Electrical equipment is unsafe, or does not have electrical equipment safety system (EESS) approval markings.

The role of TotalSAFE

TotalSAFE is Essential Energy's information management system for data related to health, safety and the environment. It can be accessed by all Essential Energy employees. Publicly reported data is logged in **TotalSAFE** via **13 20 80.**

TotalSAFE captures injuries and near misses and helps us to identify safety hazards across our network. We analyse the reported information to highlight improvement opportunities and operational deficiencies, and to guide the development of measures that maximise the safety of our employees, customers and the communities we serve.

Public safety incident data is also captured in **TotalSAFE**. We analyse each incident according to its industry grouping, approximate geographic location, type of asset and the object involved.

Through this analysis, we develop targeted programs and campaigns that increase public awareness of the risks associated with Essential Energy's network, with the aim of reducing these incidents.

This PESAP outlines the key initiatives and campaigns that will be undertaken to address the top six at-risk groups identified through the data analysis. These at-risk groups are:

GENERAL PUBLIC: Renovations, DIY, vandalism and vehicle use

AGRIBUSINESS: Agricultural related and farm activities

AVIATION: Recreational and agricultural applications

BUILDING: Construction and demolition activities, including roadworks

TRANSPORT: Commercial and public transport

EMERGENCY SERVICES AND PUBLIC AUTHORITIES: Police, Fire Brigade, Rural Fire Service, Ambulance, Councils

We will continue to invest in improving our data analysis capabilities so we can:

- identify trends, patterns and anomalies in safety performance;
- determine and predict emerging issues or risks;
- link data sets and information from all key areas that provide input to safety data;
- understand effectiveness of corrective actions; and
- utilise the outcomes of data analysis to inform decision making, resource allocation and development of targeted programs.

Glossary

GIS: Geographic Information System – software that maps our electricity network.

Overhead powerline: Powerline cables and wires, usually strung along a series of pole structures to distribute electricity at various voltages. We operate and maintain 186,690 km of overhead powerlines.

Padmount: A packaged ground mounted distribution substation, generally painted green and approximately the size of a small car.

Pillar: Pillars are small above-ground boxes that serve as a junction point for underground low voltage cables.

Pole: Structure used to carry overhead powerlines. Most poles used across our distribution territory are wood, but concrete, steel and other materials are used on some sections of the network.

Stay: High-strength, tensioned wire anchored into the ground or to another pole to assist the structural integrity of power poles.

Underground powerline: Electricity cable/wires, installed directly, buried underground or within conduits to distribute electricity at various voltages. Most new urban land subdivisions have underground electricity distribution and Essential Energy also has underground distribution on other sections of its network e.g. central business districts.

Public safety electrical incident data

Over the past financial year, Essential Energy has invested time and resources in improving safety incident reporting and analysis so we can get deeper insights into trends and at-risk groups.

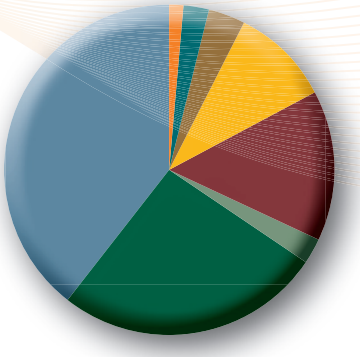
During the year, IPART implemented new regulations (effective 1 October 2016) that increased the scope and definition of safety incident reporting requirements. The numbers and types of incidents recorded have therefore increased.

A total of 864 public electrical safety incidents were reported. Many new incidents were due to IPART's requirement to report near misses involving physical contact by public workers or the general public with overhead network assets such as power poles and streetlight columns.

High-level trends and results for 2016-17

- General Public and Agribusiness at-risk groups accounted for the majority of public safety incidents.
- Near miss reporting on physical contact between motor vehicles and overhead assets (e.g. power poles) was included for the first time, increasing incidents in the General Public sector.
- Agribusiness incidents increased, possibly due to increased agricultural activity because of bumper plantings and harvesting for some crops.

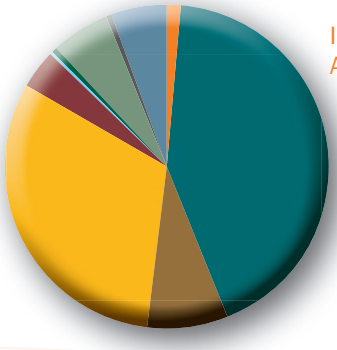
Incidents by Industry



Electrical workers	22	23	Aviation
Emergency services/ Public Authorities	31	226	Agribusiness
Transport (exc Aviation)	85	339	General public
Building/Construction/ Demolition	126	12	Other

- Most public safety incidents involved contact with overhead powerlines, power poles or streetlight columns.

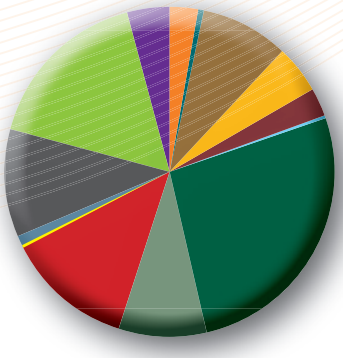
Incidents by Asset Contact



Overhead powerline	369	6	Transformer
Pillar/Padmount/Kiosk	68	49	Underground powerline
Power Pole/Streetlight column	272	4	Zone substation
Stay	33	48	Not applicable, or no object involved
Switching apparatus	3	12	Other

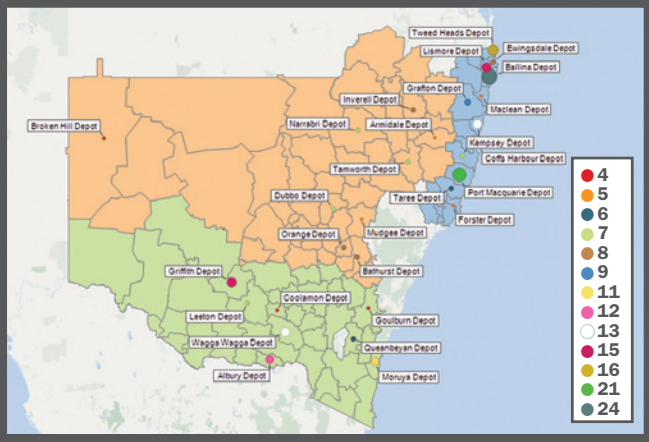
- Public safety incidents predominantly involved motor vehicles and trucks.
- Tractors and attached implements featured frequently.

Incidents by Object Involved



Aircraft	24	73	Not applicable, or no object involved
Crane	5	1	Power Tool
Excavator	75	9	Scaffolding
Fire/storm event	41	91	Tractor or attached implement
Harvestor	25	143	Truck
Irrigation equipment	2	36	Vegetation
Motor vehicle	231	108	Other

General Public

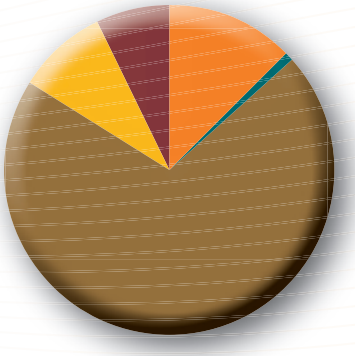


The General Public at-risk group covers public safety incidents involving renovations, DIY, vehicles and vandalism. This group also includes public workers.

Incident trends

General Public safety incidents	
39% of all public safety incidents in **2016-17**	**339** public safety incidents recorded, the majority involving motor vehicles contacting overhead powerlines and power poles/ streetlight columns.

General Public Incidents by Sector



Recreational	3	30	Renovations/DIY
Vehicle use	239	24	Vandalism/Security breach
		43	Other

Incident clusters

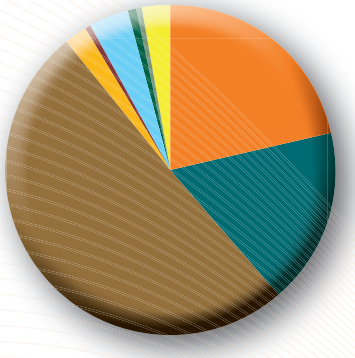
Geographic cluster analysis provides us with insights into risk areas that have experienced high incident rates, which we then use to develop safety communications targeting these locations.

The highest number of incidents occurred around Ballina (24) followed by Port Macquarie (21) and Tweed Heads (16). This may be because these towns have higher populations compared to other population centres across Essential Energy's footprint.

Incident analysis

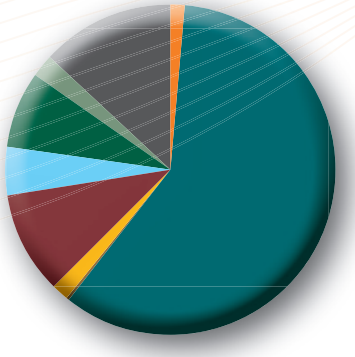
The typical General Public incident involved a vehicle (e.g. truck, van, motor bike) contacting a power pole or streetlight column.

General Public Incidents by Asset Contact



Overhead powerline	68	12	Stay
Pillar/Padmount/Kiosk	54	3	Zone substation
Power pole/Streetlight column	158	2	Transformer
Underground powerline	7	25	Not applicable, or no object involved
Switching apparatus	2	8	Other

General Public Incidents by Object Involved



Excavator	5	16	Vegetation
Motor vehicle	201	26	Not applicable, or no object involved
Scaffolding	1	7	Fire/Storm event
Tractor or attached implement	5	44	Other
Truck	34		

Progress to date

Educating drivers, home-owners, farmers, builders and other members of the public about electricity safety remains a priority.

Essential Energy's School Safety Program continues to be a keystone activity for engaging and teaching the next generation. It has the support of the Department of Education and aligns with the national curriculum to ensure it is easy for teachers to implement.

Our 2016-17 Program reached 83,000 students across 883 primary schools, accounting for 96 per cent of schools within our footprint. Registrations for the 2017-18 Program have increased that figure to 97 per cent.

We introduced a poster competition in 2016-17 to engage school students even further and received 250 entries, many with inspiring safety messages.

In addition, we deployed public safety messages during the storm season and ran bushfire risk mitigation campaigns through social media and media releases.

AgQuip Field Days

Proposed strategies for 2017-18

Engage

> Continue to engage Essential Energy's Customer Advocacy Group to provide insight into planned public safety activities for all at-risk groups.

> Continue partnership opportunities with SafeWork NSW, including awareness programs relating to work, health and safety compliance for public workers.

> Engage the Roads and Maritime Service to investigate 'Black Spot' poles identified through incident analysis.

> Attend the AgQuip and Henty Field Days to promote safety messages and engage with the community on public safety matters.


Poster competition winner presentation to Hallidays Point Public School

Educate

> Deliver the School Safety Program, including Electricity Safety Week (4-8 September 2017).

> Extend awareness of the Program by using social media more and developing the safety poster competition to cover three primary school categories: K-2, grades 3-4 and grades 5-6. For further information about the Program, visit our website: **essentialenergy.com.au/education**

> Promote the bushfire risk mitigation activities that we undertake through our Vegetation Management Plan, communicating the importance of clearance zones.

> Direct members of the community to **essentialenergy.com.au/trees** for our Plan Before You Plant guidelines for planting around powerlines and the tree-trimming distances required to reduce the risk of bushfires.

> During the storm season (October to March), promote safety messages about what to do before, during and after severe weather events. These include:

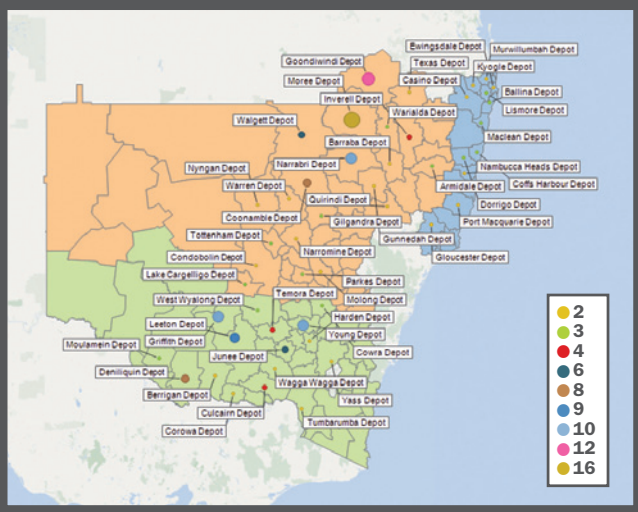
- Always stay at least 8 metres away from fallen powerlines and anything in contact with them, and look out for indicators of damage to the electricity network.
- After a flood, always have a qualified electrician inspect all wiring before turning electricity supplies back on. We will be implementing a new flood safety field card in 2017-18.

> To address the high incident rate of vehicles contacting the electricity network in Ballina, Port Macquarie and Tweed Heads, a local media release reminding the public to look out for electricity infrastructure will be delivered.

Enable

> Engage with the general public through our new online engagement platform, Essential Engagement. This enables our customers to provide feedback and engage in two-way discussion around important issues - such as vegetation management - in an easy to use, real-time environment. It also facilitates direct contact with our Customer Advocacy Group. To have your say, visit: **engage.essentialenergy.com.au**

Agribusiness



The Agribusiness at-risk industry group covers public safety incidents involving farming-related activities.

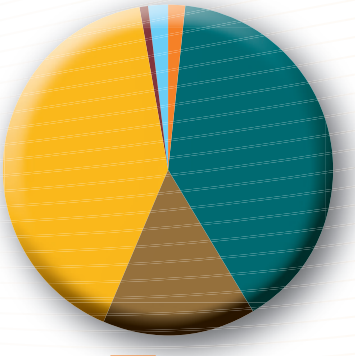
Incident trends

Public safety incidents involving Agribusiness

26% of all public safety incidents in **2016-17**

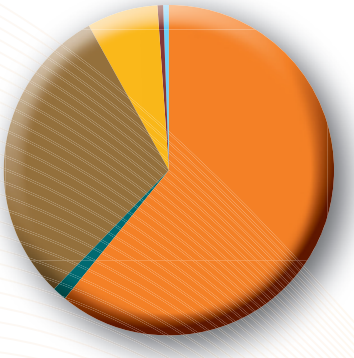
226 public safety incidents recorded, the majority involving mixed farming (i.e. farms with both crops and livestock) or unspecified farming activities.

Agribusiness Incidents by Sector



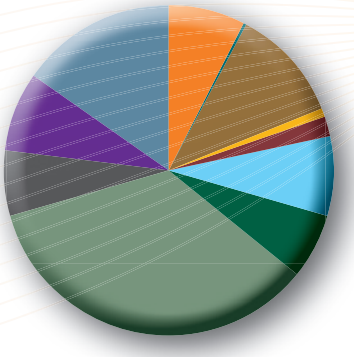
Fruit and vegetables	4	92	Mixed/Unspecified farming
Grain	90	2	Cotton
Livestock	34	4	Sugar

Agribusiness Incidents by Asset Contact



Overhead powerline	137	16	Stay
Pillar/Padmount/Kiosk	3	1	Transformer
Power pole/Streetlight column	67	2	Not applicable, or no asset involved

Agribusiness Incidents by Object Involved



Excavator	17	18	Not applicable, or no asset involved
Crane	1	14	Truck
Harvestor	25	79	Tractor or attached implement
Irrigation equipment	2	34	Fire/Storm event
Motor vehicle	4	18	Vegetation
		14	Other

Incident clusters

The highest number of incidents occurred around Moree (16) and Goondiwindi (12). Young, Griffith and Narrabri had 10 each. This may be attributed to intense agricultural activities in these areas. In particular Moree is a major agricultural centre in NSW.

Incident analysis

The typical Agribusiness incident in 2016-17 involved tractors or attached implements (e.g. spray rigs, grain augers, cotton pickers, slashers and similar farm equipment) contacting overhead powerlines.

Progress to date

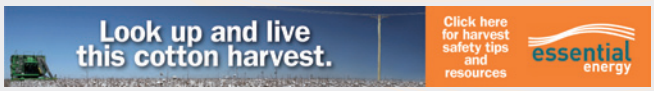
When it comes to the potential dangers for members of the Agribusiness industry working around powerlines and other network infrastructure, Essential Energy advocates fours key **LAND** safety messages:

- ***L**ook up and live.* Identify overhead powerlines and mark them at ground level. Essential Energy can provide electrical network maps showing the location of overhead powerlines on your property.
- ***A**lways be aware.* Before accessing paddocks and work areas, check the location and condition of poles and wires. Conditions can change without notice and heat can affect powerline height.
- ***N**eed to know.* Know the height of farm machinery in both the raised and lowered positions so you can maintain the required safety clearance distances. Powerlines can be as low as 5.5m so always lower machinery fully before moving off and check and observe clearances when working under or around powerlines.
- ***D**on't disembark.* If your machinery contacts overhead powerlines, stay in the vehicle (if it is safe to do so) and call Essential Energy immediately on 13 20 80.

Proposed strategies for 2017-18

Engage

- Continue to engage with NSW Farmers Association through the Roundtable series of discussions and via SafeWork NSW.
- Facilitate ongoing dialogue with agricultural groups through their membership of the Customer Advocacy Group.
- Attend Field Days such as AgQuip and Henty to promote agribusiness safety messages.
- After an incident, make direct contact with members of the relevant agribusiness sector to provide additional safety information.



Agribusiness safety collateral

Educate

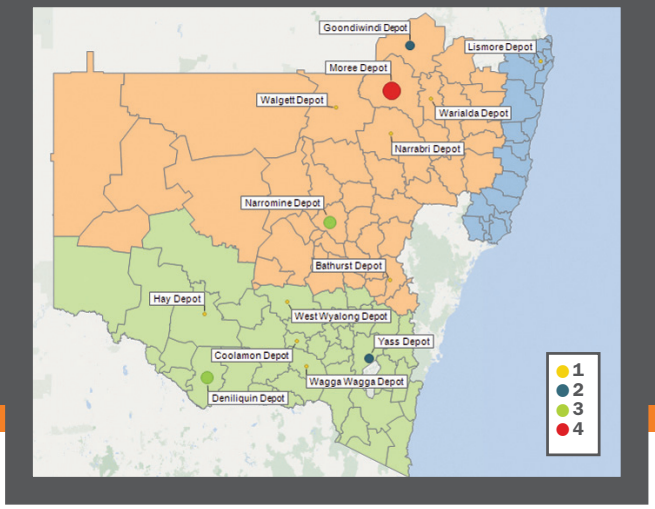
- Implement seasonal harvest safety campaigns for grain, cotton and sugarcane industries.
- Continue to promote storm safety messaging that advises landowners to look for indicators of potential network damage e.g. burnt areas in paddocks, injured or downed livestock, smoke or fallen trees.
- During sowing season for 2016, we launched a new campaign in the grain belt to address the incidence of tractors contacting the electrical network while sowing. We will deploy it again next season.
- Roll out an educational campaign promoting vigilance during stubble burn-offs.

Powerpole burnt during stubble burn-off

Enable

- Through the Essential Energy website, provide landowners with free safety stickers, gate signs, DVDs and posters to assist with communicating safety messages on their properties. There are also fact sheets covering many agribusiness topics. Visit: **essentialenergy.com.au/safety**
- Provide maps of the overhead electricity network through our website to assist with identifying potential risks. Visit: **essentialenergy.com.au/overhead**
- Through our website, facilitate landowner enquiries about powerline markers, requests for overhead electricity network maps and downloads of our new farm hazard assessment form: **essentialenergy.com.au/overhead**
- Review results and feedback on our new, improved powerline marker and modify it as required.

Aviation



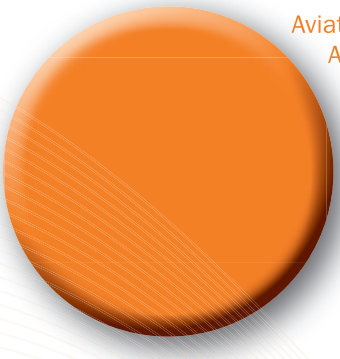
For the first time, Aviation was highlighted as a stand-alone at-risk industry group in 2016-17.

Aviation covers public safety incidents involving the use of aircraft, including recreational aircraft and commercial aerial spraying operations.

Incident trends

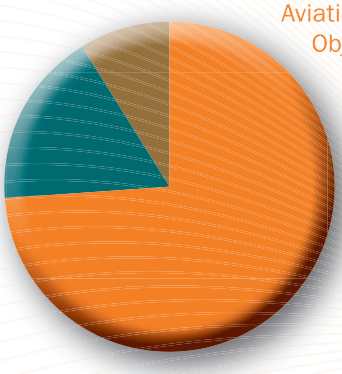
Public safety incidents involving Aviation	
3% of all public safety incidents in **2016-17**	**23** public safety incidents recorded for this group, the majority involving agricultural aerial application activities.

Aviation Incidents by Asset Contact



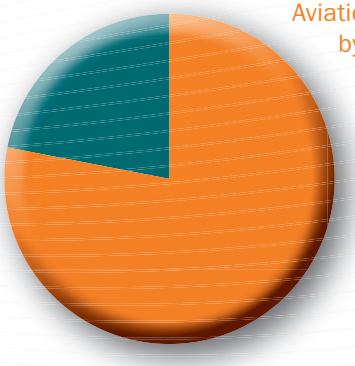
23 Overhead powerline

Aviation Incidents by Object Involved



Fixed wing 17 | 4 Helicopter | 2 Other

Aviation Incidents by Sector



Arial application 18 | 5 Recreational

Incident clusters

The highest number of incidents occurred around Moree (4), Deniliquin (3) and Narromine (3). This may be attributed to intense agricultural activities in these areas. In particular Moree is a major agricultural centre in NSW.

Incident analysis

The typical Aviation incident in 2016-17 involved aircraft (including crop dusters, paragliders, planes and helicopters) contacting overhead powerlines. The majority of these incidents involved agricultural aerial application.

Progress to date

In 2017, Essential Energy worked with an external supplier to develop an affordable, lightweight, easy to install and highly visible powerline marker that we introduced in May.

We also set up an online enquiry system to centralise and streamline access to the new marker. To enquire about your powerline marker, visit: **essentialenergy.com.au/overhead**

Our communications with the aviation industry focused on promoting the new marker and the availability of overhead electrical network maps during peak aerial application season (the lead-up to cotton harvest).

Award-winning Aerial Safety Program

In 2017, Essential Energy was recognised as a world leader in aviation safety by the Aerial Application Association of Australia (AAAA). The AAAA awarded us the Leland Snow Innovation Award at its national convention in June.

"This recognition of Essential Energy is based on the company's long-term commitment to aerial application safety through the provision of electrical network mapping and powerline marking."

Phil Hurst, AAAA CEO

Proposed strategies for 2017-18

Engage

> Continue to work closely with the AAAA by becoming a Foundation Safety Partner to increase network safety knowledge and minimise the risk of electrical incidents.

Educate

> Target communications at high-incident areas – Moree, Deniliquin and Narromine.

> Target landowners with marketing campaign focused on the availability of powerline markers and overhead electrical network maps.

> Promote our new farm hazard assessment form, which helps landowners to discuss electrical safety hazards with employees and contractors before any work begins on their property.

Enable

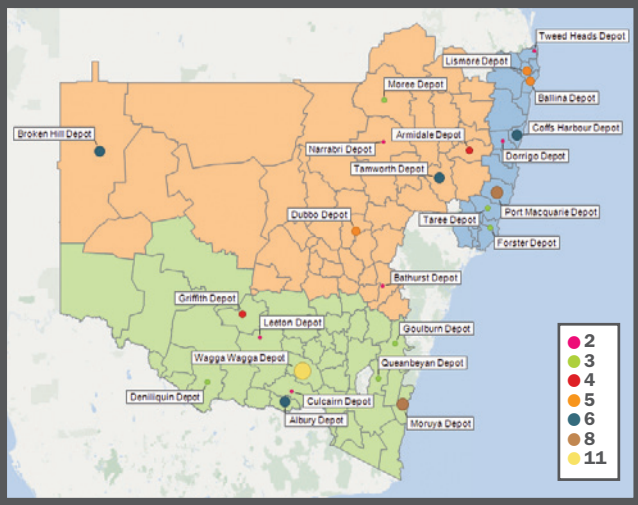
> Enable landowners to enquire about powerline markers, request overhead electricity network maps and download the new farm hazard assessment form at: **essentialenergy.com.au/overhead**

> Constantly review results and feedback on our new powerline marker and modify it as required.

Essential Energy's new overhead powerline marker

Aviation safety collateral

Building
(Construction & Demolition)

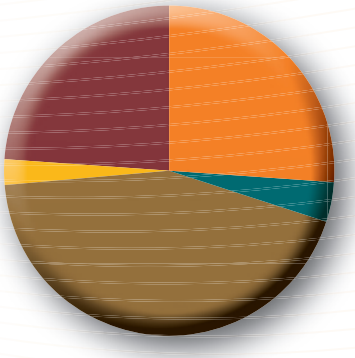


The Building at-risk industry group covers public safety incidents involving construction and demolition work. It includes public safety incidents involving excavation, under boring/trenching and domestic/industrial construction activities.

Incident trends

Public safety incidents involving Building	
15% of all public safety incidents in **2016-17**	**126** public safety incidents recorded for this group, the majority involving earthmoving activities.

Building/Construction/Demolition Incidents by Sector



Builder/Carpenter	33	3	Renovations/DIY
Demolition	5	30	Other
Earth moving	55		

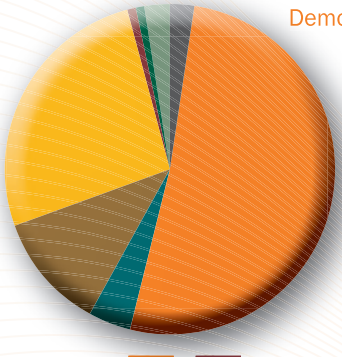
Incident clusters

The highest number of incidents occurred around Wagga Wagga (11), Port Macquarie (8) and Moruya (8). This may be attributed to the high level of residential and commercial development activities in these areas. In particular Port Macquarie is a growing regional centre in NSW.

Incident analysis

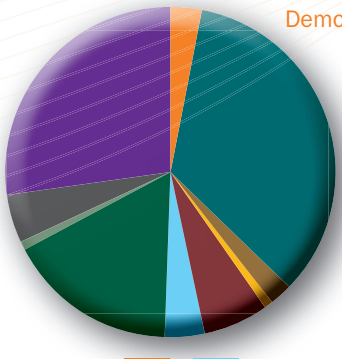
The typical Building incident in 2016-17 involved excavators and other earthmoving plant contacting overhead or underground powerlines, or trucks contacting overhead powerlines, power poles or streetlight columns.

Building/Construction/Demolition by Asset Contact



Overhead powerline	66	1	Stay
Pillar/Padmount/Kiosk	5	1	Transformer
Power pole/Streetlight column	14	4	Not applicable, or no asset involved
Undeground powerline	32	3	Other

Building/Construction/Demolition by Object Involved



Crane	4	5	Tractor or attached implement
Excavator	43	21	Truck
Motor vehicle	3	1	Vegetation
Power tool	1	6	Not applicable, or no asset involved
Scaffolding	8	34	Other

Progress to date

During 2016-17, Essential Energy joined forces with SafeWork NSW, Endeavour Energy and Ausgrid to produce the 'If you don't know, then don't dig' video to promote safety around underground powerlines.

We made the video available on USBs, Essential Energy's website and promoted it through social media.

Fact sheets promoting specific safety messages for construction and scaffolding activities are also available on Essential Energy's website.

Proposed strategies for 2017-18

Engage

- Provide construction industry associations with information on working safely around construction sites.
- Participate in the Dial Before You Dig (DBYD) program, which is important for construction-related activities operating within Essential Energy's footprint. We email a fact sheet to everyone within our footprint who requests one through DBYD.
- Actively seek partnership opportunities with SafeWork NSW on construction-related initiatives.
- Engage key stakeholders and associations to promote public safety around the electrical network.

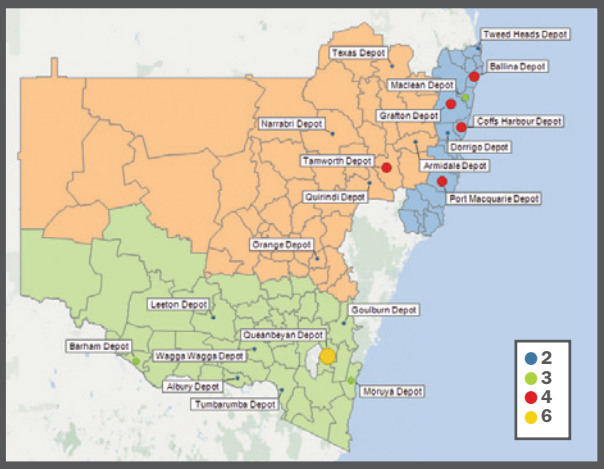
Educate

- Target high-incidence locations by distributing local media releases to Wagga Wagga, Port Macquarie and Coffs Harbour.
- Host Dial Before You Dig representatives at Essential Energy's Field Day sites for AgQuip and Henty.
- Provide copies of the new underground powerline safety and awareness video to operators of construction machinery at events such as Field Days.
- Contact construction companies directly to provide advice, safety information and collateral.

Enable

- Provide construction-related fact sheets and DVDs that address electrical hazard awareness. These can be ordered for free or downloaded from: **essentialenergy.com.au/safety**
- Promote the availability of overhead electricity network maps so operators of construction machinery can identify potential overhead risks at sites. Visit: **essentialenergy.com.au/overhead**
- Encourage requests for powerline markers for construction sites — call **13 20 80**.

Transport



Transport was highlighted as a stand-alone at-risk industry group in 2016-17.

Transport covers public safety incidents involving operators of commercial or public transport such as trucks and other high-load vehicles.

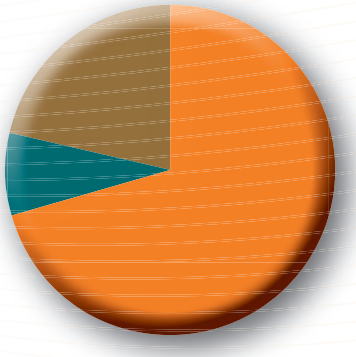
Incident trends

Public safety incidents involving Transport

10% of all public safety incidents in **2016-17**

85 public safety incidents recorded for this group, the majority involving commercial transport.

Transport Incidents by Sector



60	Commercial transport
18	Public transport
7	Other

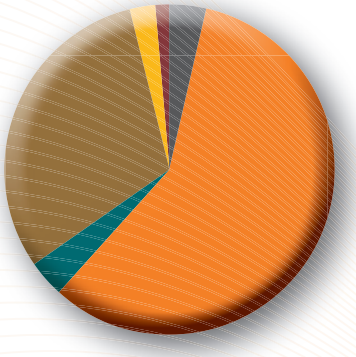
Incident clusters

The highest number of incidents occurred around Queanbeyan (6). Ballina, Grafton, Coffs Harbour, Port Macquarie and Tamworth had four each. This may be attributed to the high level of residential and commercial development activities in these areas. In particular Port Macquarie is a growing regional centre in NSW.

Incident analysis

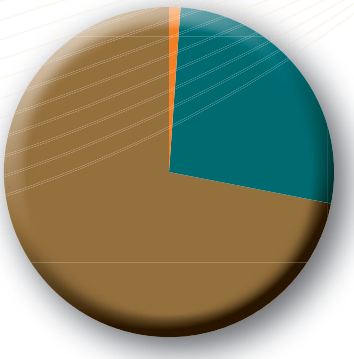
The typical Transport incident in 2016-17 involved trucks, often with high loads, contacting overhead powerlines, power poles or streetlight columns.

Transport by Asset Contact



Overhead powerline	50	2	Stay
Pillar/Padmount/Kiosk	3	1	Transformer
Power pole/Streetlight column	25	4	Not applicable, or no asset involved

Transport by Object Involved



1	Excavator
23	Motor vehicle
61	Truck

Progress to date

Essential Energy continues to promote campaigns that remind drivers of high machinery to be aware of overhead powerlines.

We distributed media releases to regional publications and supported the safety messages with social media posts.

Our **Look Up and Live** campaign was a focus and we created double-sided cabin stickers for operators of high machinery to act as a reminder.

Proposed strategies for 2017-18

Engage

> Hand out safety packs to machinery dealers at Field Days. The packs will include copies of safety stickers, fact sheets and DVDs that can be passed onto their customers.

Educate

> Promote the **Look Up and Live** campaign to this group during high seasonal activities such as grain and cotton harvesting.

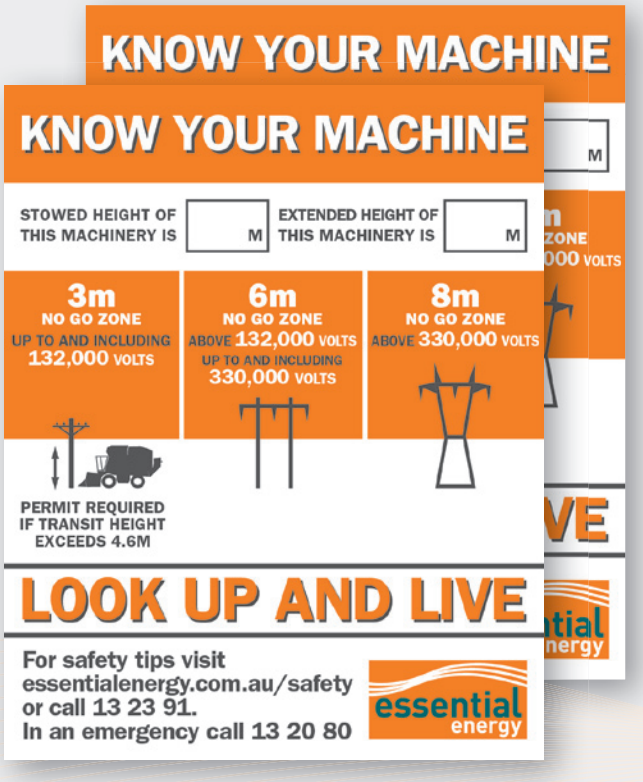
> Promote high-load awareness information through media releases and publications.

> After an incident, contact this group to provide advice, safety information and collateral.

> Engage key stakeholders and associations to promote public safety around the electrical network.

Enable

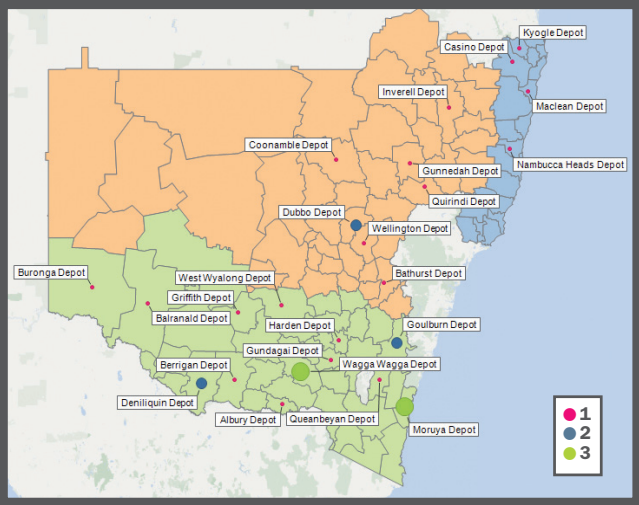
> Provide a targeted video, fact sheets and free stickers addressing risks associated with high loads through: **essentialenergy.com.au/safety**



Double sided sticker for vehicle cabins

Transport related safety collateral

Emergency Services and Public Authorities

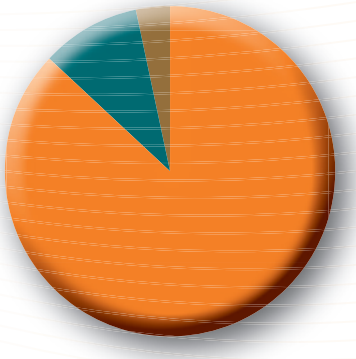


The Emergency Services and Public Authorities at-risk industry group incorporates Police, Fire Brigade, Rural Fire Service, Ambulance and Councils as well as customers who are registered for Life Support status.

Incident trends

Public safety incidents involving Emergency Services and Public Authorities	
4% of all public safety incidents in **2016-17**	**31** public safety incidents recorded for this group, the majority involving works performed by Council.

Emergency Services & Public Authorities Incidents by Sector



27	Council
3	Fire services
1	Police

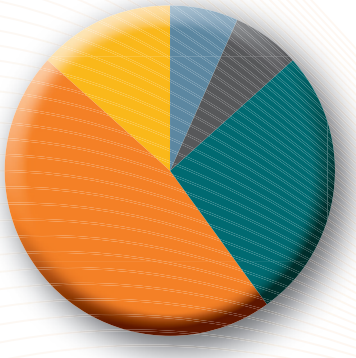
Incident clusters

The highest number of incidents occurred around Moruya (3) and Wagga Wagga (3), followed by Goulburn, Dubbo and Deniliquin at two each.

Incident analysis

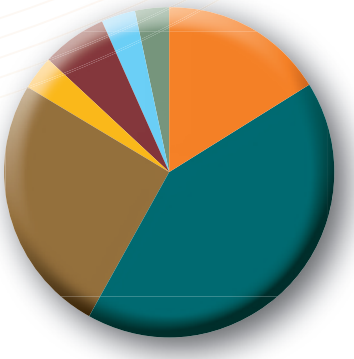
The typical Emergency Services and Public Authorities incident in 2016-17 involved trucks contacting overhead powerlines, power poles or streetlight columns.

Emergency Services & Public Authorities Incidents by Asset Contact



Underground powerline	7	2	Stay
Overhead powerline	15	2	Not applicable, or no asset involved
Power pole/Streetlight column	5		

Emergency Services & Public Authorities Incidents by Object Involved



Excavator	5	2	Tractor or attached implement
Truck	13	1	Vegetation
Aircraft	1	1	Not applicable, or no object involved
		8	Other

Progress to date

We implemented a new SMS and text-to-voice service to assist communication with Life Support customers, ensuring they received priority notification of power supply outages. We used social media posts to remind customers to keep their contact details up-to-date.

A DVD specifically developed to educate emergency services on safety around the electricity network is available for groups such as the SES and Rural Fire Service.

Proposed strategies for 2017-18

Engage

> Continue to engage with electricity retailers to ensure timely and efficient notification of new Life Support status customers.

> Continue to offer safety sessions for emergency services and to actively work with NSW Rural Fire Service.

> Engage with the NSW Rural Fire Service over how communications and network maps could help them deal with bushfires.

> Engage with Councils and major garbage truck operators regarding the hazard of overhead powerlines – particularly service lines and their operations.

> Engage key stakeholders such as Councils and associations to promote public safety around the electrical network.

Educate

> Send an information pack to anyone registering as a Life Support customer. The pack includes:

- An information brochure about our commitment to them as someone with Life Support status.
- A fridge magnet with emergency phone numbers in case of an outage.
- Advice about having a back-up plan for planned and unplanned outages.

> Provide a free Electrical Hazard Awareness for Emergency Services DVD, which can be viewed or ordered at: essentialenergy.com.au/safety

> After an incident, contact this group to provide advice, safety information and collateral.

Enable

> Prioritise communication with Life Support customers, including SMS messaging, during outages.

Life Support brochure

Essential Energy providing electrical safety awareness training for 200 NSW RFS volunteers in Boorowa

essential energy

General enquiries 13 23 91 • Power outages 13 20 80 • essentialenergy.com.au

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ANNUAL BUSHFIRE RISK MANAGEMENT REPORT

2016/17

essential energy

1. Introduction

Essential Energy's Annual Bushfire Risk Management Report is provided in accordance with the Independent Pricing and Regulatory Tribunal's (IPART) Electricity Reporting Manual – May 2017, and covers the period 1 October 2016 to 30 September 2017. Essential Energy has provided additional information throughout this report to provide IPART with a more detailed view and understanding of Essential Energy's bushfire preparedness and risk management. In providing this detailed view, Essential Energy has used, in some instances, classifications and reporting periods consistent with established internal reporting.

Essential Energy has continued investment in inspection technologies such as Aerial LiDAR survey and Pole-Top Hi Definition imagery to better understand the condition of assets and to properly identify potential asset failures that could lead to fire starts.

Essential Energy has demonstrated an ongoing commitment to reducing the impact of fires by ensuring internal focus by senior management through an organisational structure which includes a Bushfire Risk Assurance Panel (BRAP) and a Bushfire Risk Working Group (BRWG) operating under a charter.

Bushfire Risk Management Committees

The BRAP consists of Senior Management representatives from various divisions, which report directly to the Executive Management team. Essential Energy has also established a BRWG which is made up of operational level representatives with a focus on fire mitigation activities and projects.
The structure of the **BRAP (tier 1)** is chaired by the GM Asset Management and includes the chairperson of the BRWG as one of its members as a line of communication between the two groups. This panel reports through to the Executive Leadership Team of Essential Energy as required on bushfire mitigation matters.
The structure of the **BRWG (tier 2)** includes representation from various business functional areas including:

- asset inspection and vegetation management
- aerial patrol coordination
- network risk strategy
- maintenance and refurbishment strategy
- insurance, claims & liability
- regional management
- network asset management systems
- other co-opted members as required.

The Pre-summer Bushfire Inspection Program (PSBI) provides an additional focus on asset condition prior to the fire season in our highest risk parts of the network.

Essential Energy communicates the importance of fire risk to all field employees each year to ensure they are aware of the dangers and consequence of fires to themselves and the communities they serve. This includes clear priorities for bushfire mitigation related work activities and programs. Essential Energy also targets bushfire preparedness messaging in its Public Electrical Safety Awareness program (PESAP), available to communities and employees alike.

In 2017, Essential Energy managers attended industry conferences, workshops and other related activities to help ensure good industry practice is achieved. These include:

- A Bushfire Risk Industry Day hosted by Powercor in Melbourne with nationwide attendees to share experiences with new and emerging technologies aimed at reducing network fire ignitions and to promote further education relating to bushfire risk.
- The Utility Arborist Association of Australasia (UAAA) hosted an international Arborists conference in Canberra in 2017 attended by Essential Energy representatives. The focus of the conference was vegetation management relating to asset infrastructure including powerlines from a global perspective.
- Representatives of Essential Energy participate in Energy Network Association (ENA) committees relating to Vegetation Management and Network asset management including bushfire risk related matters.
- Essential Energy is an active participant of the NSW Industry Safety Steering Committees (ISSC) including review of industry codes and guidelines relating to bushfire risk such as *ISSC3 Guideline for management of trees in proximity to power lines* which was recently republished.
- Essential Energy engaged in dialogue with other utilities nationwide to compare, amongst other things, asset maintenance practices.
- Essential Energy facilitated a NSW industry day with focus on Network Fire Risk Modelling. This included attendance by, and collaboration with, NSW RFS, other network operators, and University of Melbourne.
- Each year RFS senior Officers attend meetings with Essential Energy bushfire committees and managers to brief them on the season outlook and to discuss operational matters. Essential Energy also sends managers to the RFS multi-agency season briefings held at various sites around the state.
- Essential Energy conducted meetings with network equipment manufacturers and service suppliers to investigate opportunities to improve the safety and reliability of the network.

2. Climatic Conditions – consideration by Essential Energy

Essential Energy acknowledges that climatic conditions vary over the different fire seasons. As an example, in 2017 the NSW Rural Fire Services (RFS) made temporary variations to the fire danger period declarations for several Local Government Areas (LGA's), refer to the following table.

Table 1 – RFS temporary variations to fire danger period declaration

Normal declaration	Temporary (2017) variation date	Area
October 1st	September 1st	Mid-Coast: *Hastings, Greater Taree* Northern/Central Tablelands: *Gilgandra, Warrumbungle, Bathurst, Oberon, Mudgee* *Cudgegong, Lithgow, Blue Mountains* (all Ausgrid/Endeavour Energy)

As well as temporary variations based on season conditions the RFS also have several LGA's with permanent variations. This means that in most years these declarations are permanently adjusted to commence earlier or later than 1st October, refer to the following table.

Table 2 – RFS permanent Variations to fire danger period declaration

Nominal declaration	Permanent variation date	Area
October 1st	August 1st	*Tenterfield, Inverell, Glenn Innes Severn, Guyra/Armidale Dumaresq, Uralla and Walcha*
October 1st	September 1st	*Tweed, Kyogle, Byron, Lismore, Ballina, Richmond Valley, Clarence Valley, Coffs Harbour, Bellingen, Nambucca, Kempsey, Gunnedah, Liverpool Plains Bega Valley* *Upper Hunter, Muswellbrook, Singleton* (Ausgrid) South Coast: *Shoalhaven* (Endeavour)
October 1st	November 1st	*Blayney, Cabonne, Cowra, Orange City, Berrigan, Corowa, Albury City, Greater Hume, Griffith City, Leeton, Murrumbidgee, Narrandera, Coolamon, Junee, Lochart, Urana, Wagga Wagga City*

RFS segregate fire declaration periods into;

- nominal declaration (1st October – most state areas)
- permanent variations (most years declaration occurs on this date for certain areas)
- temporary variations (changed declaration date for the current season only)

Variations to the nominal declaration date (of 1st October) are based on assessment of conditions and recommendations of the local Bush Fire Management Committees.

Essential Energy conducts bushfire mitigation activities on a continuous cycle all year round, balancing fire risk consideration with program efficiency's and affordability. All fire mitigation related work programs contribute to fire risk mitigation prior to, during, and after declared fire danger periods.

Essential Energy manages variation in seasonal conditions which can impact the declared danger periods through the following actions:

- Monitoring of conditions – Essential Energy monitors the state fire risk conditions through communication with RFS, including formal agency briefings regarding climate outlooks and accessing feeds from Bureau of Meteorology via RFS which are integrated into Essential Energy alert systems. Other methods for monitoring upcoming climatic conditions include;
  - information provided from media releases,
  - Bushfire Risk Working Group review of the BOM season outlooks,
  - information provided by the Bushfire and Natural Hazards Cooperative Research Centre.
- Essential Energy assesses the risk situation through fortnightly Bushfire Preparedness Operational meetings. This includes consideration of the conditions, locations, and type of maintenance tasks open. These meetings include our Regional Managers responsible for field delivery of the pole and line maintenance program, as well as Program & Department Managers responsible for. Resource deployment is one of the delivery key functions of ground based and aerial inspections and vegetation management programs. Deployment of resources to help meet priorities is considered during these planning meetings.
- Total Fire Ban (TFB) considerations – Special precautionary conditions for TFB days are adopted regardless of when they occur, thereby ensuring activation inside or outside declaration dates. It includes changes to field devices to prevent automatic line re-energisation should a fault be detected to reduce the probability of a fire ignition.

- Planning of Essential Energy's Pre-Summer Bushfire Inspection (PSBI) program and the cycle length takes into consideration possible variations to declaration periods. A post 2017 PSBI program review

will be conducted to consider process or planning improvements which help achieve the earliest completion of work.

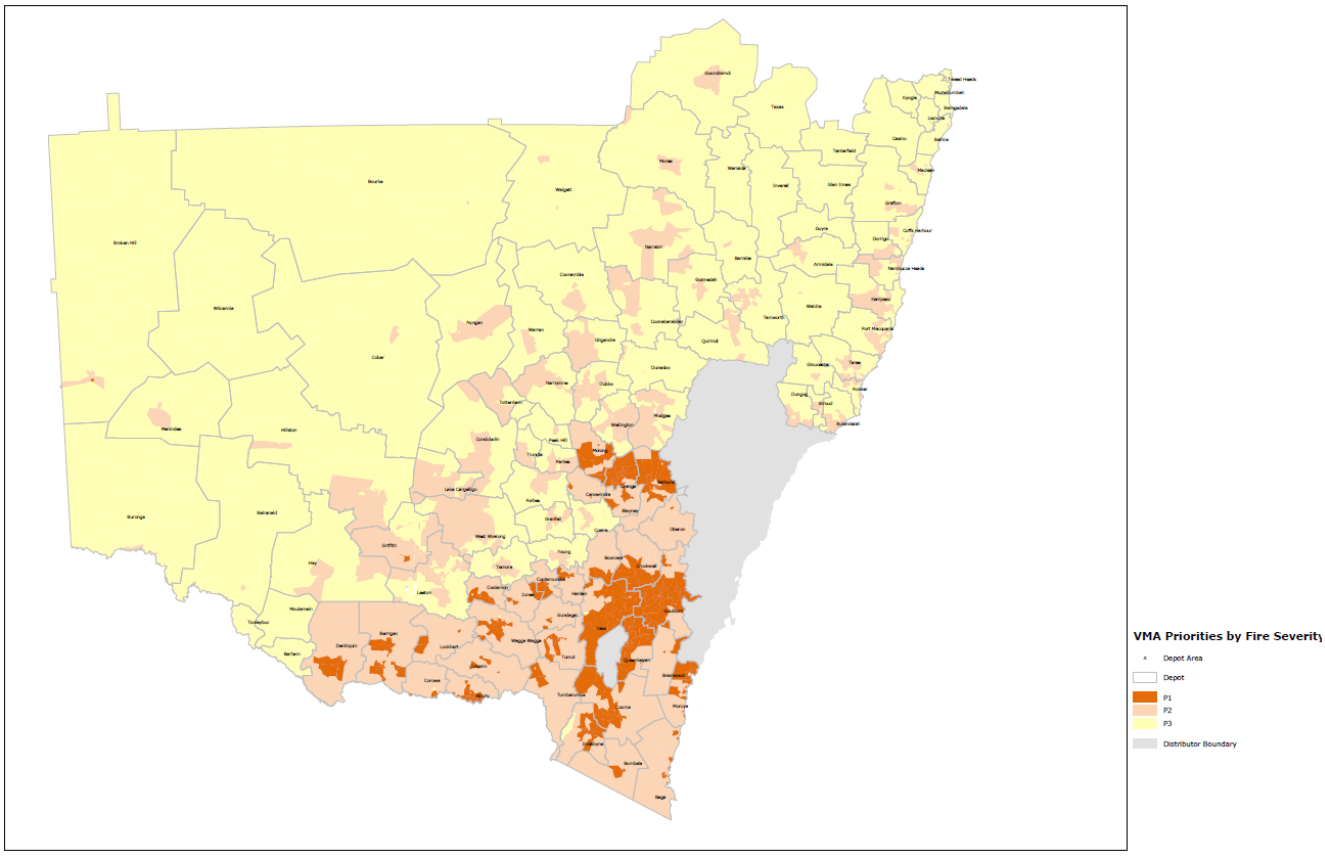
- Essential Energy Corporate internal communications are released each year leading up to the fire danger periods. This includes information about the temporary earlier declarations to make field crews aware of the conditions and why maintenance priorities are required. Ongoing communications are issued throughout the season to ensure all staff are cognisant of the dangers associated with bushfire season.

Identification of hazardous bushfire areas

Essential Energy has identified locations which are considered to be generally bushfire prone[1]. The bushfire prone lands are further segmented into fire risk classifications based on fire risk modelling. The modelling considers the consequences and probability of fires which may originate from network assets. Fire risk levels and priorities are determined through modelling of the network using the Phoenix Rapid Fire system as well as internal modelling using fire start history and other attributes. This determines the areas considered the highest fire risk priority and therefore subject to a pre-summer aerial inspection.

Fire risk priority classifications (P1, P2, P3, P4) are used to determine fire mitigation work priorities, pre-summer inspection requirements, investment program priorities, and operational procedures. Procedure CEOP 8067 contains descriptions of fire risk classifications and priority zones. Below is a sample map of these zones based on designated maintenance areas within the Essential Energy footprint.

Figure 1 Map indicating fire risk prioritisation zones.



[1] *Bushfire prone* status is applied to rural locations by Essential Energy and is defined as “land capable of carrying or supporting wildfire”.

3. Statistical Reporting

Table 3 Data on bushfire risk preparation works

Criteria	Target this season	Actual this season	Outstanding from previous seasons	Actual from previous seasons
Line route length of the ENO's network inspected in bushfire prone areas within the reporting year.	Refer to Tables 4, 5, and 6			
Private lines checked by the ENO's in pre-season inspections by the conclusion of the reporting year.	All OH Private lines connected directly to the network are inspected by EE during routine network line inspections in accordance with CEOP2339.	15,100 poles	Not available	Not available
Number of HV customers advised to undertake pre-season bushfire checks in accordance with ISSC31.	258 sites	258 sites	2017 was the first time Essential Energy requested this information from sites.	Not available

Table 4 Data on bushfire risk preparation works - Ground Line Inspections

Ground Line Inspection – 4.5-year cycle				
Bushfire Risk Priority[2]	**Total Pole Population**	**Target Poles Inspected**	**Actual 2017 Season**	**Outstanding 2017 Season**
P1	119,526	29,430	29,323	107
P2	388,203	69,400	68,721	679
P3	605,631	113,006	110,027	2,979
P4	267,466	54,846	48,723	6,123
Total	***1,380,826***	***266,682***	***256,794***	***9,888***

Table 5 Data on bushfire risk preparation works –- Aerial Inspections – HD Imagery & LiDAR

HD Pole-top photography & LIDAR Inspection – annual proportion of network				
Bushfire Risk Priority	**Inspection type**	**Target km's**	**Actual km's**	**Outstanding km's**
P1	HD Photos + Lidar	14,778	9,131	5,647
P2	HD Photos + Lidar	45,217	35,171	10,046
P3	HD Photos + Lidar	60,653	52,723	7,930
P4	HD Photos + Lidar	2,262	1,838	424
	Total	***122,910***	***98,863***	***24,047***

The number of outstanding P1-P4 inspection kilometres in table 5 is due to the program design and scale (across entire state). This is a continuous activity performed throughout the year. They are not designed to be completed by the 1st October. These are complimentary inspection regimes to the normal industry ground-line cyclic inspections. It is common for there to be a proportion outstanding at the end of the reporting period because affordability for these services on a large scale, is dependent on them being able to deliver over a longer cycle.

[2] Bushfire risk priority is based on powerline related bushfire risk modelling which considers the probability of fire and its consequence to community. P1 is the highest risk and at the other end of the scale, P4 is non-bushfire prone.

Table 6 Data on bushfire risk preparation works - Aerial Inspections - PSBI

Aerial Pre-Summer Bushfire Inspection (PSBI)– Annual High Fire Risk Locations			
Bushfire Risk Priority	**Target km's**	**Actual km's**	**Outstanding km's**
PSBI (P1 – Visual Aerial Patrol)	14,778	14,778	0

Several different inspection programmes are undertaking to monitor network condition and health. Each serves a particular purpose and collectively they complement each other to ensure Essential Energy has a good understanding of its infrastructure and the risk conditions. The PSBI inspection programme specifically provides for inspection of overhead lines in the high-risk parts of the network prior to the fire danger period to ensure tasks are completed before 1st October or earlier, thus it is a critical element to bushfire risk management. It is a contingency mechanism to capture conditions which may not have been detected by other routine inspections, at the earliest opportunity before the fire danger period.

Table 7 Bushfire Starts and Risk Management

Criteria	Inside bushfire prone areas	Outside bushfire prone areas
Number of reported bushfire ignitions by private installations (High Voltage and Low Voltage).	0	0
Number of reported bushfire ignitions by the ENO's electricity network.	21	0
Number of identified vegetation defects open at the conclusion of the reporting year within bushfire prone areas.	Refer to table 9 – Vegetation Spans Open & Outstanding	
Number of directions for bushfire risk mitigation issued to private LV customers by the ENO that are outstanding as of 30 September.	431	122
Number of directions for bushfire risk mitigation issued to private LV customers by the ENO that are outstanding by more than 60 days.	The actual number exceeding 60 days inside bushfire prone areas is unknown. Some customers have not responded within notice periods. New procedures are being implemented to better manage compliance.	122 The 60-day rule does not apply to "Outside bushfire prone areas".
Number of HV customers providing statements of compliance in accordance with ISSC 31 by 30 September.	19[3] confirmed compliance notices. 258 letters sent in total – some sites do not require compliance statements e.g. site not operational, not bushfire prone, or all UG assets (no overhead lines).	

In the following data tables reference is made to tasks classifications Cat 1-4 (asset repairs) and A1-4 (Vegetation). Tasks identified are allocated risk severities based on industry experience to determine failure probability. The risk severity classifications are defined in table 8:

[3] Currently not defined as Bushfire Prone and Non-Bushfire Prone. Issues within this dataset have been identified and site details are currently being updated.

Table 8 Task Severity Classifications

Asset Tasks	Task Severity
Cat 1	Emergency tasks
Cat 2	Urgent tasks
Cat 3	Risk Tasks
Cat 4	General Maintenance tasks
Vegetation Tasks (safety clearance encroachments)	
A1	75 - 100% encroached
A2	50 - 75% encroached
A3	25 - 50% encroached
A4	0 - 25% encroached

Table 9 Vegetation Spans Open & Outstanding

Bushfire Priority	Status	A1	A2	A3	A4	Hazard trees[4]	Totals
PSBI (P1)	*open*[5]	0	0	0	0	0	0
	outstanding[6]	0	0	0	0	0	0
Other (P1)	*open*	109	287	4,384	5,743	280	10,803
	outstanding	15	11	16	9	9	60
P2	*open*	1,579	1,651	13,436	16,045	1,035	33,749
	outstanding	184	154	162	26	39	565
P3	*open*	6,410	5,138	8,991	11,326	3,438	35,303
	outstanding	797	663	294	273	16	2,043
P4	*open*	5,323	3,000	2,595	2,851	938	14,707
	outstanding	520	229	80	63	12	904
Total	*open*	***13,421***	***10,079***	***29,406***	***35,965***	***5,691***	**94,562**

Table 10 Asset Defects Impacting Bushfire Risk

	Inside Bushfire Prone Areas				Outside Bushfire Prone Areas			
	Cat 1	Cat 2	Cat 3	Cat 4	Cat 1	Cat 2	Cat 3	Cat 4
Number of identified asset defects impacting bushfire risk within bushfire prone areas that were open at the conclusion of the reporting year.	Refer to table 11							
Number of directions for bushfire risk mitigation work on private land issued to LV customers by the ENO.	0	0	365	73	0	0	97	25

[4] Hazard trees are trees outside minimum clearances which are assessed as a hazard due to their condition and proximity to the powerline. This includes trees inside Essential Energy determined "absolute clearances" to conductors or poles.

[5] Open spans represent all open spans, including outstanding spans, from the Vegetation Information Management system & LiDAR 2016 capture.

[6] Outstanding spans represent open spans that have not been rectified within the required timeframes

Table 11 Asset Defects Impacting Bushfire Risk

Severity	Cat 1 (emergency – 48hrs)		Cat 2 (Urgent -1mth1 month)		Cat 3 (risk – 9 months)		Cat 4 (next maintenance)		Totals
Fire Risk Priority	*Open*[7]	*Outstanding*[8]	*Open*	*Outstanding*	*Open*	*Outstanding*	*Open*	*Outstanding*	*Open*
P1	0	0	14	4	1,139	6	418	0	1,571
P2	0	0	34	0	3,152	155	1,158	0	4,344
P3 & P4	1	1	79	5	10,741	0	2,334	0	13,155
Total	1	1	127	9	15,032	161	3,910	0	19,070

Results as reported at 25th October 2017

ENO Comments

Essential Energy recognises the associated bushfire risk related to overhead networks. We are committed to managing this risk in accordance with various stakeholder expectations. The risk management approach seeks to balance the various key stakeholder's interests. These include:

- IPART – the NSW Network Safety and Technical Regulator
- Community expectations
- Essential Energy Board and Shareholders
- Australian Energy Regulator (AER) – Economic Network regulator

Essential Energy continues to invest significant resources into bushfire mitigation activities directly and indirectly.

The Vegetation Management program is the largest single operating program expense and Essential Energy has recently developed an updated Vegetation Management strategy for the period FY18 - FY24 to assist the business to optimise long term vegetation management expenditure, address ISSC3 compliance gaps, stabilise the supply market and reduce risk associated with vegetation contacting the Network. This strategy is a key pillar for managing compliance and reducing long term operating expenditure (OPEX) costs as part of the business' FY20 - FY24 Australian Energy Regulatory (AER) submission.

Essential Energy will engage with IPART throughout the process for development of the vegetation management strategic plan and performance periodically against the plan outcomes.

[7] Open defects represent all open defects including outstanding defects.

[8] Outstanding defects represent open defects that have not been rectified within the required timeframes.