Safety Management System Annual Performance Report

2016/17

August 2017

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1. Annual Compliance Reporting

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 the Network Operators in relation to the safety and management of their electricity network.

The ENSMS and the Electrical Safety Policy 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 the Network Operator's implementation of their ENSMS:

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

The Network Operator previous Chapters 3 & 4 of its former Network Management Plan have been reviewed and updated and remain relevant and current to this ENSMS Plan.

At Essential Energy these documents are:

- CEOP8005 - Public Electrical Safety Awareness Plan
- CEOP8022 - Bushfire Risk Management Plan

Regular inspection and maintenance of a network asset is intended and/or assists in maximising the technical life and minimise safety and network risk associated with that asset. 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.

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 has a number of programs and initiatives underway aimed at improving the safety and reliability of its distribution network, these are:

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

Program/Initiative	Description	New/Ongoing
Drones used for Asset Inspection	The use of drones for asset inspection has commenced. They have achieved a more thorough condition assessment of overhead conductors and pole-tops for minimal cost.	New

Program/Initiative	Description	New/Ongoing
LIDAR and High Definition aerial photography	Essential Energy's LIDAR program has captured many defects, such as low clearances and vegetation encroachments, that were previously difficult to identify by traditional inspection programs. The High Definition aerial photography program has also improved the identification of defective pole-tops. This has aided in the analysis of network risk and improved network reliability and safety as these defects are rectified. Additionally, the ability to create a snapshot of the network at a point in time has leant itself to building growth and deterioration models. The models will aid in predicting future issues including: vegetation encroachments, detailed network safety calculations, pole leaning and stay effectiveness.	Ongoing
Transient earth voltage and ultrasonic monitoring for partial discharge	Two programs of work have been completed regarding partial discharge detectors. The first stage was the rollout of independent devices for the zone substation group and the second stage was the smart device peripherals rollout for field staff. This process should result in lower fault and emergency costs for underground switchgear and zone substation equipment.	New
Asset Investment Planning System	Essential Energy is implementing a new Asset Investment Planning System which will allow the optimising of the investment portfolio based on our corporate objectives. It is the key tool for moving to a risk-based expenditure model. This system will allow the management of network risk by reducing or maintaining the previous expenditure profiles.	New
Pole Inspection	Essential Energy is trialling a digital wood inspection drill to understand the applicability of the tool for providing improved data on the internal condition of our poles. If successful, this should help improve safety and reliability through prevention of timber pole failures and improve our understanding of optimal replacement timing. The frequency of the radial live line inspection program has been increased with the intent to improve the safety and reliability of key radial sub transmission feeders by better targeting the assets.	Ongoing trial
Earth Testing	Essential Energy's asset inspectors have been trained and equipped to perform earth testing on an increased scope of electrical assets. This utilises test instruments with increased capability, providing increased data integrity allowing improved identification of non-compliant situations. This has led to a more tailored approach for rectifying safety situations related to earthing systems.	Ongoing
Microgrids for worst served customers	Investigating the use of microgrids to improve reliability to best meet the needs of regional customers into the future. We expect battery storage based microgrid solutions to become an economic solution to segments classified under the worst served program in the future.	New

Non-compliances relating to the safety and reliability of the electricity network

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 is 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 the 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 2016-17 the audit and assurance team completed more than 14 major audits and follow-up audits on safety and environmental risks in 2016-17. These included:

Table 2: Audit of risk areas in 2016/17

No	Area of Audit in 2016-17
	Essential Energy has been exempt from publishing information in this table under section 3.3 of IPART's Electricity Networks Reporting Manual

All action(s) raised following internal audits are allocated a specific timeframe and responsibility that is tracked through our safety incident reporting system 'TotalSAFE'. In 2016-17 identified non-compliances within the ENSMS included:

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

Identified non-compliances	Actions against non-compliances	Progress of actions
Asbestos Waste Management OC1601RG Asbestos Waste Management audit report contained a red finding identifying that asbestos registers for meter boards and network assets were not being maintained, updated and or reviewed appropriately	As part of a corporate restructure for the HSE team a new role will be created in the Audit and Assurance team to deal specifically with the asbestos issues at Essential Energy. Once filled, the priority for the new position will be to develop and implement plans to improve the current asbestos registers.	Asbestos specialist hired to commence review and improvement work.

Identified non-compliances	Actions against non-compliances	Progress of actions
NFR 9 - Breach of a controlled worksite when working near or around traffic Contractor Traffic Control Supervisors Not Fulfilling WHSE Obligations	It is recommended that a field audit of contracted traffic control companies be undertaken	A field audit of traffic control companies will be undertaken in the FY17/18 HSE Annual Audit Plan
NFR7 - Incident While Undertaking Lifting Operations Deficiencies were observed in the accuracy of lifting registers located on fleet.	It is recommended that an electronic solution be developed to allow staff to remotely access accurate depot lifting registers for all equipment	An electronic lifting register is currently being developed as part of the workforce mobility program.
NFR8 - Uncontrolled Collapse of Excavation Work Close approach training for workers who excavate near Essential Energy underground assets was an area of weakness. None of the contractors engaged across the six sites had undergone close approach training.	It is recommended that contractor pre-engagement processes include detail to prompt for a review of worker qualifications for excavation activities that include close approach training where required	A review of the WHS pre-qualification scheme will be undertaken to ensure close approach distances are covered off for trenching and under-bore works and CECM1000.11 will be reviewed to cover safe approach distance training/qualifications.
NFR8 - Uncontrolled Collapse of Excavation Work Gap in relation to three NFRCS that relate to the development and implementation of an emergency rescue plan for excavation work.	It is recommended that CEOM1000.95 – Evacuations Manual be updated, formally communicated to the Network Services underground teams and that Attachment A – Rescue Plan be better publicised for use on underground jobs.	Complete
NFR8 - Uncontrolled Collapse of Excavation Work CEOF1002.03 does not include substantial detail on the hazards and risks associated with trenching and excavating work. The HIRAC is largely aimed at the electrical hazards and controls with limited consideration for the work environment and work methods to be employed for the task	Publish updated HIRAC to close the identified gaps	To be incorporated into an electronic version of the HIRAC in 2017-18.

Identified non-compliances	Actions against non-compliances	Progress of actions
NFR8 - Uncontrolled Collapse of Excavation Work Procedures do not include any detail to prompt workers to consider whether the excavation may be classified as a confined space.	It is recommended that CEOM1000.95 be updated to include a reference to or prompt of the confined spaces requirements.	Procedures and HIRAC to be updated in 2017-18
Investigations follow up audit Gap in the hazard identification and risk assessment requirements of the CEOP8050 procedure.	Develop a formalised risk assessment template for users of the procedure to complete when determining if the use of CEOP8050 is appropriate.	Complete

Safety and Environmental review and assessments

The Risk and Compliance team that forms part of the Health, Safety and Environmental Risk, Audit and Investigation division complete annual reviews of safety and environmental risks that form part of the ENSMS. These include:

Table 4: Network Fatal Risks and key Environmental Risks for Essential Energy

No	Business Risk
1.1	Exposure to unintended discharge of electricity
1.2	Exposure to hazardous chemicals/materials
1.3	Fall from height
1.4	Motor vehicle accident
1.5	Unintended contact with mobile plant
1.6	Struck by falling or moving object
1.7	Incident while undertaking lifting operations
1.8	Uncontrolled collapse of excavation work
1.9	Breach of controlled worksite when working near or around traffic
6.1	Polluting the environment
6.2	Unauthorized development or damage to flora/fauna or heritage
6.3	Reportable waste and contamination incidents
6.4	Reportable excessive and intrusive emissions

In 2016/17 risk evaluations resulted in a number of Treatment Action Plans for those determined non-ALARP. These non-compliances relevant to the ENSMS are identified in the table below.

Table 5: Identified non-compliances within the ENSMS from risk evaluations

Identified non-compliances	Actions against non-compliances	Progress of actions
NFR 1 Exposure to unintended discharge of electricity Gap in relation to NFR Control Standard (NFRCS) 1.2.2 - Checks in accordance with Essential Energy's risk management procedure must be conducted prior to and after commissioning as well as de-commissioning, network assets	Roll out CEOP5125 Network Asset Testing and Commissioning, suite of documents to address commissioning and decommissioning	CEOP5125 has been updated. A comprehensive implementation plan is being developed with input from all key stakeholders. The revised CEOP5125 will be fully implemented in 2017.
NFR 3 - Fall from height Gap in relation to NFRCS 3.1.4 The Risk Assessment must specifically identify fall specific hazards such as: • Selection of anchor and tie-off points; • Condition of supporting structures such as roofs; • Substation civil works, underground and substation basement access; • Selection of appropriate Barricading and / or Demarcation; • Free Fall clearances and safety margins should be calculated; and • Emergency Response and Suspension Intolerance.	Publish updated HIRAC to close the identified gaps	To be incorporated into an electronic version of the HIRAC in 2017-18.

Identified non-compliances	Actions against non-compliances	Progress of actions
NFR 3 - Fall from height Gap in relation to NFRCS3.2.11 Fixed Ladders: • Fixed Ladders must be designed, constructed, and used in accordance with the requirements of AS/NZS 1657 Fixed platforms, walkways, stairways, and ladders - Design, construction, and installation. • Systems must be in place to maintain a fixed ladder register identifying fixed ladders of sufficient height or fall risk to require the use of fall-arrest equipment and must comply with AS/NZS 1657 Fixed platforms, walkways, stairways and ladders - Design, construction and installation.	Develop and maintain a fixed ladder register in accordance with AS/NZS 1657 Fixed Platforms, walkways, stairways, and ladders – Design Construction and Installation.	Site Assessment Contract has been awarded and Site Audits have commenced. All sites scheduled for completion were completed and all detail recorded. To date 10 sites have been audited and the next round is due to start at end of July2017. 20 sites are scheduled to be audited during FY18. Non-compliances are being included in future programs of works. The Fixed Ladder register is being updated accordingly.

Identified non-compliances	Actions against non-compliances	Progress of actions
NFR 6 - Struck by falling or moving object Gap in relation to NFRCS 6.1.7 Examples of controls for working at heights to manage the risk of falling object should be considered and include: • Provision of controlled Drop Hazard Zone (Exclusion Zone); • Keeping large equipment at ground level; • Good housekeeping e.g. keeping the work area tidy and ensuring materials, debris, tools and equipment that are not being used are out of the way; • Providing a secure physical barrier at the edge of the elevated area, such as toe boards or infill panels that form part of a guardrail system; • Tethering or otherwise securing tools and materials to prevent them falling on people below; • Keeping tools or other materials away from edges and off railings or sills. Gap in relation to NFRCS 6.3.3 Workers must routinely inspect their workspaces to verify that no loose tools and equipment are left behind	Publish updated HIRAC to close the identified gaps	To be incorporated into an electronic version of the HIRAC
BR – 6.1 Polluting the environment Gap in relation to compliance with AS 1940	Develop a plan for compliance with AS 1940 in relation to oil storage facilities.	The plan has been developed and will be implemented via a staged process.

Safety and Environmental Investigations

The Investigations team forms part of the Health, Safety and Environmental 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 Investigations team completed 169 ICAM level investigations of incidents that were reported in Essential Energy's safety system 'TotalSAFE'. Most Investigation findings relate to addressing the human factors or errors associated with the incident. This may involve disciplinary action using Essential Energy 'fair and just culture' procedures, and/or completing communications through-out Essential Energy so that the lessons learnt from any errors can be shared to prevent similar incidents. In reviewing the investigations for 2016-17 the following actions were identified as potential non-compliances within the ENSMS.

Table 6: Identified non-compliances within the ENSMS from safety and environmental investigations

Identified non-compliances	Actions against non-compliances	Progress of actions
Essential Energy's risk management procedure must be updated for commissioning as well as de-commissioning network assets Network Services to revise CEOP5125 Network Asset Testing and Commissioning to enable release of this document as well as associated test manual and forms to ASPs	Treatment Action Plan aligns with this investigation	CEOP5125 has been updated. A comprehensive implementation plan is being developed with input from all key stakeholders. The revised CEOP5125 will be fully implemented in 2017.
ESO to undertake review of CEOP2018 Polarity and Neutral Identification to ensure commissioning responsibilities are consistent	CEOP2018 Polarity and Neutral Identification is currently under review and a note to 5.5.3 has been added to streetlight underground for insulation testing	Due for completion in 2017
Review HIRAC documents to incorporate drill bit breakage and appropriate control measures to be implemented.	Inclusion of drill and other hand tool pre-inspection use to be added to the eHIRAC	To be incorporated into an electronic version of the HIRAC in 2017-18.
Electrical Safety Manager to review CEOP8030 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	Complete
Network Authorisation Manager review CEOP8049 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 OH (ladder and EWP) and UG.	Currently under internal review	Due for completion in September 2017

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 the risks associated with Essential Energy's network and reduce the occurrence of public safety incidents.

Annually Essential Energy completes a review of public safety to determine the effectiveness of the controls. The review included:

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

The data analysis assists Essential Energy in determining the effectiveness of its controls and programs and tailor accordingly. Any program noted with a * identifies a new program employed in 2016-17.

The initiatives contained in the PESAP have been established to target key areas of exposure of 'At Risk' Groups which have been identified as an outcome of ongoing analysis of public safety incidents that result from contact with Essential Energy's network. These At-Risk Groups are as follows:

- Community: Individuals, transport, and motor vehicles
- Agri-business: Agricultural related and 'on farm' activities
- Construction: Building and demolition activities including roadworks
- Emergency Services and Life Support: Police, Fire brigade, ambulance

Community - at risk group

Hazard assessments have identified the area of Community as an 'at risk' group. The objectives of our community programs include:

- communicating Electrical Hazard Awareness (EHA) safety information
- educating workers on clearances required when working near electricity infrastructure
- educating school children and the public about electrical safety hazards associated with the network
- providing a means of reducing public safety risks
- outlining emergency response actions and consulting with identified stakeholders
- encouraging proper management of private lines (as customers have a responsibility to ensure their installation is safe). Essential Energy will inspect and advise if any assets are defective
- encouraging proper management of vegetation clearances and planning.

Our targeted safety campaigns for the Community include:

- Establishment of the Customer Advocacy Group (CAG)*: Essential Energy has established a new voluntary stakeholder engagement group called the CAG. The CAG will be utilised as a proactive forum for consultation, engagement, and insight across Essential Energy's customer base, on any matters relating to the supply of electricity and associated services.

- Partnering with SafeWork NSW: Essential Energy has partnered with SafeWork NSW in the delivery of awareness programs in relation to work, health and safety compliance. In 2016-17 Essential Energy continued to foster this relationship with SafeWork NSW to promote community safety initiatives.
- Electricity Safety Week 5-9 September 2016: Electricity Safety Week is an annual state-wide program designed to teach students how to be safe around electricity and make them more aware of the dangers that can be associated with it. The activities have been developed with the Department of Education to meet the requirements of the NSW Board of Studies Science & Technology Syllabus for the Australian Curriculum. Essential Energy runs this program jointly with Ausgrid and Endeavour Energy. In 2015, 96% of the 916 primary schools in Essential Energy's footprint registered for the program and engaged 73,000 students in electricity safety activities. This program will again form the foundation for safety education in 2016-17. For more information visit essentialenergy.com.au/education
- Vegetation Management Plan: Trimming or removing trees to maintain safe clearance zones is an ongoing priority for Essential Energy. Clearances are required because trees planted too close to powerlines can become bushfire hazards, cause network damage and power outages during storms. Please refer to our Vegetation Management Plan for current clearance distances and to review the 'Plan before you Plant' Guide at essentialenergy.com.au/trees
- Storm and Flood Safety: During the storm season (October to March) Essential Energy promotes safety messages about what to do before, during and after severe weather events. An important component is the community targeted campaign to 'Always stay at least 8 metres away from fallen powerlines' and anything in contact with them. Specific flooding event messages are targeted to affected areas as required and advise the community to always have a qualified electrician inspect all wiring before turning electricity supplies back on.

Agri-business – at risk group

Essential Energy's network covers 95% of NSW; as such, safety on the land is something we always want to front of mind. The objectives of our Agri-business programs include:

- communicating Electrical Hazard Awareness (EHA) safety information
- educating workers and the public on clearances required when working/conducting activity near electricity infrastructure
- providing a means of reducing risks
- outlining emergency response actions
- defining reporting obligations and consulting with identified stakeholders.

When it comes to the potential dangers for the agribusiness industry working around powerlines and other network infrastructure, there are some key safety messages that Essential Energy advocate. These have been summarised into an acronym using L.A.N.D to help the industry remember the key safety points. They are:

- Look up and live. Overhead powerlines should be identified and marked at ground level. Essential Energy can provide electrical network maps showing the location of overhead powerlines on your property.
- Always 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.
- Need 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 all clearances when working under or around powerlines.
- Don't disembark. If your machinery comes into contact with overhead powerlines, stay in the vehicle, if safe to do so, and call Essential Energy immediately on 13 20 80.

Other Agri-business targeted initiatives include:

- Harvest campaigns: Seasonal integrated campaigns for the grain and cotton harvests
- Working with the Civil Aviation Safety Authority and Aerial Agriculture Association of Australia*: Essential Energy continues to work with both these groups to examine and implement strategies to assist in the reduction of the number of aircraft strikes on the electrical distribution network. These strategies aim to reinforce our electrical safety messages and assist in the reduction of these hazardous incidents. Consultation with crop dusters and CASA led to the development of mud flap marker in 2 colours. This program won an industry award from the Aerial Application Association of Australia

- Consulting with target community groups: including local councils; NSW Farmers Association, Cotton Australia, NSW Rural Fire Service;
- Implementing overhead powerline marking service: to assist visual identification of overhead services during harvesting and spraying activities (fee for service applies)
- Incident review: Direct contact from Essential Energy's Public Safety Coordinator post incident to provide additional safety information and collateral.
- Targeted field day participation: including AgQuip and Henty field days
- Vegetation management plan: Trimming or removing trees to maintain safe clearance zones is an ongoing priority for Essential Energy. Clearances are required because trees planted too close to powerlines can become bushfire hazards, cause network damage and power outages during storms. Please refer to our Vegetation Management Plan for current clearance distances at essentialenergy.com.au/trees
- Promotion of safe work practices when working near electrical network
- Storm safety: a new campaign was developed in 2016 to raise awareness of 'indicators' of electricity network damage after a storm. The campaign asks farmers to stay aware and stay safe by looking for indictors such as burnt areas in paddocks, injured or downed livestock, smoke or fallen trees,
- Windscreen stickers: innovative electrostatic stickers have been developed to remind the industry to 'Look up and live'. Stickers are distributed to workers involved in grain, cotton and sugar cane harvest to go in the cab of headers, trucks and tractors
- Free safety signage: safety DVD's, signs and stickers can be ordered for free from Essential Energy's website
- Electrical network maps: campaign to promote availability of free overhead electrical network maps that can be used to identify areas of risk on properties. Maps can be requested online via essentialenergy.com.au/overhead
- Sowing safety: a new campaign for 2016-17 will target farmers whilst sowing to ensure they know the location of all powerlines and the correct use of GPS for all agricultural activities

Construction – At risk group

When it comes to construction, Essential Energy can provide safety advice for people who operate excavators, tip trucks, cranes or high machinery, under boring/trenching machinery and civil construction machinery.

The objectives of our Construction programs include:

- providing detailed information to the NSW Roads and Maritime Services as a result of vehicle pole impacts
- communicating Electrical Hazard Awareness (EHA) safety information to the construction industry to ensure they are aware of the hazards when working near electricity infrastructure
- providing a means of reducing the risks
- outlining emergency response actions and consult with identified stakeholders
- defining reporting obligations.

Our Construction targeted initiatives include:

- Overhead powerline marking service - to assist visual identification of overhead services during harvesting and spraying activities (fee for service applies)
- Dial Before You Dig program participation - This service is important for construction related activities operating within Essential Energy's footprint
- Targeted field day participation - including AgQuip and Henty field days where construction specific fact sheets and safety stickers are available
- SafeWork NSW - New initiative in conjunction with SafeWork NSW is the development of a film focussing on underground excavation and related safety procedures due for release by the end of 2016
- Post Incident Review - Direct contact from Essential Energy's Public Safety Coordinator post incident to provide additional safety information and collateral
- Network Plans - Maps showing the general location of our overhead electricity network are available upon request for individuals and companies involved in construction visit essentialenergy.com.au/overhead
- Safety DVDs – Essential Energy can provide a free safety DVD focussing on urban workers involved in construction. The film can also be viewed on Essential Energy's youtube channel 'Essentialenergytv'. A 'Highloads' specific film is also available.

Emergency services - at risk group

The key objective of this Plan for the emergency services and Life Support 'at-risk' group is to communicate awareness that interruptions to electricity supply may occur for a number of reasons (e.g. including storm activity).

Our Emergency services targeted initiatives include:

- Information packs: sent to any person registering as a Life Support customer including a brochure and magnet to capture important phone numbers in case of an outage
- Joint initiatives: Essential Energy will continue to work with Endeavour Energy and Ausgrid to ensure Life Support systems are streamlined
- Social media: continue promoting the need for Life Support customers to ensure Essential Energy has their correct details
- SMS: continue to use SMS to alert Life Support customers of planned power outages and to have a Plan B in place
- Retailers: Work with retailers to ensure Life Support customer information is provided in a timely manner.
- Emergency Services: Essential Energy will continue to offer safety sessions for these services and continues to actively work with NSW Rural Fire Service. A specific 'Electrical Hazard Awareness for Emergency Services' DVD is provided free of charge and can also be viewed at essentialenergy.com.au/safety

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 either implemented or is in the process of implementing various programs and initiatives associated with bushfire risk mitigation as set out in the table below. This work includes the continued development of programs started following a review of the Victorian Bushfires Royal Commission recommendations.

Table 7: Bushfire Risk related programs and initiatives

Program / Initiative	Hazard (Safety / Reliability)	Description	New / Ongoing
Updated Aerial Inspection Survey Strategy. > Pre-Summer Bushfire Inspection (PSBI) program > Engineering Lidar/HD Imagery program LiDAR Vegetation program	Public Safety > Bushfire risk identification, > Low mains Reliability > Line condition monitoring	This new updated strategy allows for accurate scoping of over 60% 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 only as opposed to the visual inspection of the whole rural network. With the introduction of the Aerial Patrol and Assessment (AP&A) program including LiDAR and HD photography material risk has been removed from the network particularly in regard to the condition of pole top assets. The current AP&A program coupled with a proposed annual vegetation LiDAR program in higher vegetated areas will permit the reduction in the visual aerial patrol program to high fire risk zones only as a pre-summer bush fire patrol	Two new programs incorporated with the existing PSBI.
C55 – Implementation of Asset Investment and Planning System. Risk prioritisation tool assigned at a program and project level.	Safety and Reliability improvement through targeted approach.	The Asset Investment and Planning System is helping the business to focus on using investments to deliver optimal value through quantifying the risk mitigation, cost reduction and benefits provided by those investments. It will help us harness data to differentiate between assets, allowing better targeted and prioritised investments. And it will help identify opportunities to unlock value that might otherwise have been missed.	New – currently integrating into systems and programs, starting with CAPEX

Program / Initiative	Hazard (Safety / Reliability)	Description	New / Ongoing
Research into new pole inspection equipment	Public Safety Reliability Improved asset life	IML Resistograph is a device presently undergoing testing within Essential Energy. The IML is an automatic drill that has the potential to be able to detect internal decay and voids that conventional hand drilling may not distinguish. The device measures and plots drill bit resistance as the small bit is driven through the pole under test. An assessment of the resistance can indicate an internal defect or void and could be utilised to prompt further investigation or analysis. The initial field tests are encouraging, however, more substantial tests are required given the large capital and ongoing investment required.	Ongoing research into new technologies
Spotfire Data Analysis tool and reporting	Analysis tools to better understand risks and program performance	The use of Spotfire allows for advanced data analysis allowing better insights into the Network. It allows a more targeted approach to maintenance and capital works	New – developed Maintenance throughout 2016
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
Development of Task Rectification Priority (TRP) priority classification for all overdue tasks	Safety and Reliability	This reporting tool takes account of the safety and reliability impacts of failures and prioritises accordingly.	New classification regime.
Asset Management System Replacement	Safety and Reliability	Essential Energy is currently preparing for the replacement of the WASP Asset Management software with a SAP product.	New – in early planning phase.
Phoenix Modelling P1-P4 classification	Bushfire Risk	The use of Phoenix Bushfire Risk Modelling has allowed a more advanced classification of the Essential Energy Network. This ten can allow targeting and prioritising high risk areas of the network.	New

Table 8: Non-compliances relating to the management of bushfire risk associated with the electricity network

Identified non-compliances	Actions against non-compliances	Progress of actions
Bushfire Mitigation Audits of NSW Electricity Operators by Eco Logical Australia in 2016. A minor non-compliance of Audit Criteria 13 was found.	IPART issued a Notice to Amend Safety Management System with two actions: 1. Develop all necessary safety management system processes and procedures to address the non-compliance. 2. Full implementation of amended safety management system with regards to identifying, prioritising, and rectifying defects	The ENSMS was re-submitted to address the minor non- compliance which was completed on the 31 December 2016 1. Complete – with audit report required by the Notice submitted to IPART 31/01/2017. 2. Underway with required audit report of 2016/17 Bushfire Preparedness report to be submitted to IPART by 30/11/2017.

1.3.2 Bushfire risk management report

Essential Energy's 2015/16 Bushfire preparedness report is included as an Appendix to this report.

2. Contextual Information

2.1 Deviation form Standards

Table 9: Deviations from Standards

Deviation Description	Justification
Code of Practice - Electricity transmission and distribution asset management (Feb 2009) a. Safe Approach Distances (SAD's) at Essential Energy differ to tables 4 & 5 in the Code. b. Mechanical protection for cables (Section 5.4.3 of the Code is 2400mm) which differs from NSW Service and Installation Rules (NSWSIR's) 2.10.2 (d) which requires 2500mm.	a. Essential Energy SAD's comply with NENS-04 Safe Approach. Essential Energy (and its predecessor's) use 33kV as a distribution voltage using distribution style constructions, where other Distributors use 33kV as a subtransmission voltage utilising that 'style' of construction – hence the different SAD's. b. Essential Energy uses 2500mm
AS/NZS 7000:2016 Overhead line design and the associated Handbook HB331 a. Industry has chosen to use the old version of AS 1720 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 and Asset Management Code (above) 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.
AS/NZS 3000 Wiring Rules (under review). Table 3.8	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.
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. Refer section 4.26 of CEOP8042 Asset Identification and Operational Labels for further details.

Deviation Description	Justification
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.

2.2 Significant Community Infrastructure

For the purposes of incident reporting over the previous financial year, 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

3.1 Classification of risk levels

Essential Energy utilises the risk rating criteria as shown in the Common Risk Matrix table below.

Table 10: Common Risk Matrix

LIKELIHOOD	CONSEQUENCE				
	Insignificant	Minor	Moderate	Major	Severe
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 11: 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 12: 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's 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

The table below summarises the business risks within the scope of the ENSMS. For further details, please refer to Section 3.3 Reviews of formal safety assessments.

Table 13: Business Risks within scope of the ENSMS

No.	Business Risk	Residual Risk	ALARP[1] Status
	Essential Energy has been exempt from publishing information in this table under section 3.3 of IPART's Electricity Networks Reporting Manual		

[1] As Low As Reasonably Practicable in accordance with Australian Standard AS 5577 Appendix B

3.3 Reviews of Formal Safety Assessments

The business risks within the scope of the ENSMS are reviewed annually to reassess ALARP status and agree Treatment Action Plans for non-ALARP risks.

Table 14: Reviews of Formal Safety Assessments

AS5577 Reference	AS5577 Principle	Relevant Business Risk	Business Risk Definition	Residual Risk Rating	2016/17 ALARP Status	Rationale	Treatment Action Plan/s
			Essential Energy has been exempt from publishing information in this table under section 3.3 of IPART's Electricity Networks Reporting Manual				

4. Safety Risk Management Actions

Table 15: Safety Risk Management Action Plans

Risk	Open Treatment Action Plan	Progress against these actions
	Essential Energy has been exempt from publishing information in this table under section 3.3 of IPART's Electricity Networks Reporting Manual	

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	14
Number of open safety risk management actions within the ENSMS scope from any reporting year	4
Percentage of safety risk management actions within the ENSMS scope completed by the due date within the reporting year	71%

5. Compliance with Directions

Essential Energy was issued with a notice by IPART on 5 August 2016 to amend its Safety Management System to address the minor non-compliance of Audit Criteria 13[2] identified in the Bushfire Risk Mitigation Audit of NSW Electricity Operators, Essential Energy audit report dated 31 March 2016. The date that Essential Energy is required to comply with the notice is by 30 November 2017.

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
1	1	0

5.1 Outstanding directions not complied with

Essential Energy has no outstanding directions that are overdue.

[2] 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*)

6. Statistical Reporting

6.1 Network Asset Failures

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	1,382,045	N/A	3,134	177	0	245	304
Pole top structures / components[3]	1,754,513	N/A	9,195	428	1	261	2
Conductor – Transmission / sub-transmission[4]	11,029 km's	N/A	51	4	0	38	0
Conductor – High Voltage[5]	145,310 km's	N/A	942	132	0	661	3
Conductor – Low voltage[6]	27,571 km's	N/A	506	92	0	375	0
Service wire[7]	715,863	N/A	415	637	0	463	17
Primary plant – power transformers[8]	741	N/A	78	1	0	0	0
Primary plant – distribution transformers	140,488	N/A	72	371	0	61	0
Primary plant – reactive plant[9]	149	N/A	4	0	0	0	0
Primary plant – switchgear	14,796	N/A	57	1	0	0	0

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

[4] Transmission and sub-transmission is voltages 33kV AC nominal and above

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

[6] Low voltage is voltages below 1kV AC nominal

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

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

[9] 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[10]	5,466	0.05 (99.5% reliability)	56	56	0	0	0
Secondary plant - SCADA	355	0.05 (99.5% reliability)	12	12	0	0	0
Secondary plant – substation batteries	696	N/A	1	0	0	0	0

6.2 Encroachment on Network Assets

Essential Energy has been working closely with Vegetation Contractors to reduce overdue tasks ahead of the Bushfire season, and in particular high bushfire prone (P1) areas. The high volume of vegetation tasks being cleared as Essential Energy progressively transitions to a compliant network, and the constrained number of authorised Vegetation Contractor personnel available impacted Essential Energy's ability to achieve a zero-overdue target in 2016-17. However as Essential Energy progressively transitions to a compliant network, the percentage of overdue vegetation risk tasks is forecast to continue to improve in future years.

Table 19: Vegetation

Criteria	Inside Bushfire prone areas	Outside Bushfire prone areas
Category 1 defects	77	11
Category 2 defects overdue	1	0
Category 3 & 4 defects overdue	2,386	957
Total vegetation encroachments as a result of third parties	0	0

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

Table 20: Ground Clearance

Criteria	Inside Bushfire prone areas	Outside Bushfire prone areas
Number of OH[11] spans for which inspections were planned	18,359	71,258
Number of OH spans for which inspections became overdue	0	12,022
Number of OH spans for which LIDAR[12] inspections became overdue	0	0
Number of defects identified[13]	805	3
Number of defect rectifications that became overdue	35	0
Total ground clearance encroachments as a result of third parties	302	26

Table 21: Clearance to Structures

Criteria	Inside Bushfire prone areas	Outside Bushfire prone areas
Category 1 defects	0	42
Category 2 defects overdue	0	0
Category 3 & 4 defects overdue	17	16
Total structure encroachments as a result of third parties	17	58

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.

6.3 Unauthorised Access to the Network

Table 22: Unauthorised access to the network

Criteria	Network Operator	Accredited Service Providers	General Public
Major substations and switching stations	0	0	2
Distribution substations, regulators, switches and associated equipment	0	0	2
Electricity mains outside major substations	0	0	7
Communications equipment outside major substations	0	0	0

[11] Overhead

[12] Light Detecting and Ranging

[13] 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.

6.4 Customer Safety Reporting

Table 23: Customer safety reporting

Criteria	Number
Number of customer shocks from installations caused by the ENO's electricity network	182

There were 182 reported shocks on the Essential Energy Network for the 2016/17 Financial Year. This is a 21% reduction from 2015/16 Financial Year with 231 incidents (49 more) and a 33% reduction from 2014/15 Financial Year with 275 incidents (92 more).

The major contributor to these incidents were Faulty Over Head Service Joints (71) and Faulty Over Head Mains Joints (29). There were also 17 incidents from Faulty Twisted Services and 14 caused by Faulty Underground Mains Joints. These factors have been the major causes over the last 3 reporting periods.

The greatest reduction in reports were incidents caused by Long Low Voltage Run (Network Responsibility) and N-E Voltage Rise less than 10 Volts. In 2014/15 these incidents were responsible for 64 reported shocks. This was reduced to 47 in 2015/16 and 17 in 2016/17.

The reduction in these numbers can be directly attributed to Low Voltage Network improvements such as the reconductoring and Transformer upgrades and augmentations implemented over the last 3 years.

Appendix – 2015/16 Bushfire Preparedness Report

Ref: C2078122

3 November 2016

Mr Hugo Harmstorf
Chief Executive Officer
Independent Pricing and Regulatory Tribunal
Haymarket Post Shop NSW 1240

Dear Mr Harmstorf

Bushfire Preparedness Report for 12 months ending 30 September 2016

In reference to your request for a report on Essential Energy's bushfire preparedness for the 12 months ending 30 September 2016. Our response regarding your questions are as follows.

What actions has your utility taken to review your bushfire risk management plan in light of the bushfire risk projections?

The Essential Energy Bushfire Risk Management Plan (BRMP) incorporates a framework of strategies to reduce the likelihood of fire ignition related to our electrical assets and manage the risks associated with operating powerlines near vegetation. Key aspects of the plan include management of:

- asset inspection regimes (including annual pre-summer inspections);
- private powerlines;
- asset maintenance including defect priority and rectification;
- refurbishment of ageing infrastructure;
- vegetation clearance relating to powerlines; and
- public awareness.

A review has been conducted of the Bushfire Risk Management Plan in preparation for up-coming bushfire seasons by Essential Energy's Bushfire Risk Assurance Panel (BRAP) and Bushfire Risk Working Group (BRWG). This review considers current information including equipment failure investigations and trends, inspection program results, update from the Rural Fire Service (RFS) and other information.

What pre-summer inspections have you conducted in bushfire prone areas? Please outline the current percentage of actual vs planned pre-summer bushfire inspections.

Essential Energy conducts pre-summer aerial patrols of the rural overhead network annually from February to September to identify priority vegetation encroachments or previously undetected asset faults, and rectifies priority ignition risks in the lead up to the bushfire danger period.

Inspection of bushfire prone areas in 2016 included approximately 80 per cent of the rural network by standard visual aerial patrols (129,210 km) and the remaining 20 per cent by aerial patrol and analysis

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(33,560 km), which incorporates the use of LiDAR survey (remote sensing technology that illuminates a target with a laser and analyses the reflected light to build a 3-D 'picture' of vegetation encroachment and pole tops).

All of the planned pre-summer bushfire inspections are complete.

In addition to pre-summer aerial inspections, Essential Energy undertakes:

- A four yearly ground based asset inspection cycle; and
- A cyclic and risk prioritised ground-based vegetation clearance program.

Provide details of any identified network bushfire defects in bushfire prone areas that have not been rectified and remain outstanding as at 30 September 2016.

As part of Essential Energy's continuous asset inspection program, a number of maintenance work tasks are listed as "in progress" at any given time.

A high turnover of tasks from open to completed status reflects the large volume of assets inspected. This includes:

- Ground-based inspections of around 350,000 poles per annum; and
- Annual aerial surveys of around 160,000km of overhead powerlines and 1.1 million power poles.

Bushfire risk defects identified through aerial inspections are split into asset and vegetation categories, and are prioritised based on their severity, location, and ignition risk to ensure that the highest risk defect rectification tasks are completed prior to declaration of the bushfire danger period.

Asset and Vegetation work tasks are rectified based on severity with the most urgent tasks CAT1 and 2 being completed in 48 hours to 30 days respectively. Completion compliance is closely monitored by senior management which results in only a small number of residual high severity tasks remaining outstanding, ironically these are typically due to wet ground conditions (inaccessible) particularly with the record rainfall conditions this winter which has hampered preparations for the fire season. This was highlighted in a recent presentation to Essential Energy by Assistant Commissioner Steve Yorke from the NSW Rural Fire Service (RFS), one compelling slide is shown in Figure 1 which depicts Septembers rainfall deciles, of note is the highest recorded rain falls across approximately half the state.

Figure 1: Recent rainfall – September 2016 as presented by the NSW Rural Fire Service

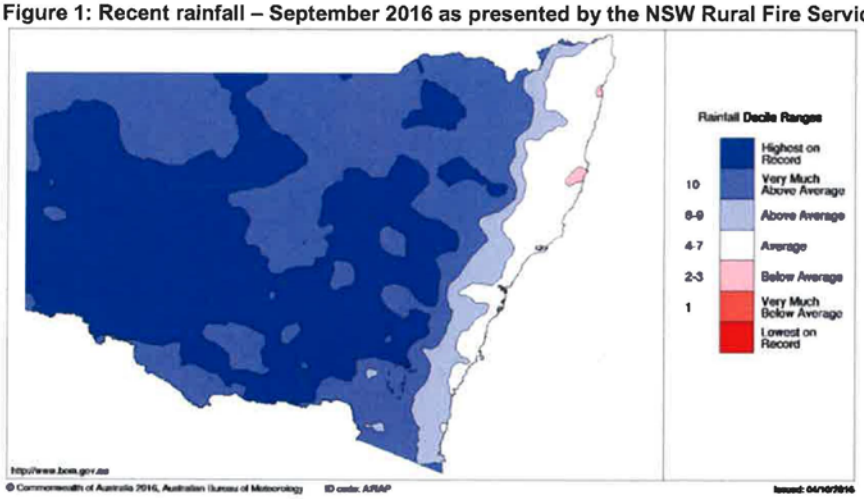

Table 1 provides the number of open ignition risk tasks identified through aerial inspection in high bushfire risk areas as at 26 September 2016, according to category and age. Essential Energy has prioritised these tasks to minimise risk exposure in preparation for the 2016/17 bushfire period.

Table 1: Task Status - High Bushfire Risk Areas Only

High Bushfire Risk Areas (EE & RFS) Source: Pre-Summer Aerial Inspections					
Open Task Age Profile	Open Vegetation		Open Assets		Total
	Urgent Risk	Risk[3]	CAT 2	CAT 3	
< 1 month	21	6,866	2	522	7,388
2 to 6 months	0	7,848	1	234	8,082
> 6 months	0	46	0	8	54
Total	21[1]	14,760	3[2]	764	15,524

[1] *Urgent Vegetation defects have a rectification period of 14 days. As at 26 September 2016, only 15 tasks were outside this timeframe.*
[2] *Cat 1 & 2 Asset defects shown have a rectification period of 48 hours and 30 days respectively. As at 26 September 2016, only three tasks were outside this timeframe. Only Cat 2 (Urgent Risk) tasks shown, all Cat 1 (48hr response) are complete.*
[3] *Risk Vegetation includes A1, A2 and minimum clearance A3 incursions*

The adoption of LiDAR inspections has generated higher vegetation defect rectification tasks compared with previous years, this is due to its high accuracy enabling even the most minor powerline clearance encroachments to be detected. Rectification of vegetation incursions has been significantly delayed due to the record wet winter/spring period with access to some rural areas not possible.

What actions have you taken to identify private lines in bushfire prone areas that are supplied by your network?

Essential Energy has identified private powerlines in bushfire prone areas through routine inspection programs over many years. Our inspection policy for overhead private lines is well established and includes a requirement to inspect private overhead powerlines as part of our cyclic ground-based pole and line inspection program.

Of the private lines identified in bushfire prone areas, how many have you inspected?

Private lines are packaged and inspected with Essential Energy poles on a four year cycle. A total of 14,071 private poles were inspected in the 12 months ending 30 September 2016.

Additionally, please provide this number as a percentage of the private lines identified to date.

The private lines inspected in the twelve months ending 30 September 2016 is 22 per cent of the private poles connected to the network and aligns with the nominal four year inspection cycle.

How many directions for bushfire risk mitigation work on private lands (pursuant to s53C of the Electricity Supply Act 1995) have you issued?

A total of 135 work tasks have been issued to private line owners from 30 September 2015 to 2016 directing rectification of defective assets under the Electricity Supply Act 1995.

As a consequence of any review, what changes or new procedures have you implemented to further enhance bushfire protection for the coming summer?

Essential Energy is currently addressing a minor non-compliance from an audit report conducted for IPART titled "Bushfire Risk Mitigation Audit of NSW Electricity Operators, Essential Energy" dated 31 March 2016. Addressing this non-compliance Plan will provide additional clarity in regard to work task

rectification during the bushfire danger period and also address a revised Bush Fire Mitigation Index (BMI).

Work has continued with the Industry Safety Steering Committee (ISSC) on revised industry guidelines including the Guide for Managing Vegetation Near Power Lines (ISSC3) and the Guideline for the Management of Private Overhead Lines (ISSC31). These revised guidelines are near approval stage.

What areas of the network are regarded as being at greatest risk of outage as a result of peak demand loads or bushfire activity over summer?

Since network peak demand has been stable for a number of years, and Essential Energy completed security of supply projects in the prior regulatory period, there are no areas of the network identified as a high risk from a demand perspective. The Southern and South East areas of NSW are considered at higher risk of bushfire activity than the North and North Coast areas.

What approaches and strategies are being implemented to address these risk locations?

The Southern and South East areas of NSW are allocated a higher fire risk rating and corrective tasks in these zones are prioritised and continuously monitored over other work tasks.

What engagement have you had with the NSW Rural Fire Service and other electricity network operators in regards to the upcoming summer season?

An ongoing working relationship with the NSW RFS is a priority for Essential Energy. Recent engagement activities include:

- continued representation on local Bush Fire Management Committees;
- participation in RFS pre-fire season multi agency briefings;
- partnership with RFS for the Phoenix bush fire risk modelling project;
- integration of RFS fire event alerts and extreme fire weather notices into operational notification systems;
- RFS is engaged by Essential Energy to conduct bushfire awareness training of its employees; and
- currently investigating RFS to conduct ICON (Incident Control) – RFS Operations Management System training at the Essential Energy System Control Centre.

Essential Energy continues to maintain close relations with the NSW RFS, this was recently acknowledged by the Assistant Commissioner Steve Yorke following his visit to our corporate office in Port Macquarie.

Engagement with other network operators through the Industry Safety Steering Committee and as a member of the Electricity Networks Association (ENA) Asset management Committee. Essential Energy chairs the Poles and Cross-arms Committee under the auspices of the ENA Asset Management Committee.

Have any problems being identified where the Minister / IPART / EUSFAC can provide assistance to your utility?

Essential Energy is appreciative of the Minister and IPART's role, particularly in terms of its stewardship of the Industry Safety Steering Committee (ISSC), co-ordination of stakeholder input to adhoc matters and in consideration of potential changes to relevant NSW Acts and Regulations. In consideration of this positive level of engagement we note the following matters where we believe departmental involvement may help achieve positive outcomes:

- The Office of Emergency Management (part of the NSW Department of Justice) in regards to the NSW State Disaster Plan (Displan) should consider continuing with the operation of the Energy and Utilities Services Functional Area Coordinator role. This role has been valuable for regional NSW communities in assisting disaster relief operations in particular bushfire related events. This role was the conduit to numerous utilities control centres, the function would also facilitate important discussions amongst utilities post events as a means of incorporating lessons learnt aimed at continuous improvement.

Please contact me if you require further information regarding any matter raised in this report.

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