



Network: Bush Fire Risk Management Plan

CEOP8022

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1.0 OVERVIEW

Essential Energy operates Australia's largest electricity network spanning 95 per cent of New South Wales and parts of Southern Queensland.

Essential Energy has a significant investment in its electricity network and non-system assets which are operated in a cost efficient and effective manner to ensure value is maximised for customers and stakeholders. This involves prudent risk management planning and ensuring that Essential Energy's network services remain safe, reliable, and sustainable. This plan details Essential Energy's strategies to manage the potential risks associated with the company's assets causing fire ignition.

South-eastern Australia contains large areas of bushfire prone lands. Essential Energy operates a predominantly rural network generally considered to be bushfire prone environments with different degrees of risk to the public from low to high.

The combination of oil-bearing eucalyptus trees, dry grass, low humidity, and hot, gusty winds result in periods of high fire risk. Fires can cause enormous property, livestock and wildlife losses and pose a real threat to human life.

All overhead energy networks are a potential source of ignition and pose the risk of causing widespread and significant damage should a network fault occur during periods of high risk.

1.1 Consultation

Essential Energy's Bushfire Risk Management Plan (BRMP) is developed in consultation with, and encourages feedback from, relevant key stakeholders. These include (but are not limited to) Local Councils, residents, and local community groups. Consultation efforts include:

- > direct liaison with Local Councils and Regional Advisory Groups (community representatives) and other identified community groups
- > written notice to relevant Essential Energy customers
- > publication in a local newspaper coupled with exhibition placement at the relevant Local Council/s.

1.2 Feedback and Review

Essential Energy will review this Plan regularly to promote opportunities for continual improvement and facilitate community and stakeholder consultation. Feedback can be provided at any time and will be considered during the next scheduled Policy review.

Written submissions should be addressed to:

Manager Network Risk Strategy
PO Box 5730, Port Macquarie NSW 2444
Telephone: 132391

2.0 OBJECTIVES OF THE PLAN

The Plan aims to:

- > assist relevant managers and field personnel understand the activities associated with reducing fire ignition potential within the Essential Energy network area
- > establish a framework of strategies to reduce the likelihood of fire ignition as it relates to Essential Energy assets and manage the risks associated with operating powerlines near vegetation
- > comply with regulatory requirements and expectations.

Key aspects of the plan include the management of:

- > vegetation clearances relating to powerlines
- > asset inspection regimes (including annual Pre-Summer Bushfire Inspections)
- > private powerlines
- > asset maintenance including defect priority and rectification
- > refurbishment of ageing infrastructure.

Essential Energy is committed to, and responsible for, implementing systems to measure, monitor, manage, bushfire risk including provision of appropriate resources to support relevant strategies and activities.

2.1 Legislation

This plan is provided to meet the objectives and requirements of the NSW Electricity Supply (Safety and Network) Regulation 2014 in accordance with AS5577. This includes consideration of industry codes, guidelines, and practices as well as published standards.

The primary objective of this plan is to meet the requirements of clauses 5, 6, 7 and 8 of the regulation. This includes ensuring the network is safe in its design, construction, and operation and to support:

- (a) safety of members of the public
- (b) the safety of persons working on networks
- (c) the protection of property
- (d) the management of safety risks arising from the protection of the environment (for example, preventing bush fires that may be ignited by network assets)

The plan components which address these legislative requirements are indicated in Table 1.

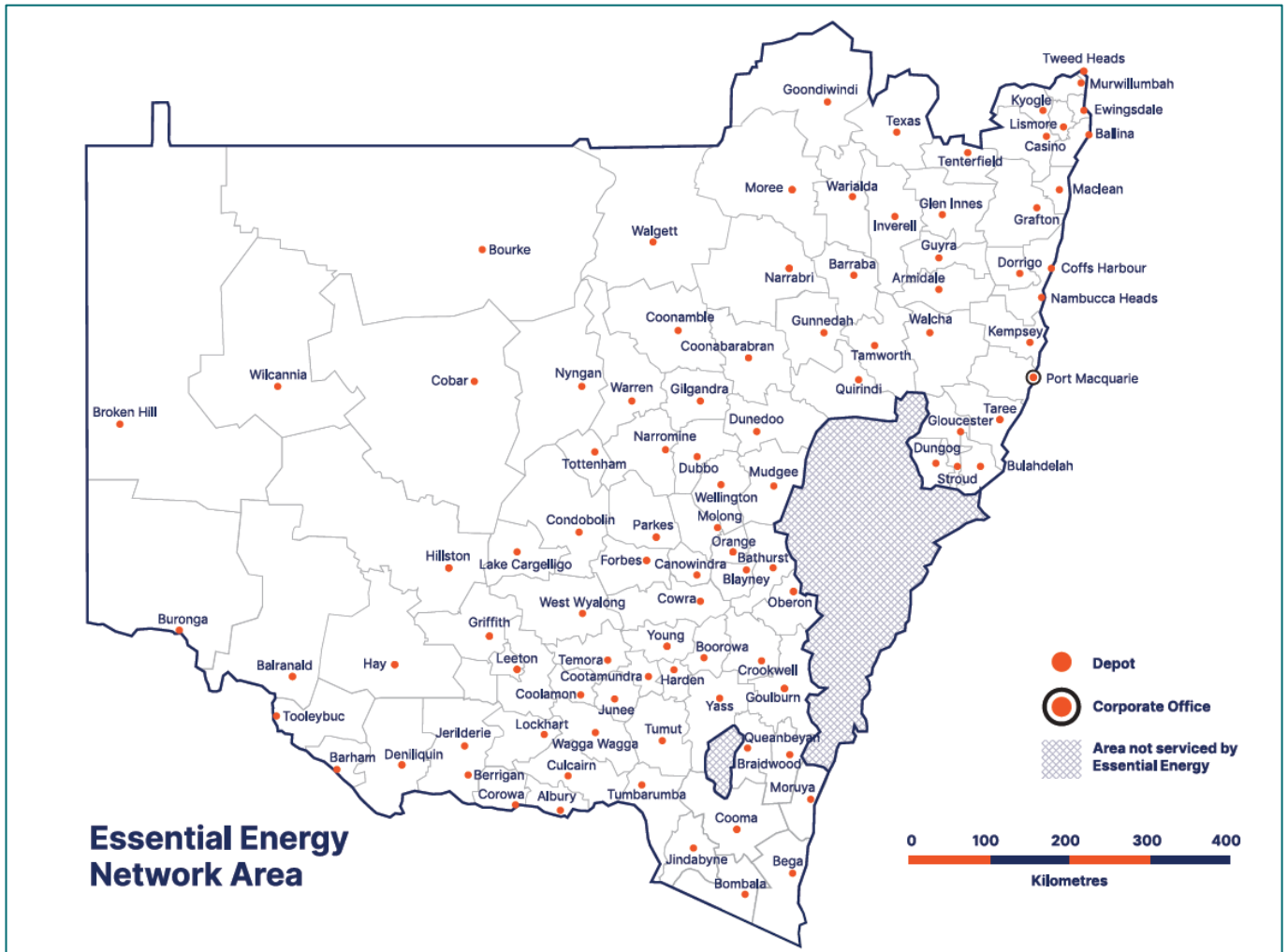
Table 1 – Plan requirements to meet legislative objectives

Regulatory provisional items	The Plan CEOP8022
The legislative requirements	Section 2
provisions that identify bush fire prone areas and that set out a process for identifying network assets capable of initiating bush fires and a system for ensuring that all such information is kept up-to-date	Section 4.1
provisions that ensure that network assets located in bush fire prone areas and capable of initiating bush fires are inspected, tested and maintained in accordance with the maintenance schedule set out in analysis of hazardous events in the plan	Sections 4.1; 4.2; 4.3; 4.4; 4.5; 4.6 Sections 5.1; 5.2; 5.3; 5.4; 5.5;
provision for the review of equipment types or construction methods known in their operation or design to have bush fire ignition potential and a mitigation strategy in relation to their use	Section 4.7; 4.8; 4.9; 4.11 Section 5.3; 5.4; 5.5 Section 8
information relating to rights and duties of the customers with private lines and the dangers of trees coming into contact with those lines	Section 4.5; 4.12; 4.15 Section 9
provisions that ensure that any private overhead electricity lines located in bush fire prone areas and capable of initiating a bush fire are inspected, tested, and maintained in accordance with the maintenance schedule set out in the analysis of hazardous events in the plan, and that standards are enforced by the network operator	Section 4.5 Section 9
provision for a complaints recording system in relation to bush fire risk management and provisions that ensure that appropriate investigations and remedial actions are undertaken as required	Section 4.14; 4.15
provision for liaison and consultation with the NSW Rural Fire Service, New South Wales Fire Brigades, councils for relevant local government areas and any other relevant government departments	Section 4.13 Section 7.3 Section 11
information for the general public about the fire hazards associated with overhead power lines and vegetation, particularly during storms and conditions of high fire hazard	Section 4.12 Section 9
a description of any special procedures or precautions proposed to be taken during conditions of very high fire danger, including work practices by staff, fault location procedures, automatic and manual reclosing of lines and protection settings	Section 6 & 7
a description of the reports to be made to the Director-General in relation to the control of the risk of bush fire resulting from the network operator's transmission or distribution system ("the schedule of reports")	Section 10.1 & 10.2
A network operator must measure its performance against its safety management system.	The report pertaining to bushfire performance is; Electricity Network Performance Report (ENPR) Audit of the ENSMS and BRMP apply.

3.0 SCOPE

This plan covers Essential Energy’s network assets and operations within the areas identified on the map below. This includes over 200,000 kilometres of powerlines and 1.4 million power poles that span diverse terrain and climatic conditions from subtropics to Alpine areas and plains.

Essential Energy Network Areas



Essential Energy networks include a small number of line assets in the Queensland franchise area.



4.0 PREVENTATIVE STRATEGIES

Essential Energy has developed and implemented various strategies to prevent or minimise the occurrence of fire ignition from its energy network assets. The following topics relate specifically to bushfire mitigation policy; many others exist which may have an indirect relationship.

Strategies related to bushfire mitigation include are detailed in the below sections.

4.1 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 by modelling of the network using the IGNIS project Fire Modelling method which includes fire simulations conducted by the University of Melbourne FLARE Team. This determines the areas considered the highest fire risk priority and therefore subject to additional mitigation activities such as Pre-summer Aerial Inspections and clearing vegetation ‘clear to sky’ (CTS).

Fire risk classifications (P1, P2, P3, P4) are used to determine fire mitigation work priorities, pre-summer inspection requirements, investment program priorities, vegetation clearing standards, 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.

A fire modelling refresh project was undertaken by Essential Energy in 2023 to update previous modelling undertaken in 2013-14. This resulted in a shift in some of the P1 (highest risk) zones up into the mid-north coast. Pre-summer Inspections have now been conducted in the new zones as we transition mitigation activities. This includes adoption of CTS for vegetation across the new P1 maintenance areas proposed over an eight-year period.

The below map (left) indicates the original fire zones, while the map (right) indicates the revised fire risk zones. It is important to note, the Vegetation Operations are undergoing a transition phase to the new fire risk zones outlined Table 1 below, whereas our Asset and Maintenance Operations activities have already been transitioned.

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”.

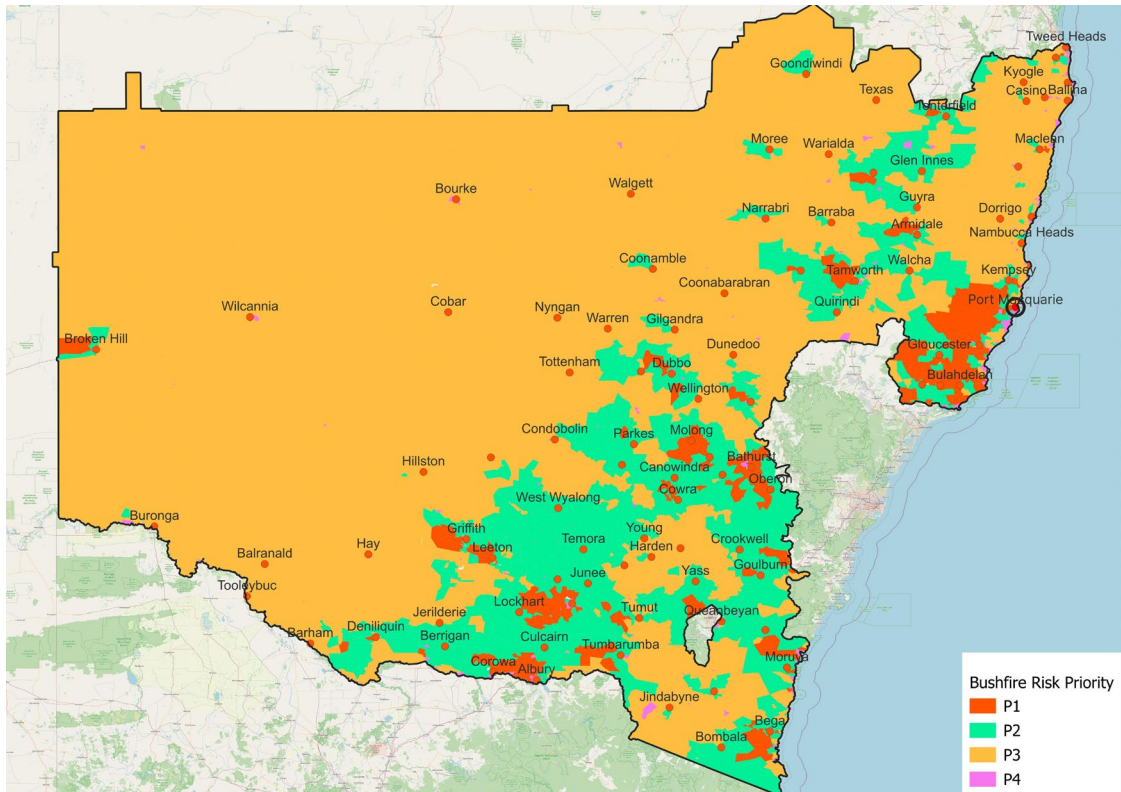


Figure 1: Bushfire Priority Zone 2023-24

	CURRENT REGULATORY PERIOD					NEXT REGULATORY PERIOD				
Fiscal year	FY25	FY26	FY27	FY28	FY29	FY30	FY31	FY32	FY33	FY34
Transition	Yr 0	Yr 1	Yr 2	Yr 3	Yr 4	Yr 5	Yr 6	Yr 7	Yr 8	Program completed
Completion	2%	5%	10%	15%	15%	15%	15%	15%	8%	

Table 1: Proposed Vegetation Transition

4.2 Asset condition monitoring (inspections) - strategy

Condition monitoring of existing network assets consists of both routine and risk based inspection programs. Inspections are based on cyclic assessments as well as other assessments where there is identified need for additional monitoring. The current inspection regimes include:

- a) Pre-summer aerial inspections of high risk network locations², as defined by network modelling. It identifies fire risk potential associated with vegetation clearances and asset maintenance. Refer to section 6.1 for program description.
- b) Routine ground-based pole and line inspections, including aerial (drone) imagery.
- c) Ad hoc aerial survey services including; Lidar and line surveys post storms or faults.
- d) Routine radial transmission and sub-transmission live line inspections.
- e) Other specified asset inspections including but not limited to substation earthing systems, pit & pillar, zone substation inspections, reclosers & other protection equipment, feeder studies, etc.

² High risk locations are summarised in section 5.1 and defined in detail in policy CEOP 8067.

4.3 Special operational conditions

Essential Energy has developed operating procedures that relate to reducing fire risk or to reducing public and employee risk associated with fires. This includes patrol of feeders prior to manual reclosing on days of high fire danger and field procedures for works performed on days of Total Fire Ban.

Essential Energy's policy for non-emergency work is to observe recommended work activity limitations during days of high fire danger or abnormal conditions and undertake work site hazard assessments that consider risk factors such as fire start, prior to works commencing.

Employees are provided equipment and training for firefighting as a precaution in the event that work procedures result in ignition of a fire or they come into contact with fires during the course of their duties. Essential Energy may postpone or cancel work activities with a high fire ignition risk and planned supply interruptions where possible, in areas of predicted extreme fire weather.

This ensures that employees are available for rapid deployment for fault and emergency works and customers have electricity supply available during these periods.

Please refer to CECM1000.13 HSE Manual: Bushfire Prevention and Survival for additional information.

4.4 Vegetation management

Vegetation control is managed in accordance with CEOP8008 Vegetation Management Plan and includes assessing and controlling risks associated with vegetation in close proximity to assets. The vegetation clearing work program considers requirements of ISSC3 – *Guide for the management of vegetation in the vicinity of electricity assets (2016)*.

Essential Energy's network is monitored and assessed by qualified vegetation personnel who are responsible for undertaking risk assessments and scoping work for action by field crews. Work requirements for private properties and sensitive areas are subject to negotiation and consent in relation to powers under the Electricity Supply Act 1995 (the Act).

While Essential Energy endeavours to work cooperatively with property owners, the Electricity Supply Act 1995 and associated Electricity Supply (Safety and Network Management) Regulation 2014 require Essential Energy to manage the public safety risk in regard to trees near powerlines.

The Act provides for powers to enter properties to maintain clearances and in certain circumstances, costs for such works may be imposed on property owners under a Section 48 notice.

Essential Energy's vegetation works program incorporates frequent inspection and maintenance cycles for urban and rural areas. High fire danger areas are also subject to annual review via pre-summer aerial inspection which identifies vegetation clearance risks.

Essential Energy negotiates the full removal where possible, of potentially hazardous trees or trees requiring frequent maintenance attention. Alternatives - such as line relocation or conversion to aerial bundled conductor (ABC), covered conductor (CCT) or underground - are considered for heavily treed sections of line where clearing is problematic.

In 2024 an eight-year vegetation transition plan was endorsed by the bushfire priority zone transition (BPT) steering Committee, to transition the newly upgraded P1 Areas to P1 (clear to sky) compliance. As a result, whilst in this transition, there will be Clear to Sky (CTS) vegetation tasks identified by the annual PSBI activities that will not be rectified prior to the fire season of that year. The CTS will be prioritised based on scheduled targets and value, whilst leveraging the operational and resource efficiencies.



4.5 Private lines risk management

Essential Energy's management of private lines is set out in policy CEOP2339 Private Lines: Management Plan.

4.5.1 High Voltage Customers

High voltage customers (HVCs) as defined in the NSW Service and Installation Rules, are required to have in place and maintain an Installation Safety Management Plan (ISMP) that considers safety risks associated with the operation of a high voltage network. Essential Energy will consider a compliant ISMP to be one that has been reviewed by a suitably qualified independent auditor and found to comply with the requirements for an ISMP as required by regulation, standards, rules and guidelines.

Over the life of an HV connection agreement, it would be reasonable to expect the understanding of the risks associated with the operation of HV networks to change. Where changes to the relevant regulation, standards, rules and guidelines occur, the HVC is expected to update the ISMP to reflect any new requirements. Periodically, Essential Energy may request evidence that a customer's ISMP is up to date, and that the ISMP is appropriately implemented at the customers' site. Essential Energy considers evidence to be a statement from a suitably qualified auditor that the ISMP is up to date and appropriately implemented at the site that the ISMP refers to.

Essential Energy will consider a suitably qualified auditor to be an auditor that meets the criteria and experience requirements detailed in Attachment G, Table 2.. Attachment G describes the audit criteria for proponents to a HV connection agreement and existing HVCs and provides a letter template for an auditor.

Please consult CEOP8022.02, Branch Procedure: High Voltage Customer Bushfire Preparedness for a complete overview of the expectations of High Voltage Customers connecting to Essential Energy's network.

4.5.2 Low Voltage Customers

In the interest of public safety, Essential Energy will, using its' best endeavours, notify owners of private property with unsafe installations. Repairs or isolation is expected to be carried within specified timeframes otherwise Essential Energy may do the repairs at the owners' cost. This is a mandated requirement under Division 2A - Special powers for bush fire prevention: Section 53 of the Electricity Supply Act 1995.

Essential Energy currently encourages property owners to replace existing private overhead powerlines with underground installations as they reach the end of their useful life and substantial re-investment is required. This is achieved through consultation with property owners at the time of replacement. Incentives are provided including disconnection and removal of the existing overhead private assets at no cost to the owner.

Vegetation near private overhead powerlines is currently managed by Essential Energy's vegetation contractors but costs may be passed on to owners particularly where inappropriate plantings under powerlines have been deliberately placed and allowed to grow into the safe clearance space.

4.6 Asset maintenance and refurbishment

Essential Energy implements maintenance programs based on industry standards and emerging new methodologies. Targeted refurbishment programs have been developed and are continuously reviewed for effectiveness. These programs drive replacement through ongoing monitoring and assessment prior to asset failure.

Please refer to CEOP8010 Branch Procedure: Electricity Network – Asset Inspection and Routine Maintenance for additional information on asset maintenance and CEOM7094 Divisional Manual: Renewal and Refurbishment Guidelines for additional information.



4.7 Network planning

Network planners are required to monitor network performance and configuration to ensure it meets expectations and service demands. Poor performing feeders are highlighted for attention and corrective work programs. Fire risk is a consideration as outlined in the Capital Works Planning Guidelines and Planning database.

4.8 Industry research & technology

Essential Energy uses industry research in relation to fire ignitions, including reviewing commercially available alternative materials, network standards, and technologies that enhance either condition monitoring or network function.

Research includes participation in industry research, trials and engineering conferences. Review of major fire events associated with electrical network assets is undertaken to determine what lessons can be learned. These include events such as the Victorian Ash Wednesday and Black Saturday Bush Fires.

Essential Energy is continuously evaluating new technologies, and business applications, in order to better manage the risks associated with owning and operating network assets.

Examples include:

- The University of Melbourne has assisted Essential Energy to update its valuation of spatial consequence mapping for network-initiated fires. The output of this work identified a substantial shift in the location of areas of highest community safety impact, broadly from the South-East region around the ACT to the Mid North Coast.
- Essential Energy are currently undergoing an Early Fault Detection (EFD) pilot on our overhead distribution network. The pilot will cover a total of approximately 300 kms of polyphase and single wire earth return (SWER) overhead high voltage (HV) power lines. EFD detects and triangulates partial discharge (PD) that increases due to deterioration of overhead network components. Particular conditions emit a specific PD signature, this is used to alert field operations to the presence of and location of a particular condition for investigation prior to failure. Other network operators have reported that EFD has been successful in identifying overhead network conditions that could lead to a failure and subsequent fire. The detection of equipment deterioration and subsequent repair prior to failure of a network component will reduce bushfire and public safety risk.
- Essential Energy continues to utilise composite poles across its footprint, with the current uptake being 60% of the total annual pole usage.

4.9 Design and construction standards

Design and construction standards assist with fire risk management by ensuring network construction quality. This builds resilience of the network to unplanned breakdown and therefore fire start risk. This is incorporated into the network design, procurement, construction, and commissioning phases.

Essential Energy's Overhead Design Manual CEOM7097 requires all new service connections in rural areas to be underground or insulated unless exempted, so as not to increase the bushfire risk. This manual also places conditions on conductor and construction type for designated fire risk areas.

Construction standard examples associated with our network includes (but is not limited to):

Specification of material types and asset components; Specification of construction types e.g. pole top construction assemblies which provide adequate phase clearances; construction practices which promote insulated or underground components, LV spreader installation, and asset protection zones.



4.10 Bushfire Risk Management Committees

In addition to the senior organisational management structure, Essential Energy has adopted a two tier bushfire mitigation committee structure to regularly review bushfire mitigation matters. [CEOP0002.46](#), details Essential Energy's Company Committees.

This includes a Bushfire Risk Assurance Panel (BRAP) consisting of Senior Management representatives from various divisions, which report directly to the Executive Management team. Essential Energy has also established a Bushfire Risk Working Group (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 Head of Asset Management Risk and Compliance, or delegate and includes the chairperson of the Bushfire Risk Working Group as one of its members as a line of communication between the two groups. This panel provides oversight and assurance of bushfire prevention activities for the organisation.

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.

4.11 Fire start reporting and analysis

Fire start investigation, reporting and analysis is used as an opportunity to review performance and improve risk mitigation strategies. Analysis includes consideration of events within the operational footprint as well as the industry. Essential Energy works collaboratively with other distributors to share information and experience regarding fire risk where the opportunity exists.

Reporting

Internal business reporting is used to (i) inform the business of performance in relation to fire starts from the network, (ii) to understand the level of risk exposure and set maintenance priorities. Reports are provided weekly, monthly, and annually for those responsible for risk management and work delivery.

External reporting is provided to governing state bodies such as IPART, including network performance associated with fire risk and safety plans.

Bushfire Mitigation Index (BMI)

Essential Energy has developed a bushfire mitigation index report for the purposes of monitoring risk levels leading up to and during the fire danger period. The BMI is described in detail in CEOP 2087 and monitored by the Bushfire Risk Assurance Panel and Bushfire Risk Working Group. The purpose of the index is to compare the state of fire season readiness from one period to the next. The KPI's making up the index are considered the activities which have greatest impact on the level of fire risk exposure. These include inspections; asset maintenance, vegetation clearances; and functions associated with the pre-summer patrol.

4.12 State emergency and fire agency relations

Fire management and response agencies are considered key stakeholders in supporting Essential Energy in managing fire risk. Essential Energy participates in preparing and planning for fire seasons and operational event management through the NSW bushfire management structures and Local Government emergency management structures.

Essential Energy has a formal relationship with the State Emergency Management Centre (SEMC) via a sub-group representing utility businesses. This is coordinated by the Energy & Utilities Functional Area Coordinator (EUSFAC). An Energy & Utility Services Plan (EUSPlan) deals with major incident management and coordination by the sub-group in consultation with distributors or their representatives.

Agency relationships enhance fire mitigation strategies in two ways: by contributing to the planning and preparation of coming fire seasons, and when fire events do occur, ensuring the relevant agencies work effectively together to bring events under control and minimise any impact.

4.13 Compliance requirements

Essential Energy's fire mitigation strategy takes into consideration the requirements associated with relevant Acts, Regulations, and industry Codes of Practice. Essential Energy pays attention to industry regulations that relate specifically to fire risk mitigation.

Central to this is the development and preparation of plans such as the *Bushfire Risk Management Plan (NSW)* in accordance with the Electricity Network Safety Management System plan. These plans are subject to external audit by regulatory bodies.

4.14 Customer enquiries

For general enquiries customers can contact our 24/7 call centre on 132391. Customers may report assets which appear to be a potential fire hazard at any time.

Essential Energy has a commitment for concerns raised by the customers or the general public to affect timely and efficient resolutions.

Our Complaints and Dispute resolution procedure is consistent with Australian Standard AS IOS 10002-2006 (Customer satisfaction – Guidelines for complaints handling in organisations).

A copy of the Essential Energy Complaints and Dispute resolution procedure is available at <https://www.essentialenergy.com.au/about-us/customer-and-regulatory-information/complaints-and-dispute-resolution-procedure>

CEOH4502.11 How to Manage Complaints, documents the methods of receiving a complaint and logging it in the Contact Management database.

5.0 PREVENTATIVE PROGRAMS OR WORK

The following is a list of work programs that assist with preventing fires as related to each of the preventative strategies mentioned in section 5.

5.1 Asset condition monitoring (inspections) – work programs

Essential Energy has implemented the following inspection programs:

- > **Annual pre-summer bushfire inspections (PSBI) of rural network components deemed a high fire risk based on risk modelling preceding the fire danger declaration periods.** This provides identification of maintenance tasks with a prioritised target completion date of 1st October³. Ground line assessment of 'No fly zones' is included. This program is specifically a pre-summer condition assessment of assets in high risk locations to identify any risks that may not have been identified by other routine asset or vegetation inspection programs. This is performed annually in preparation for the fire danger period, using aircraft to provide advantages such as:
 - Review of large sections of network in relatively short timeframes in the most cost effective manner.
 - The ability to observe asset condition from a top down (aerial) perspective which is particularly helpful in identifying the cross-arm deterioration and pole top component condition, which is a different point of reference to routine ground based inspections.
 - The detection of storm damage to assets, or vegetation clearance issues that may have occurred in between routine inspections.

CEOP2398, Company Procedure: Pre-Summer Bushfire Inspection, provides an up-to-date view of the programme and its purpose.

- > Routine ground based pole and line asset inspections - carried out in accordance with policy's CEOP2446, CEOP7005 and industry standards.
- > Routine aerial services including High Definition image pole-top analysis, Lidar engineering survey and Lidar vegetation survey
- > Routine radial sub-transmission line inspections, outlined in CEOP2475 Division Procedure: Radial, Urban & Critical Sub-transmission Inspection and Maintenance
- > Inspections of specified assets and equipment such as substations, switching cubicles, low voltage pits and pillars, earthing systems, are conducted in conjunction with other routine inspections. See CEOP8069 and CEOP8010
- > Six monthly condition monitoring of targeted critical distribution equipment
- > Routine thermo-vision program for specified assets to identify hot connections. This typically applies to urban areas and other critical or heavily loaded network segments.

5.2 Vegetation management works programs

Essential Energy has developed work programs to maintain the required clearance space from vegetation.

In determining the locations where work will be required to maintain the clearances specified, Essential Energy uses inspections programs such as:

³ Conditions outside of Essential Energy's control may impact the completion date e.g. unseasonal wet conditions which prevent site access.

- > Ground line vegetation clearance inspections i.e. pre-listing by designated roles. These inspections take place cyclically in accordance with service provider specifications. Refer to CEOP8008 and CEOP2021.
- > Annual aerial inspections of high risk bushfire prone areas e.g. PSBI program
- > Review of data sourced from Aerial Patrol and Analysis (LiDAR) surveys
- > Associated audits by Essential Energy employees.

A detailed inspection of spans is conducted to determine the clearance requirements, the method of maintaining the required clearance space between vegetation and power lines, and customer consultation.

In assessing the most appropriate method, consideration is given to site conditions.

Information gathered by inspections forms the basis of the vegetation work packaging system and allows:

- > appropriate planning and scheduling
- > identification and quantification of equipment and accredited personnel required
- > funding allocation
- > community and customer consultation
- > distribution of work packs to field crews for actions specified (trimming, mulching, spraying, removal, etc.)
- > risk assessment and prioritisation.

As well as managing the clearance space, Essential Energy also gives consideration to identifying 'hazard trees' as outlined in the vegetation plan. These may be outside the clearance space but still have potential to fall and impact assets. Where hazard trees have been identified, they will be subject to the same treatment as trees infringing clearances - that is generally trimmed or removed.

5.3 Other engineering solutions and new technologies

A risk management approach to the development of network standards has seen various changes to them to reduce the risk of bushfires. Examples of these changes include the use of underground cable, covered conductor (CCT) for overhead high voltage and promoting underground, insulated low voltage lines in rural areas and low voltage spreaders on bare overhead lines to prevent conductors clashing, composite poles/crossarms and standalone power supplies.

Also, a move to high voltage 'delta' pole-top construction, which provides greater vertical and horizontal clearances between conductors, reduces the likelihood of clashing conductors from external sources such as wind, birds, or vehicle collision.

Essential Energy's construction standards consider improving insulation levels and clearances by specifying materials, assemblies, and components.

5.4 Asset replacement/refurbishment programs

Essential Energy has implemented several asset refurbishment programs aimed at replacing assets before they reach failure or 'end of life'. This includes, but is not limited to:

- > air break switch (ABS) replacement program – replaced with fully enclosed gas switches. This improves insulation levels and reduces the likelihood of ignitions resulting from fauna contact.
- > distribution substation & fuse site refurbishment program – this is an assessment and prioritised refurbishment of targeted substation sites to enhance safety, reliability, and construction standards. Work includes replacing porcelain expulsion drop out fuses with polymer types complete with sparkless fuse elements, replacing bare conductor bridging with insulated cable

- (CCT), insulating HV bushing with shrouds, ensuring high voltage dropper cables are supported, and replacement of lightning arrestors with new polymer types
- > line refurbishment – which includes renewing poles and conductors where required as well as associated pole top components such as tie wires, insulators, and cross-arms
 - > an extensive condemned pole replacement and staking program
 - > identifying ‘at risk’ low voltage lines on private rural properties and replacing with underground or insulated systems. This includes offering financial incentives to owners who choose to replace overhead private lines with underground.

Additional information can be found in CEOM7094 – Division Manual: Renewal and Refurbishment Guidelines.

5.5 Remedial maintenance

Remedial maintenance work is determined predominantly through Essential Energy’s inspection processes. This maintenance work is the rectification of the tasks identified, reported, and captured in our asset management system. Defects are reported by:

- > Annual pre-summer aerial inspections
- > Ground line asset inspection regimes
- > Vegetation scoping
- > Routine aerial surveys (HD Imagery and Lidar)
- > Essential Energy personnel/contractors utilising a Electronic Maintenance Work Log eform
- > The general public

Tasks identified are allocated risk severities based on industry experience to determine failure probability. The risk severity classifications are found in CEOP8010 for assets and CEOP2140 for vegetation:

Asset Tasks:

Tasks are recorded in the Asset Management System and monitored through export of data in routine and adhoc management reports.

6.0 PREPARATIONS FOR THE BUSHFIRE DANGER PERIOD FOR RURAL FIRE DISTRICTS

6.1 Pre-Summer Bushfire Inspection (PSBI) - Pre-summer Aerial Inspection

Annual pre-summer aerial inspections are conducted of high fire risk locations preceding the FDP (Bushfire Danger Period For Rural Fire Districts). The inspections will take approximately 2 months to complete typically commencing in February. This allows a reasonable period of 5 months⁴ to package, issue, and complete work identified by pre-summer inspections. This timeframe takes into consideration that the FDP periods may vary in different districts across NSW and bringing the declaration forward in some districts can be accommodated by modifying inspection and work schedules. Essential Energy monitors potential changes to declaration periods through RFS for advice at the earliest opportunity.

6.2 Issuing and Prioritisation of Pre-summer Works

Network maps are issued to pre-summer inspection contractors each year which highlight the network assets (and private lines) to be patrolled. The process for management of PSBI work i.e. issuing network data to aerial contractor, receiving data, and loading data to AMS/GIS systems is contained in;

- CEOM7005.02 Inspection and Assessment of OH Structures and
- CEOP2398 Aerial Patrol Work Tasks and GIS Data Guideline

Timeframes may need to be amended or accelerated to accommodate variation in declaration periods. Instruction will be provided if required, to ensure resources can meet the expected demands for completion of works prior to the FDP.

6.3 Completion of Pre-summer Works

Well established processes are in place and managed by Essential Energy for completion and close-out of PSBI work in the asset management system.

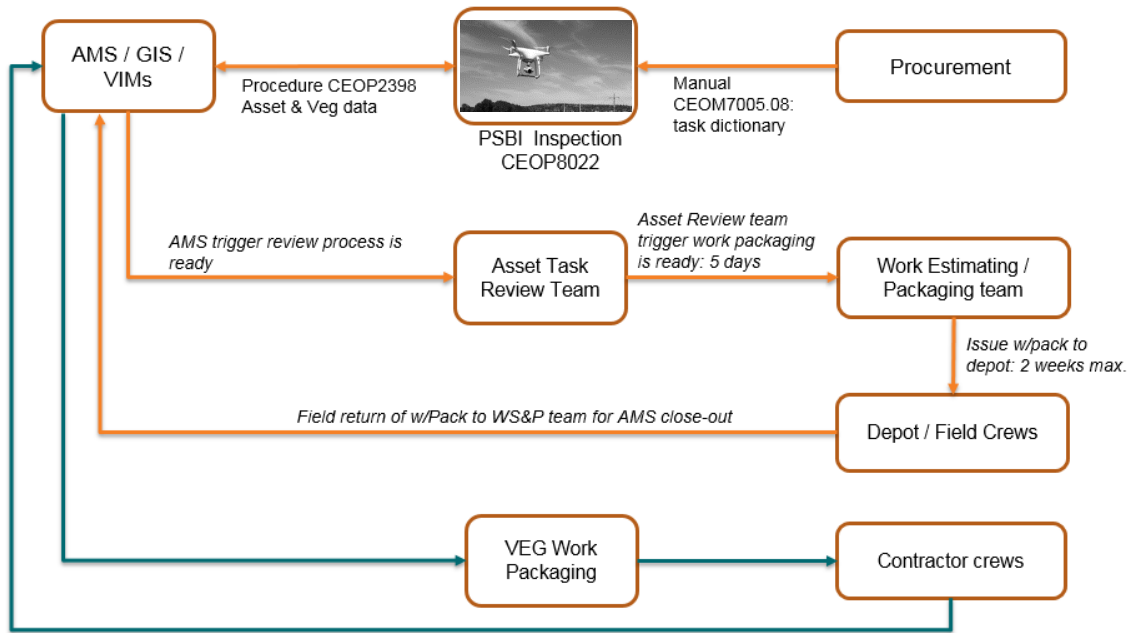
For example - the Asset Review Team are responsible for assurance that all reported high priority asset conditions are actioned as soon as practicable. This includes following up on sightings reported to the Call Centre, and liaising with depot staff to ensure they have sufficient information and confirm the task has been actioned.

Please refer to CEOP2398 Company Procedure: Pre-Summer Bushfire Inspection for additional information.

6.3.1 Work pack completion process

Refer to CEOP2398.

⁴ Subject to weather and access



6.4 Monitoring and reporting of PSBI work

PBSI work progress and status is monitored through reporting to the BRAP / BRWG / ENIMC / meetings on a regular basis. Close attention and focus is given to the forecast target dates for completion and these groups oversee, if necessary, further risk assessment. This process may result in reprioritisation and reallocation of resources.

A post PSBI review may be required where deemed necessary by the BRWG to identify opportunities to optimise scheduling of component phases of the PSBI program to assure successful delivery of the scope of works. The findings and recommendations of the review will be reported to the BRWG upon completion.

6.5 Managing Residual Fire Risk

To ensure readiness for the fire season Essential Energy is committed to;

- Actioning asset related tasks identified by PSBI inspections before the FDP. The FDP starts nominally on 1 October, but there are permanent and temporary variations to this. Permanent variations are listed in Attachment E.
- Ensuring asset related tasks in Priority 1 (P1) zones reported in the AMS system, from other inspection processes, are actioned within allocated timeframes, before or during the FDP. This includes Cat 1-3 classified tasks.
- Actioning vegetation tasks identified by pre-summer inspections before the fire declaration period.
- Ensuring vegetation span clearances in P1 zones reported in the AMS/Xugo system from other inspection processes, are rectified within allocated timeframes before or during the FDP. This includes A1-A4 classified tasks.

It is acknowledged that cases may arise where some portion of works identified above cannot be completed within expected timeframes due to circumstances beyond Essential Energy's reasonable control. For example, past flooding events in parts of NSW prevented access to many inland assets in the months leading up to the FDP.

In such cases, Essential Energy engages a risk management process which includes (i) close monitoring of overdue works in high risk locations (ii) re-setting priorities and (iii) resource planning which allows for reprioritisation and mobilisation to affected areas as soon as possible. This is undertaken through regular meetings of the senior leadership group through representations on the BRAP, AP&A group, and ENIMC. The risk position is highlighted through these groups to the Executive Leadership Team and Board.

7.0 OPERATIONAL REQUIREMENTS FOR TOTAL FIRE BAN WEATHER AND FIRE EMERGENCIES

7.1 Special procedures and precautions

Essential Energy has developed the following work practices to ensure procedures and precautions are considered by employees and accredited service providers, to minimise the risk of bushfire ignition by network assets or work practices during conditions of extreme fire danger.

During periods of Total Fire Ban power supply restoration is carried out in fire prone areas after a line patrol has been undertaken in accordance with the System Operations: Manual Reclosing of Overhead Lines (CEOP2062).

Remotely Operable Distribution Feeder Reclosers

During periods of Total Fire Ban remotely operable distribution feeder reclosers (with capability) in designated areas will either have the Auto Recloser suppressed or have the device set to its Bushfire Protection Group Setting where available. When the device has been set to the Bushfire Protection Group Setting, this protocol ensures that the reclosers are configured to respond to faults as quickly as possible. The Bushfire Protection Group Setting Overcurrent and Earth Fault protection settings are designed to enable the fault to be cleared in the minimum time while maintaining discrimination between reclosers. Where there is not a Bushfire Protection Group Setting available, the suppression of Auto Reclose ensures that when a fault occurs the device will not attempt an automatic recloser during the period a Total Fire Ban has been declared. Exceptions may be made for feeders where a risk assessment shows that the reliability impact of suppressing line reclosing results in an adverse impact to community resilience that is greater than the risk reduction achieved, where this condition is identified a formal quantitative risk assessment will be undertaken.

Sensitive Earth Fault Settings

The inclusion of sensitive earth fault protection on rural feeders. This type of protection operates at very low levels of fault current (i.e. a tree branch leaning against a line but still in contact with the ground). This type of protection is not possible on either Isolated or un-isolated Single Wire Earth Return (SWER) systems.

Fault Response Considerations

Control Room and Field staff responding to faults during Total Fire Ban periods should be aware that power lines in a declared Total Fire Ban district may have the Bushfire Protection Group Setting Applied. This may result in devices that do not have the Bushfire Protection Group (e.g. fuses, other reclosers, etc) not operating on faulted segments even if the fault is downstream of that device. Reclosers may operate before the downstream protection device in these cases, so staff must inspect both the backbone and downstream protected line segments for faults. Under Bushfire Protection Group Setting operating conditions, do not assume the absence of a protection device operation means no fault exists in the downstream protected segment. Refer to *CEOP2062 Manual Reclose of Overhead Lines and CEOP8002.02 Distribution Protection Guideline* for details.

Note: it is acknowledged that the move to a defined bushfire setting group in all distribution feeder reclosers will occur over time. A transition period for application of changed protection settings applies.

Work practices

Field work practices covering the use of plant, tools, and equipment during periods of high fire danger and Total Fire Ban conditions is defined in procedure *CEOP1000.13 Bushfire prevention and survival*.

Extreme heatwave weather may cause the cancellation of planned work programs to ensure the health and safety of employees and the public. Resourcing for emergency response is considered during extreme conditions.

Critical loads connected to Essential Energy's network are given priority during power restoration efforts. Examples include:



- > hospitals
 - > premises with life support systems, including aged-care and domestic
 - > water supply pumping stations and boosters
 - > sewerage pumping stations and boosters
 - > critical communication facilities.
- Listings and locations of such sites are kept in operational control rooms. This information changes frequently and Essential Energy relies on customers or agencies for such information.
- Essential Energy also maintains incident management manuals and policies for emergencies such as wildfire events. These include:
- > CEOP2137: Electricity Networks Escalation & Recovery Plan
 - > CEOP2143: System: Load Shed and System Restart Overarching.

Emergency Cutting

Emergency tree cutting works may be required on days of Total Fire Ban to ensure the safety and reliability of the network. Such activities can be undertaken provided:

- > staff performing the work have ready access to firefighting equipment to extinguish any potential ignitions and
- > all reasonable steps are taken to prevent the escape of fire, sparks, incandescent or burning material from the activity undertaken.

Communication and Liaison Actions

Essential Energy has a working relationship with relevant emergency agencies through participation in the Energy & Utility Services Plan (EUSPlan) and membership of the *District Bushfire Management Committees*.

During the lead up to the fire danger period and after the declaration, Essential Energy's bushfire preparedness is monitored to manage any associated risks.

Essential Energy also liaises with Queensland authorities regarding network assets in that state.

Total Fire Ban Day Notifications

Essential Energy uses various communication tools to ensure employees are aware of forecast adverse weather conditions and/or a declared day of Total Fire Ban. These include:

- > listening to regional ABC radio and local radio stations
- > accessing the following web sites:
 - for NSW: <https://www.rfs.nsw.gov.au/>
 - for Queensland: <https://www.fire.qld.gov.au/>
 - for Victoria: <https://www.cfa.vic.gov.au/>
- > 2-way radio broadcasts
- > observing signage erected at Depots
- > mobile phone SMS messages sent by the Operations centre
- > internal email notifications.

Essential Energy managers and supervisors can monitor existing fire events via Essential Energy's applications linked to RFS feeds.



7.2 Emergency asset maintenance and replacement

Emergency asset maintenance or replacement is undertaken after an on-site hazard identification and risk assessment and control (HIRAC) process has been carried out. Tasks identified as emergency or urgent in nature are rectified either immediately or within a very short timeframe reflecting the risk they pose.

7.3 Disconnection actions

Essential Energy does not normally disconnect electrical supply during times of bushfire unless it is considered necessary or it is directed to, by emergency agencies, for safety reasons.



8.0 FIRE START INVESTIGATION AND ANALYSIS

Essential Energy reviews equipment types and construction methods known in their operation or design to have bushfire ignition potential and has introduced mitigation strategies in relation to their use.

Essential Energy uses two systems for incident or failure analysis – the TotalSAFE incident reporting system and the Outage Management System. Data is collated regarding the type of network event that has occurred and causal information. Analysis of these systems is done periodically and reported through the Bushfire Mitigation Working Group to the Bushfire Assurance Panel.

The process for Essential Energy employees reporting specifically of fire events related to the network assets begins with a TotalSAFE log and includes an integrated electronic field report (Network Fire Report). (See section 14.6 and 14.7)

The purpose of this document is to report all fires attended by Essential Energy employees where Essential Energy assets have been damaged and/or are the alleged cause of ignition.

Once the incident report has been created and the responsible officer assigned for investigation, it is automatically sent via email to the assigned officer and when required, to the Risk Insurance and Business Continuity and Asset Engineering Risk and Compliance Management business units.

The type of information gathered includes:

- > incident details including background and locality information
- > investigation/comments
- > cause(s) of the incident and network related information.

And if required:

- > corrective action proposed
- > preventative action proposed.

A responsible officer/manager may be assigned to implement the proposed action after which, the incident report is signed off by the Approver.

Actions that are assigned but not implemented by the due date, are automatically escalated to the next level of management. They will continue to be escalated until the work is completed or until it reaches the Chief Executive Officer.

The TotalSAFE database allows reports, digital photographs, and other relevant information to be attached, with a unique number assigned to it and a link to the incident details.

Please refer to CEOP7068 Company Procedure – Asset Failure Investigation for additional information.

9.0 PUBLIC SAFETY AWARENESS

Essential Energy provides information to the public regarding bushfire mitigation efforts. This includes:

- > vegetation clearances and risks relating to trees in close proximity to lines and planting of unsuitable species
- > providing web-based copies of the Bushfire Mitigation & Vegetation Management Plans
- > bushfire safety messages
- > information relating to pre-summer Aerial Patrol activities
- > private lines responsibilities.

Essential Energy has developed a bushfire awareness campaign to inform the community of fire hazards associated with overhead power lines and vegetation. The aim of the campaign is to heighten public awareness of hazards prior to and during the high fire danger period.

The bush fire awareness campaign forms part of Essential Energy's Network Management Plan Chapter 3: Public Electrical Safety Awareness Plan (CEOP8005). The purpose of which is to raise the public awareness of the hazards associated with electricity networks and in particular, the fire ignition hazards associated with overhead power lines.

The Plan provides details of strategies used to raise public awareness of the numerous hazards that result from the interaction of people and electricity supply network assets - and to provide simple and effective ways to minimise possible risk exposure.

Essential Energy has also developed a Vegetation Management Plan which aims to develop increased customer awareness of safety in relation to the planting and control of vegetation near power lines.

Essential Energy's awareness program includes:

- > television/radio advertisements
- > social media
- > planting guidelines
- > posters relating to vegetation management
- > newspaper articles and press releases
- > liaison with landowners/occupiers, state government bodies, Bushfire Management Committees, and community-based organisations
- > unclassified information available on Essential Energy's Website
- > defective private lines, direct customer contact
- > direct customer contact.



10.0 PLAN PERFORMANCE

Bushfire Fire related Key Performance Indicators (KPI's) include measuring activities associated with bushfire mitigation strategies. These strategies include line inspection and maintenance, vegetation management, and inspections and Pre-Summer Bushfire Inspections (PSBI).

A range of reporting systems are available. Fire starts are reported in the TotalSAFE Incident database. The statistics from this database assist in informing the business about its bushfire mitigation plan effectiveness. The reporting includes monthly and annual fire reporting for the BRWG and BRAP.

The Bushfire Mitigation Index (BMI) provides the organisation with an indication of preparedness for the bushfire danger period. This is reported to the Bushfire Risk Working Group and to the Bushfire Risk Assurance Panel which is a panel of senior management representatives that provide oversight on the Risk of Bushfires to the organisation. The BMI reports on critical inspection (including PSBI), asset maintenance and vegetation maintenance activities in high fire risk zones.

Other corporate reporting systems are utilised by responsible Managers and provide reports on activities relating to bushfire mitigation and prevention activities such as maintenance, inspections, and incidents.

10.1 Plan review and audit

Essential Energy's Bush Fire Risk Management Plan is reviewed on a periodic cycle as set in the policy document library (currently set at 2 yearly intervals). A review may be triggered at any time as determined by business needs and obligations or due to feedback from audit processes.

The Plan is subject to internal audit by Essential Energy's internal audit department from time to time and audited externally by regulatory agencies (IPART).

10.2 Reporting

An *Annual Network Performance Report* is submitted to the office of IPART and includes information on bushfire starts maintenance, reliability, and safety aspects of the operation of Essential Energy's transmission and distribution systems.



11.0 LGA & FIRE AGENCIES RELATIONSHIPS

Essential Energy liaises with, consults, and provides access to network assets when requested by the Director-General, fire agencies or other relevant state or local government emergency agencies regarding bushfire related issues. Attachment B indicates the statutory relationships.

Where requested, Essential Energy will:

- > provide representation on NSW Bush Fire Management Committees. A full listing of the committee structure in NSW is attached - **Refer to** Attachment C
- > participate in local and regional emergency plans, their preparation and any operative exercises or testing of such plans as required
- > provide liaison officers for Fire Control Management, Incident Control Centres, or the State Emergency Operations Centre when directed
- > provide representation on Local or District Emergency Management Committees across the state.

Essential Energy takes into consideration fire weather warnings reported by Rural Fire Services which are based on the NSW RFS Fire Areas - **Refer to** Attachment D.

Essential Energy monitors fire weather and danger ratings via the Bureau of Meteorology (BoM) geographical gridded weather mapping services.

Rural Fire Services provide statistical fire event information to Essential Energy as requested. This information forms part of Essential Energy's analysis of fire occurrence where network assets may be involved.



12.0 MANAGEMENT STRUCTURES & TRAINING

Essential Energy has in place structured management teams with responsibilities for various components of the Plan.

These include responsibility allocations relating to fire mitigation as follows:

Head of Asset Engineering, Risk and Compliance

- > Network performance and risk management, maintenance & refurbishment management, fire mitigation plan development, preparation & submission, license & regulatory conditions, network planning for growth and replacement, asset management systems, and standards

Network Services

- > Vegetation management, asset inspection, works Management, contract supervision and management
- > Regional management – line maintenance (asset repair); fault & emergency response, stakeholder liaison, works coordination, line crew management. Design services, work scheduling, logistics supply

Risk Insurance and Business Continuity

- > Corporate risk strategy, insurance, investment funds, and budget allocations.

The Bushfire Mitigation Plan and related policies are the responsibility of the Head of Asset Engineering, Risk and Compliance, whilst the responsibility for operational implementation rests with the *Network Services* management team. **Refer to Attachment A.**

12.1 Field based resources

Depot Senior Resource / Resource / Crew Supervisors – are responsible for local field-based overhead and underground line construction and maintenance crews and ensuring asset defects are attended to.

Asset Operations Coordinators and Asset Inspectors – are responsible for ground line testing, assessing, treatment of poles, overhead visual inspections of pole tops and lines and reporting on the condition of Essential Energy's transmission and distribution network. Asset Inspectors are also responsible for minor on-site defect rectification and data capture of asset details.

Senior Program Supervisors, Senior Vegetation Officers and Vegetation officers– are responsible for issues regarding power line vegetation control within an assigned regional area. This includes overseeing and auditing vegetation control activities such as customer consent and negotiations, contract supervision, identification of hazardous trees, maintaining vegetation clearances, environmental management of vegetation near lines and auditing clearances.

Contracted resources are also employed for general **tree clearing** activities and for **annual aerial inspection**. Aerial inspection is conducted prior to the fire declaration period and aims to identify damage to the network or vegetation encroachments that may have occurred between routine ground inspections by Asset Inspectors. This also provides an audit of the quality of the contract clearing works in rural zones.

12.2 Training

Essential Energy employees receive training and advice relating to bushfire safety. This includes:



- emergency management
- use of firefighting equipment
- completion of accredited Bushfire Awareness course run by the NSW Rural Fire Service including refresher training on a three-year cycle. Modules include:
- pre-summer advice and reminders in regard to bushfire mitigation policy

12.2.1 Asset inspection training & competencies

Asset Inspectors are required to meet the requirements of CEOP2371 Training & Authorisation: Asset Inspectors, which includes compliance and competency audits and refresher training requirements.

12.2.2 Vegetation training & competencies

Specialised training requirements apply to all contracted vegetation management crew members engaged to work for Essential Energy in regard to vegetation clearing activities. These requirements are specified in CEOF7811 Skills and Training Matrix, and form part of the service contract.

Essential Energy Vegetation Officers are required to meet the qualification and experience standards outlined in the position description (CBPD 0050 2010) and preference is given to candidates with arborist qualifications.



13.0 POLICY REFERENCES

13.1 General

The Bushfire Risk Management Plan is supported by various corporate policies and standards which are located in Essential Energy's electronic Policy Library Database which is accessible to all employees and to accredited service providers or contractors.

Essential Energy is required to operate under company and industry codes and standards. The plan contains references to these policies, guidelines, codes and standards. The governing regulations include:

- > Electricity Supply (Safety and Network) Regulation 2014 – for NSW networks
- > Electrical Safety Regulation 2013 – for Queensland networks.

The following referenced documentation forms a key part of the framework to achieve the regulatory objectives in relation to the plan at both corporate and operational levels.

13.2 Safety & Risk Management – applicable company policy and procedures

13.2.1 CEOM8047 – Electricity Network Safety Management System Plan (ENSMS)

The objective of Essential Energy's *Electricity Network Safety Management System Plan* is to establish a framework that supports the provision of safe, reliable and sustainable electricity supplies including protection of people, property and the environment in accordance with the regulation and Clause 4.2 of AS 5577.

The ENSMS plan specifically refers to the Bushfire Risk Management Plan for management of bushfire risk.

13.2.2 Bushfire Formal Safety Assessment

The objective of the Bushfire Formal Safety Assessment (FSA) is to document the risk assessment undertaken by Essential Energy to identify electricity network hazards that could cause a bushfire. The Bushfire FSA describes the controls that are applied to manage bushfire risk and documents the evaluation the effectiveness of controls that are applied to manage network-initiated bushfire risk.

13.2.3 CEOP8004 – Customer Installation Safety Plan

The purpose of the Customer Installation Safety Plan is to ensure the provision of safe electrical installations for connection to Essential Energy's network.

13.2.4 CEOP8005 – Public Electrical Safety Awareness Plan

This plan has been prepared in accordance with the NSW Electricity Supply (Safety and Network Management) Regulation 2014 and details Essential Energy's strategies for promoting customer awareness of energy network safety.

13.2.5 CEOP8022 – Bushfire Risk Management Plan

The Bushfire Risk Management Plan aims to identify and mitigate potential bushfire risks – specifically those that relate to the provision of electricity supplies across Essential Energy's network area.

13.2.6 CEOP2111 – Risk: Corporate Risk Management Procedure

The Corporate Risk Management Procedure provides a structured approach to the identification, analysis, evaluation and treatment of risks associated with aspects of Essential Energy's distribution network in a



commercial environment. This provides a framework for strategic and operational risk, with bushfire ignition identified as Essential Energy's number one operational risk.

13.2.7 CEOP2137 - Electricity Networks Escalation and Recovery Plan

The purpose of this procedure is to:

- > illustrate the relationship between this procedure and other incident management documents, e.g. for crisis management
- > provide a framework for escalation of incidents by System Operations
- > articulate the roles and responsibilities of the various response work groups
- > articulate the roles and responsibilities for major incident coordination.

13.2.8 CEOP2223 - Major Issues: Management

This document guides Essential Energy's Crisis Management and Recovery (CMR) procedure and provides for:

- > the Chief Executive Officer to be responsible for invoking the CMR procedure in consultation with the Chairperson, if possible
- > specialist crisis management roles within Essential Energy
- > training and crisis response exercises
- > identification of stakeholders and management of stakeholder interests
- > divisional plans for crisis management
- > appropriate management structures for a range of crises circumstances
- > responsibilities for efficient recovery after the crisis.

13.2.9 CECM1000.77 – HSE Manual: Flora & Fauna

This manual outlines the actions Essential Energy will take to manage the protection of flora and fauna within the framework of its operational requirements.

13.2.10 CECM1000.13 – HSE Manual: Bushfire Prevention & Survival

This manual provides guidance for work activity considerations in bushfire prone areas and days of high fire danger. It also provides guidance for employees regarding emergency fire procedures.

13.2.11 CEOP2062 – System Operations: Manual Reclosing of Overhead lines

This document sets out the steps to be taken by Essential Energy's operational personnel for the manual reclosing of power lines and provides advice specifically relating to days of total fire ban.

13.3 Asset Management – applicable company codes

13.3.1 CEOM8018 – Asset Management

The Asset Management Plan links Essential Energy's strategic direction and operational services with annual budgets and forecasts for capital, operating and maintenance expenditure over the planning period.

The plan provides an overview of Essential Energy's network development and provides a high-level description of the systematic asset management approach undertaken by Essential Energy. Furthermore, it details the business processes used to ensure resources are aligned with business objectives and explains how the various processes link together to deliver high quality, reliable and safe electricity network services at the lowest possible price.

13.3.2 CEOM7097 – Overhead Design Manual

This document outlines the basic requirements for the design of all overhead distribution power lines within Essential Energy's network area to ensure a standardised network.

It provides construction requirements for bushfire risk areas including the type of conductors suitable for fire prone areas.

These design requirements apply to new works associated with customer connections (i.e. contestable works) and augmentation or refurbishment required by Essential Energy.

13.3.3 CEOM7099 – Overhead Construction Manual Index

This document details construction methods to be used within Essential Energy's network area.

The manual is to be used by Essential Energy employees, Accredited Service Providers, contractors, and other personnel engaged by Essential Energy in the construction of Essential Energy's overhead network.

13.3.4 CEOP2446 – Maintenance Strategy – Pole and Line Inspection

This strategy defines the processes associated with the inspection, assessment, and auditing of the companies pole population, overhead lines, and above ground portions of the underground network.

13.3.5 CEOM7005 - Asset Inspection Manual

This manual documents Essential Energy's criteria for the inspection and assessment of Essential Energy's overhead transmission and distribution network including the above ground components of underground distribution systems.

This criterion is documented in accordance with CEOP2446 and all relevant Statutory and Regulatory obligations.

This manual contains the activities associated with the asset inspection and assessment process, including:

- > inspection and assessment of network overhead poles and structures
- > visual inspection of overhead lines
- > wood pole treatments
- > vegetation clearances
- > termite identification and treatment
- > distribution substation earth integrity checks

13.3.6 CEOM7005.08 – Operational Manual: Aerial Surveillance: Overhead Electricity Networks Including Fault & Emergency Patrols

This manual documents Essential Energy's criteria for aerial Inspection of overhead networks. Including criteria associated with:

- > aerial surveillance of overhead lines including fault and emergency patrols
- > annual patrol of high risk bush fire prone areas.

13.3.7 CEOP8008 – Vegetation Management Plan

Essential Energy recognises the amenity value of trees and other vegetation and their importance to our environment. Vegetation must, however, be managed near power lines to maintain safety for individuals and the environment while maintaining the quality and reliability of the electricity supply. This is a challenging task



to achieve while maintaining safety requirements, protecting or minimising harm to the environment, preventing damage to property and to satisfy all concerned.

13.3.8 CEOP8009 – Distribution Substation and Switchgear Maintenance

The safe and dependable operation of an electricity distribution network hinges on the reliability of equipment such as distribution substations and switchgear and the establishment and maintenance of low impedance earthing systems to ensure protective devices operate properly under fault conditions.

The minimum standards prescribed in this document shall apply to all distribution substation and switchgear apparatus installed on the distribution network.

13.3.9 CEOP2245 – Asset Refurbishment Strategy Zone Substations

This document establishes policy and overall strategies for asset management of substation plant especially with regards to replacement or refurbishment considerations.

13.3.10 CEOP8011 – Sub-Transmission & Zone Substation: Maintenance

This procedure documents Essential Energy's network maintenance strategy and technical maintenance plans for each asset category within Sub-Transmission and Zone Substations.

13.3.11 CEOP8042 – Networks: Asset Identification & Operational Labels

The purpose of this document is to provide a standard format and process for labelling of Essential Energy assets for both operational and maintenance purposes. This covers the requirements for labelling of private poles.

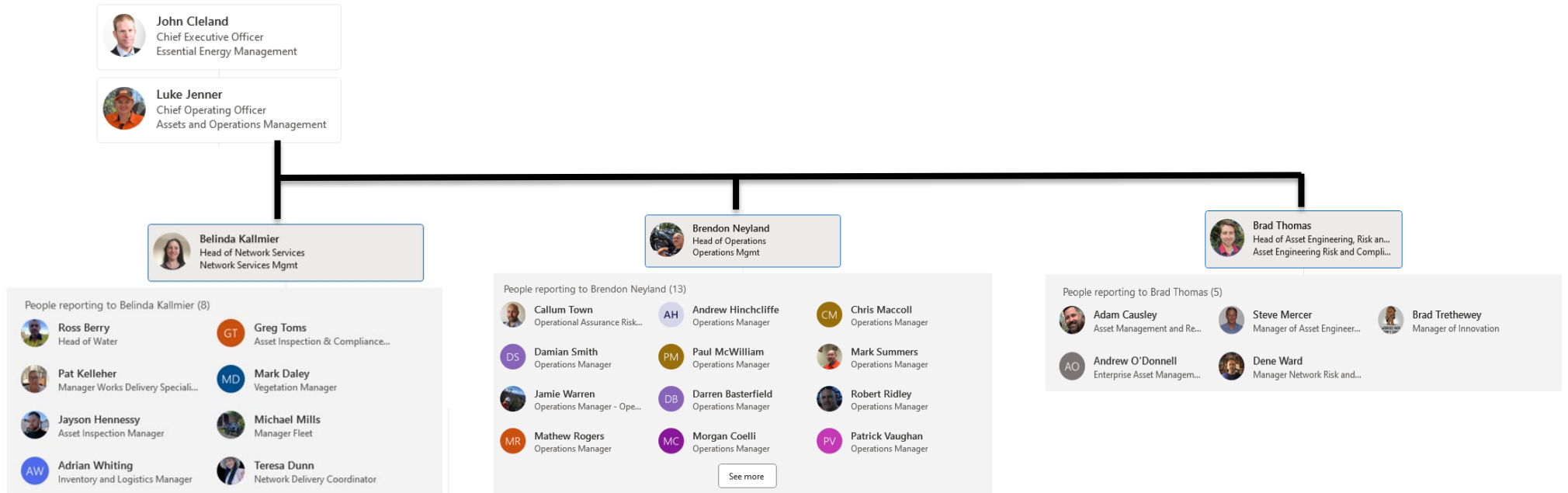
13.3.12 CEOP2513.06 – Connection Policy – Connection Charges

This connection policy sets out the circumstances in which Essential Energy requires a retail customer or real estate developer to pay the cost of connecting their premises or development to the Essential Energy network

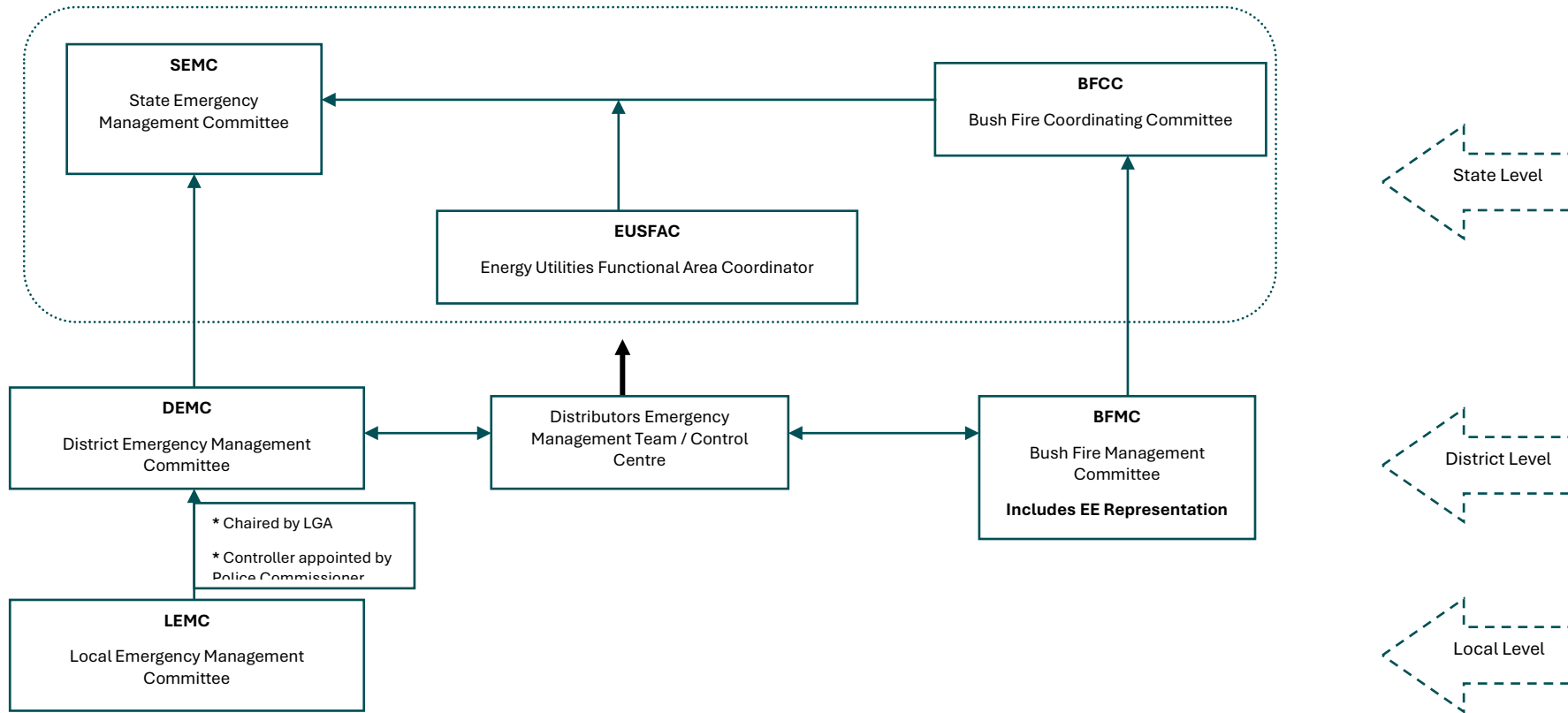


14.0 ATTACHMENTS

14.1 Attachment A - Organisation structure with plan responsibility



14.2 Attachment B – Agency Relationships (State & District Emergency Hierarchy)



14.3 Attachment C – Bush fire management Committees (RFS Jurisdictions) & LGA's

LGA	Bush Fire Management Committees	LGA	Bush Fire Management Committees
Bankstown, Hurstville	Bankstown/Hurstville	Lithgow	Lithgow
Bourke, Brewarrina	Barwon/Darling	Gunnedah, Liverpool Plains, Upper Hunter	Liverpool Range
The Hills Shire	Baulkham Hills	Lord Howe Island	Lord Howe
Bega Valley Shire	Bega Valley	Dungog, Port Stephens	Lower Hunter
Bland, Temora	Bland-Temora	Kempsey, Nambucca	Lower North Coast
Blue Mountains City	Blue Mountains	Balranald, Wentworth	Lower Western Zone
Bombala	Bombala	Camden, Campbelltown, Liverpool	Macarthur
Blayney, Cabonne, Cowra, Orange	Canobolas Zone	Manly, Mosman, North Sydney	Manly-Mosman-North Sydney
Carrathool Shire	Carrathool	Forbes, Lachlan, Parkes, Weddin	Mid Lachlan Valley
Gilgandra, Warrumbungle	Castlereagh	Conargo, Deniliquin, Jerilderie, Murray, Wakool	Mid Murray Zone
Central Darling	Central Darling	Bellingen, Coffs Harbour	Mid North Coast
Bathurst Regional, Oberon	Chifley	Griffith, Leeton, Murrumbidgee, Narrandera	Murrumbidgee Irrigation Area
Clarence Valley	Clarence Valley	Muswellbrook Shire	Muswellbrook
Cobar Shire	Cobar	Moree Plains, Narrabri	Narrabri/Moree
Corowa, Berrigan	Corowa, Berrigan	Armidale, Dumaresq, Guyra, Uralla, Walcha	New England
Mid Western Regional	Cudgegong	Newcastle City	Newcastle
Blacktown, Fairfield, Penrith	Cumberland Zone	Bogan, Coonamble, Walgett, Warren	North West
Eurobodalla Shire	Eurobodalla	Kyogle, Lismore, Richmond Valley	Northern Rivers



LGA	Bush Fire Management Committees		LGA	Bush Fire Management Committees
Ballina, Byron, Tweed	Far North Coast		Glen Innes, Severn, Inverell, Tenterfield	Northern Tablelands
Gloucester Shire	Gloucester		Dubbo, Narromine, Wellington	Orana
Gosford City	Gosford		Coolamon, Junee, Lockhart, Urana, Wagga Wagga	Riverina
Great Lakes	Great Lakes		Gundagai, Tumbarumba, Tumut	Riverina Highlands
Greater Taree City	Greater Taree		Shoalhaven City	Shoalhaven
Gwydir	Gwydir		Singleton Shire	Singleton
Hastings	Hastings		Cooma-Monaro, Snowy River	Snowy-Monaro
Hawkesbury City	Hawkesbury		Boorowa, Cootamundra, Harden, Young	South West Slopes Zone
Hay Shire	Hay		Goulburn-Mulwaree, Upper Lachlan, Yass Valley	Southern Tablelands
Hornsby, Ku-ring-gai	Hornsby/Ku-ring-gai		Sutherland	Sutherland
Albury, Greater Hume Shire	Hume Zone		Tamworth Regional	Tamworth
Cessnock, Maitland	Hunter		Pittwater, Warringah	Warringah/Pittwater
Hunters Hill, Lane Cove, Ryde, Willoughby	Hunters Hill, Lane Cove, Ryde, Willoughby		Unincorporated Area	West Darling
Kiama, Shellharbour, Wollongong	Illawarra		Wingecarribee Shire	Wingecarribee
Palerang, Queanbeyan	Lake George		Wollondilly Shire	Wollondilly
Lake Macquarie City	Lake Macquarie		Wyong Shire	Wyong



14.4 Attachment D – NSW Fire Areas (for fire weather warnings & declarations)

NSW FIRE AREAS + LOCAL GOVERNMENT AREAS



1. FAR NORTH COAST

- Ballina
- Byron
- Clarence Valley
- Kyogle
- Lismore
- Richmond Valley
- Tweed

2. NORTH COAST

- Bellingen
- Coffs Harbour
- Gloucester
- Great Lakes
- Greater Taree
- Hastings
- Kempsey
- Nambucca

3. GREATER HUNTER

- Cessnock
- Dungog
- Lake Macquarie
- Maitland
- Muswellbrook
- Newcastle
- Port Stephens
- Singleton
- Upper Hunter

4. GREATER SYDNEY REGION

- All Sydney Metropolitan Councils
- Plus Gosford, Blue Mountains, Hawkesbury and Wyong

5. ILLAWARRA/SHOALHAVEN

- Kiama
- Shellharbour
- Shoalhaven
- Wingecarribee
- Wollondilly
- Wollongong

6. FAR SOUTH COAST

- Bega Valley
- Eurobodalla

7. MONARO ALPINE

- Bombala
- Cooma Monaro
- Snowy River

8. ACT

- Australian Capital Territory

9. SOUTHERN RANGES

- Eastern Capital Regional Council
- Greater Argyle
- Greater Queanbeyan
- Upper Lachian
- Yass Valley

10. CENTRAL RANGES

- Bathurst Regional
- Blayney
- Cabonne
- Cowra
- Lithgow
- Mid Western Regional
- Oberon
- Orange
- Wellington

11. NEW ENGLAND

- Armidale Dumaresq
- Glen Innes
- Guyra
- Severn
- Tenterfield
- Singleton
- Walcha

12. NORTHERN SLOPES

- Gunnedah
- Gwydir
- Inverell
- Liverpool Plains
- Tamworth Regional

13. NORTH WESTERN

- Coolah
- Coonabarabran
- Moree Plains
- Narrabri
- Walgett

14. UPPER CENTRAL WEST PLAINS

- Bogan
- Coonamble
- Gilgandra
- Warren

15. LOWER CENTRAL WEST PLAINS

- Bland
- Dubbo

- Forbes
- Lachlan
- Narromine
- Parkes
- Temora
- Weddin

16. SOUTHERN SLOPES

- Boorowa
- Cootamundra
- Gundagai
- Harden
- Tumbarumba
- Tumut
- Young

17. EASTERN RIVERINA

- Albury
- Coolamon
- Greater Hume
- Junee
- Lockhart
- Wagga Wagga

18. SOUTHERN RIVERINA

- Berrigan
- Conargo
- Corowa
- Deniliquin
- Jerilderie
- Murray
- Urana
- Wakool

19. NORTHERN RIVERINA

- Carrathool
- Griffith
- Hay
- Leeton
- Murrumbidgee
- Narrandera

20. SOUTH WESTERN

- Bairnald
- Wentworth

21. FAR WESTERN

- Bourke
- Brewarrina
- Broken Hill
- Central Daring
- Cobar
- Unincorporated NSW

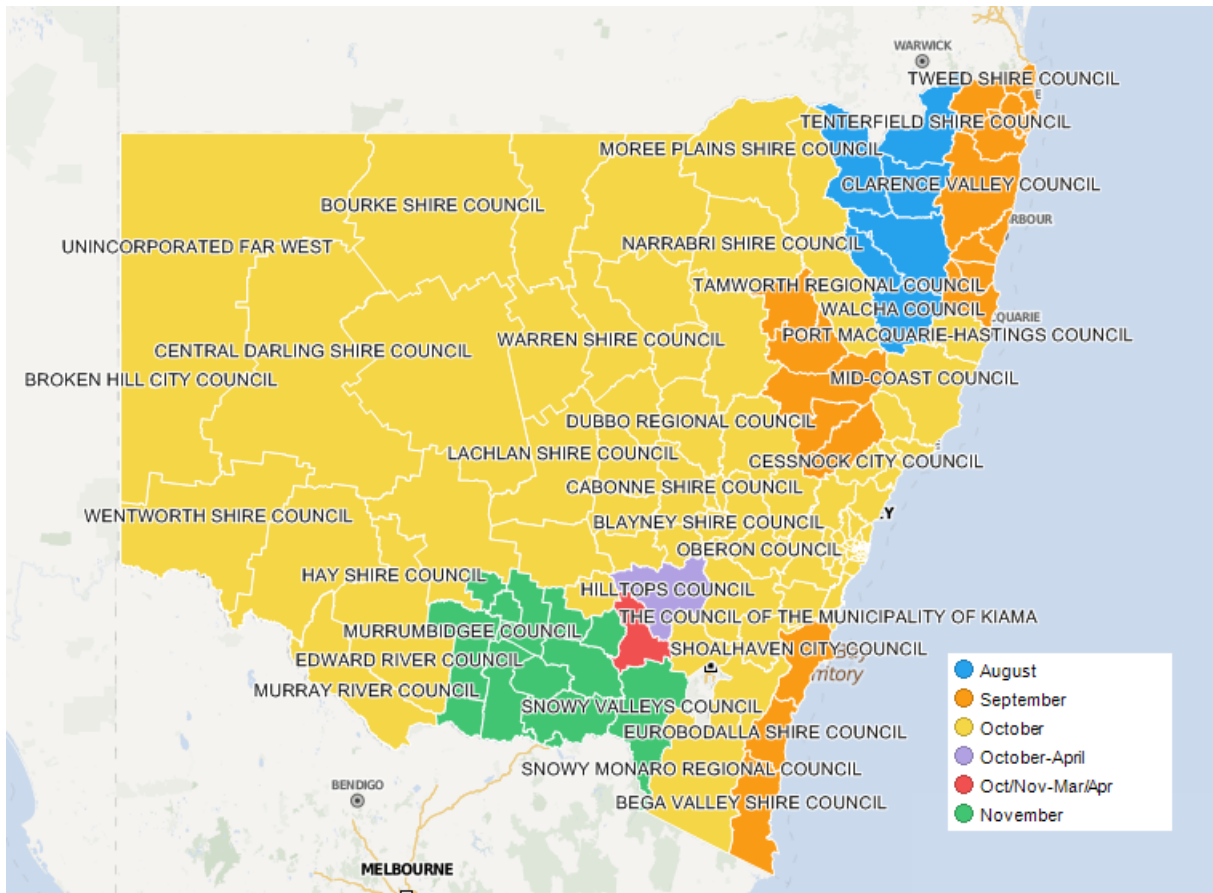


14.5 Attachment E - Bush Fire Danger Period - Permanent Variations

BUSH FIRE DANGER PERIOD - PERMANENT VARIATIONS			
AUGUST			
Local Government Area	District/Team/Zone	RFS Region	Permanent/Temporary
Armidale Dumaresq	NEW ENGLAND ZONE	North	Perm 1/8-30/8
Glen Innes Severn	NORTHERN TABLELANDS TEAM	North	Perm 1/8-30/8
Guyra	NEW ENGLAND ZONE	North	Perm 1/8-30/8
Inverell	NORTHERN TABLELANDS TEAM	North	Perm 1/8-30/8
Tenterfield	NORTHERN TABLELANDS TEAM	North	Perm 1/8-30/8
Uralla	NEW ENGLAND ZONE	North	Perm 1/8-30/8
Walcha	NEW ENGLAND ZONE	North	Perm 1/8-30/8
SEPTEMBER			
Local Government Area	District/Team/Zone	Region	Permanent/Temporary
Ballina	FAR NORTH COAST TEAM	North	Perm 1/9-30/9
Bega Valley	FAR SOUTH COAST TEAM	South	Perm 1/9-30/9
Bellingen	MID NORTH COAST TEAM	North	Perm 1/9-30/9
Byron	FAR NORTH COAST TEAM	North	Perm 1/9-30/9
Clarence Valley	CLARENCE VALLEY	North	Perm 1/9-30/9
Coffs Harbour	MID NORTH COAST TEAM	North	Perm 1/9-30/9
Eurobodalla	FAR SOUTH COAST TEAM	South	Perm 1/9-30/9
Kempsey	LOWER NORTH COAST TEAM	North	Perm 1/9-30/9
Kyogle	NORTHERN RIVERS TEAM	North	Perm 1/9-30/9
Lismore	NORTHERN RIVERS TEAM	North	Perm 1/9-30/9
Muswellbrook	HUNTER VALLEY TEAM	East	Perm 1/9-30/9
Nambucca	LOWER NORTH COAST TEAM	North	Perm 1/9-30/9
Richmond Valley	NORTHERN RIVERS TEAM	North	Perm 1/9-30/9
Shoalhaven	SHOALHAVEN	South	Perm 1/9-30/9
Singleton	HUNTER VALLEY TEAM	East	Perm 1/9-30/9
Tweed	FAR NORTH COAST TEAM	North	Perm 1/9-30/9
OCTOBER			
Local Government Area	District/Team/Zone	Region	Permanent/Temporary
Boorowa	SOUTH WEST SLOPES ZONE	West	Perm Revoc 1/4-30/4
Cootamundra	SOUTH WEST SLOPES ZONE	West	Perm Revoc 1/4-30/4
Harden	SOUTH WEST SLOPES ZONE	West	Perm Revoc 1/4-30/4
Young	SOUTH WEST SLOPES ZONE	West	Perm Variation 1/4-30/4
NOVEMBER			
Local Government Area	District/Team/Zone	Region	Permanent/Temporary
Albury City	SOUTHERN BORDER TEAM	South	Perm Revoc 1/10-31/10
Berrigan	SOUTHERN BORDER TEAM	South	Perm Revoc 1/10-31/10
Coolamon	RIVERINA ZONE	South	Perm Revoc 1/10-31/10
Corowa	SOUTHERN BORDER TEAM	South	Perm Revoc 1/10-31/10
Greater Hume	SOUTHERN BORDER TEAM	South	Perm Revoc 1/10-31/10
Griffith	MIA ZONE	South	Perm Revoc 1/10-1/11
Gundagai	RIVERINA HIGHLANDS ZONE	South	Perm Revoc 1/10-31/10
Junee	RIVERINA ZONE	South	Perm Revoc 1/10-31/10
Leeton	MIA ZONE	South	Perm Revoc 1/10-1/11
Lockhart	RIVERINA ZONE	South	Perm Revoc 1/10-31/10
Murrumbidgee	MIA ZONE	South	Perm Revoc 1/10-1/11
Narrandera	MIA ZONE	South	Perm Revoc 1/10-1/11
Tumbarumba	RIVERINA HIGHLANDS ZONE	South	Perm Revoc 1/10-31/10
Tumut	RIVERINA HIGHLANDS ZONE	South	Perm Revoc 1/10-31/10
Urana	RIVERINA ZONE	South	Perm Revoc 1/10-31/10
Wagga Wagga	RIVERINA ZONE	South	Perm Revoc 1/10-31/10



RFS Fire Danger Period Map - Permanent Declarations:



14.6 Attachment F - Network Fire Reporting

TotalSAFE reporting system and monthly reports

Essential Energy utilises the TotalSAFE reporting system to capture individual fire events as they occur, where the network was the suspected ignition source or impacted by fire from other sources. These are based on field reports of attending employees.

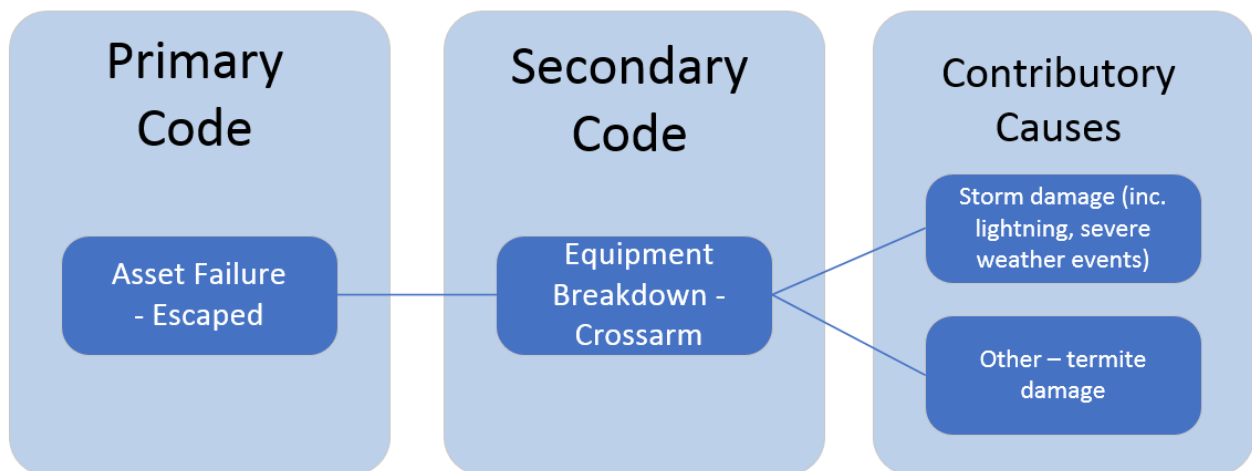


Network associated fire starts that are reported are compiled into a monthly report at the end of each month. The monthly report is compiled by the Asset Management maintenance team and prepared for the consideration of the Bushfire Risk Assurance Panel and Bushfire Risk Working Group meetings.

14.7 Network fire coding

Network fire starts are coded and classified by Essential Energy into three categories: primary (PC), secondary (SC), and contributory factors. This provides the opportunity to better understand causal factors for network fire ignitions, allowing for deeper interrogation of multiple factors associated with ignition.

Figure 2: EXAMPLE with Code Relationship



14.7.1 Primary codes

There are six primary codes used as the suspected high-level cause of fires. The first five relate to how the network was suspected to be involved in an ignition whilst the sixth is simply to capture how often network infrastructure is damaged by fires from other sources of ignition. For the purposes of

understanding network ignition causes and preventable programs, the sixth category (*External - Non-network fire ignition*) is ignored.

The first five codes are based around the AER F-factor descriptions used by Victorian ENO's and have been adopted by NSW ENO's (under the former NNSW operating structure) in order to facilitate benchmarking at least to this level. Table 1 describes the primary level codes used.

Table 2: Primary codes for suspected network fire ignitions

Primary Network Component Cause Code
Asset Failure - Contained
Asset Failure - Escaped
Contact with Vegetation
Bird/Animal
Human Activity – ignition by network assets
External – Non-network fire ignition

Primary Code Definitions:

- *Asset Breakdown* - network ignitions suspected to be caused by asset fault / failure, current leakage or operation of the network devices
 - Contained – these are network related fires that were “contained” on or within Essential Energy assets. i.e. did not spread to surrounds
 - Escaped- These are network related fires that “escaped” from the asset to ground, structures or surrounding vegetation
- *Contact with Vegetation* - network ignitions suspected to be caused by unassisted vegetation contact with assets
- *Bird/Animal* - network ignitions suspected to be caused by animal contact/flashover with assets
- *Human Activity* - ignition by assets - network ignitions suspected to be caused by public activities (contact with wires/assets by 3rd parties, vandalism, farming activity, etc.). Wire strikes by machinery are a common example.
- *External* – Fires suspected to have resulted from ignition sources other than network assets and where damage was caused to network assets.

14.7.2 Secondary codes

Secondary cause coding has been adopted by Essential Energy to better understand suspected cause at an asset component level or in the case of contact with the network, modes of contact. These are able to be used for alignment of fire starts with existing, or potential, mitigating programs. For example, low voltage conductor clashing can be largely mitigated by programs to fit low voltage spreaders. There may be opportunity to align secondary codes with network fault reporting coding (FMECA codes) at some point in the future.

Secondary Cause Code
Conductor - Break
Conductor - Clashing line to line
Conductor - Connections
Conductor - Contact with foreign object
Conductor - Insulation Breakdown
Equipment Breakdown - Brackets, Bolts, Steelwork
Equipment Breakdown - Crossarm
Equipment Breakdown - Insulator
Equipment Breakdown - Stay
Equipment Breakdown - Surge Arresters
Equipment Breakdown - Tie Wire
Equipment Breakdown - Other
Equipment Breakdown - Air Brake Switch
Equipment Breakdown - Gas Switch
Equipment Breakdown - HV Link
Equipment Breakdown - Metering
Equipment Breakdown - UG/OH termination
Equipment Breakdown - UG Equipment / Pit / Pillar
Equipment Breakdown - Earthing
Equipment Breakdown - Unknown
Fuse - Assembly break
Fuse - Connections
Fuse - Element blown
Fuse - Tube fail or hang up
Fuse - Other
Pole Failure - Assisted
Pole Failure - Unassisted
Vegetation - Grow in
Vegetation - Fall in and blow in
Vegetation - Other
Bird - Equip Flashover
Bird - Wirestrike
Bat - Equip Flashover
Bat - Wirestrike
Possum
Bird/ Animal - Other



Vehicle (Public) impact
Vehicle (Agri) - asset impact
Public activity - non vehicle
Agricultural activity - non vehicle
Construction activity
Wilful / Malicious damage
Human Activity - Other
House/Building/Structure Fire
Bushfire
Stubble / Agricultural Fire
Other

14.7.3 Contributory codes

Contributory codes allow for adding additional suspected causal factors relating to environmental conditions or other factors that may be involved in the ignition of a fire from the network. This provides for capture of multiple factors if required where they are suspected to have contributed to ignition of a fire. Unlike Primary and Secondary codes where only a single code can be assigned to an event, multiple contributory codes can be assigned to a single event. For example, a cross-arm failure may be due to a combination of; storm conditions; timber decay and/or white ant infestation.

Contributory Causes
Standards - Manufacturers
Standards - Design
Standards - Construction
Standards - Low Ground Clearance
Standards - Maintenance
Standards - Insulation Quality
Environmental - Severe weather - Wind
Environmental - Severe weather - Lightning
Environmental - Termites
Environmental - Rot / Fungal Decay
Environmental - Weathered
Environmental - UV degradation
Environmental - Contamination / Tracking
Human - Vandalism / Arson
Human - Vehicle Non-Ag
Human - Aircraft
Human - Equipment / Plant Non-Ag
Human - Other
Human - Work Practice
Agriculture - Vehicle-Plant
Agriculture- Other
Corrosion
Internal Equipment Fault
Vegetation Grow in - Below
Vegetation Grow in - Side
Vegetation Grow in - Overhang

Vegetation Fall In - Side
Vegetation Fall in - Overhang
Downstream Fault - Known
Downstream Fault - Unknown
Other - please specify

The free text field option also allows for provision of additional informational not covered by codes which may help clarify the circumstances of a fire ignition.

A separate field for capturing the Type of Assets (*Asset Details*) involved is also provided for.

14.8 Attachment G – Audit criteria for HVC Installation Safety Management Plan

Essential Energy has obligations under the *Electricity Supply (Safety and Network Management) Regulation 2014* section 7 (1) (b) (v) to manage bushfire risk relating to aerial consumer mains on bushfire prone land that is private land. To discharge this obligation and meet the requirements defined under section 4.5.1 of this document, a proponent to a high voltage connection agreement is required to provide evidence from a suitably qualified auditor that the Installation Safety Management Plan (ISMP) meets the requirements of the relevant regulation, standards, rules and guidelines and for existing High Voltage Customers (HVC) to provide on demand evidence by means of an external audit by a suitably qualified auditor that the ISMP meets the requirements of the relevant regulation, standards, rules, guidelines and is practically implemented.

Essential Energy considers a suitably qualified auditor to be an auditor that meets the criteria in below. It is the responsibility of the proponent to a HV connection agreement, or the HVC to ensure that the auditor selected to perform an audit and provide a Statement of Compliance meets the criteria in . The auditor will provide evidence to Essential Energy of compliance to the criteria in below in the form of an addendum to the audit report. Failure to provide evidence of compliance with the criteria in as an addendum to the report will render the Statement of Compliance invalid.

- Internal quality management processes and accreditation/certification (e.g.) ISO9000; and
- Professional indemnity insurance to the value of \$2M and public liability insurance to the value of \$20M; and
- Demonstrable experience in the application of audit frameworks such as ISEA/ASEA 3000 in the execution of audits of electrical infrastructure and electricity network related bushfire safety management systems, including a demonstration of familiarity with the relevant NSW Electricity Supply Act, NSW Electricity Supply (Safety and Network Management) Regulation 2014, and the NSW Service Rules as they apply to High Voltage Customers; and
- Evidence of implementation of functional peer review signoff protocol; and
- Is not engaged by the proponent or HVC to manage the design, construction, operation, and maintenance of the high voltage installation subject to the audit.

Table 3 ISMP auditor criteria and experience requirements

Table 3 provides direction to a suitably qualified auditor for the assessment criteria of a proponent to a high voltage connection agreements ISMP.

provides direction to a suitably qualified auditor for the assessment criteria for an existing HVCs IMSP.

Confirmation must be provided in writing that the proponents/HVCs ISMP is compliant to the minimum requirements established in and . A template for confirmation that a proponent and existing HVCs is provided in section 14.8.3 and 14.8.4 respectively.

Essential Energy has no visibility of additions or alterations that a HVC may make to the network on the customer side of the HV metering point. Accordingly, reliance on a customer record from a point in time is not sufficient to discharge the obligation to manage bushfire risk associated with the operation of aerial consumer mains. Where a HVC operates a wholly underground and /or has completely removed aerial consumer mains and the HVC is asked to provide an audit report and a certificate of compliance, the HVC is exempt from providing these. However, evidence shall be provided in the form of a letter from an independent auditor that meets the criteria in to support the exemption.



14.8.1 ISMP audit criteria for a proponent to a high voltage connection agreement

Minimum Criteria	Auditor's comments
1. An Installation Safety Management Plan (ISMP) has been prepared for the proponent's high voltage network	
2. The context of the ISMP relates to and considers hazards specific to the site to which it applies	
3. The ISMP identifies hazards that could result in a safety impact to workers and public, the environment or electricity related fire	
<p>4. Using an appropriate risk assessment technique, risk is eliminated risk so far as is reasonably practicable, and where it is not reasonable to eliminate, risks are reduced as low as reasonably practicable. Controls should reflect good practice and include at a minimum and not be limited to:</p> <ul style="list-style-type: none"> i. A design and construction approach that considers risks ii. Asset inspection and maintenance regimes iii. Vegetation management to ISSC3 <i>Guideline for Managing Vegetation in the Vicinity of Electricity Assets</i> iv. Protection systems and clarification of how assets will be operated on high fire risk days v. Investigation and implementation of corrective actions from investigation of fires started by the electricity network 	
5. The control measures identified in the ISMP are incorporated into appropriate procedures that are available at the site to which the ISMP applies	

Table 4 Installation Safety Management Plan audit criteria for proponents to a high voltage connection agreement

14.8.2 ISMP audit criteria for an existing HVC

Minimum Criteria	Auditor's comments
1. An Installation Safety Management Plan (ISMP) exists for the high voltage network at site subject to the connection agreement	
2. The context of the ISMP relates to and considers bushfire hazards specific to the site at which it applies	
3. The ISMP identifies hazards that could cause electricity related fire	
<p>4. Using an appropriate risk assessment technique, controls related to the management of bushfire risk are identified to eliminate risk so far as is reasonably practicable, and where it is not reasonable to eliminate, risks are reduced as low as reasonably practicable. Controls should reflect good practice and include at a minimum and not be limited to:</p> <ul style="list-style-type: none"> i. Design and constructions consider bushfire risk ii. Asset inspection and maintenance regimes iii. Vegetation management to <i>ISSC3 Guideline for Managing Vegetation in the Vicinity of Electricity Assets</i> iv. Protection systems and clarification of how assets will be operated on high fire risk days v. Investigation and implementation of corrective actions from investigation of fires started by the electricity network 	
5. The control measures identified in the ISMP are incorporated into appropriate procedures that are available at the site to which the ISMP applies	
6. There is evidence that the control measures are effectively implemented at the site to which the ISMP applies	

Table 5 ISMP audit criteria for existing HVCs

14.8.3 Letter template for proponent to high voltage connection agreement

Essential Energy

XXXXXX

XXXXXX

XXXXXX

To Whom it May Concern

Statement of Compliance – Installation Safety Management Plan

I have reviewed the Installation Safety Management Plan (ISMP) for the site subject to a proposed high voltage connection agreement with Essential Energy at DP _____ or address

From my review of the ISMP against the Essential Energy audit criteria detailed in CEOP8022, nothing has come to my attention to indicate that the ISMP is non-compliant with respect to the following requirements:

- the ISMP meets the requirements of the NSW Service and Installation Rules (the Rules) and any other subsequent obligations following from the Rules
- the ISMP considers hazards associated with the operation of a high voltage network
- for the hazards identified, controls are identified that eliminate risk so far as is reasonably practicable, and where not practical to eliminate, risks are reduced as low as reasonably practicable

This Statement of Compliance should be read in conjunction with the attached report and is subject to the qualifications and limitations detailed in the report.

Kind Regards

XXXXXXX



14.8.4 Letter template for existing High Voltage Customer

Essential Energy

Xxxxxx

Xxxxxx

Xxxxxx

To Whom it May Concern

Statement of Compliance – Bushfire Risk Management

I have reviewed the Installation Safety Management Plan (ISMP) for the site subject to the High Voltage Connection agreement with Essential Energy NMI #####.

From my review of the ISMP against the Essential Energy audit criteria detailed in CEOP8022, nothing has come to my attention to indicate that the ISMP is non-compliant with respect to the following requirements:

- the ISMP considers bushfire hazards associated with the operation of a high voltage network specific to the site to which it refers
- for the bushfire hazards identified, controls are identified that eliminate risk so far as is reasonably practicable, and where not practical to eliminate, risks are reduced as low as reasonably practicable

Considering the implementation of the ISMP, nothing has come to my attention to indicate that the bushfire risk controls identified in the ISMP are not adequately implemented at the site to which it refers.

This Statement of Compliance should be read in conjunction with the attached report and is subject to the qualifications and limitations detailed in the report.

Kind Regards

xxxxxxx



14.9 Attachment H – Bushfire Mitigation Factsheets

Bushfire Management



“Safety comes first at Essential Energy. Throughout the year we plan ahead to reduce bushfire risk and ensure the safety and reliability of our network. Essential Energy’s network covers 95% of regional and rural NSW and parts of southern Queensland so we understand the risks of living and working in bushfire-prone areas. We implement a range of ongoing activities to help us prepare for bushfire season.”



RESEARCH/TRIALS

- Investigation of methods & technology to identify hazard trees
- Continuous monitoring of research and trials across Industry



ENGAGEMENT

- Community engagement forums
- Safety Regulator - industry working groups and targeted strategies



MAINTENANCE AND RENEWAL

- Significant investment in vegetation management
- Asset Renewal Capital Works



INSPECTION

- Routine groundline and specialised asset inspections - critical assets, UG equipment, substations, & transmission lines, aerial services (inc. drones, lidar, photography)



SAFETY REGULATION AND AUDIT

- Independent Bushfire Preparedness audits conducted by safety regulators



PLANNING AND DESIGN

- Review of protection settings for bushfire risk days




RISK MANAGEMENT

- Development of a Bushfire Strategy & Plan



NETWORK OPERATIONS

- Emergency response planning - fault & dispatch management
- Changes to Operating Conditions for TFB days



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

183,612 km
of overhead powerlines - equivalent to driving around Australia 13 times

377
zone substations and 140,000 distribution substations

>855,000
customers

163,417 km
of powerlines in designated bushfire zones

4.6
customers per km of powerline - the lowest density in the National Electricity Market

737,000
square kilometres of regional rural and remote New South Wales and parts of southern Queensland

We cover 95% of New South Wales and parts of southern Queensland

Bushfire Management



RESEARCH/TRIALS

- Investigation of methods and technology to identify hazard trees
- Electrical protection settings review
- Ongoing monitoring of research and trials across industry.
- Review of research and findings from major fire enquiries (UBRC).



ENGAGEMENT

- Community engagement forums
- Expert partners - Fire Agencies; Bushfire and Natural Hazards CRC; Universities
- Customer Advisory Groups
- Industry representations - UAAA; ENA; ENO's; ISSC
- Safety and economic regulators.



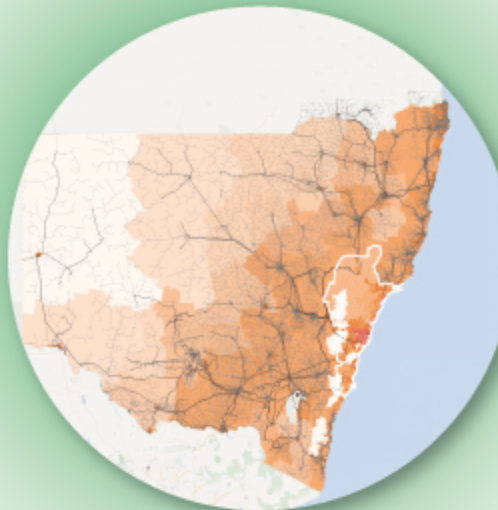
MAINTENANCE AND RENEWAL

- Significant investment in vegetation and contract management
- Management of more than 600,000 maintenance tasks per annum
- Identify and repair high fire risk tasks prior to fire season commencing
- Targeted capital works to renew ageing or deteriorated assets.



SAFETY REGULATION AND AUDIT

- Independent Bushfire Preparedness audits conducted by IPART
- Management of private lines
- Annual Safety Reporting to IPART
- Internal audits applied.



INSPECTION

- Routine groundline inspections
- Pre-summer aerial inspections of high fire risk lines
- Aerial inspections deployed using technologies such as LiDAR and hi-resolution photography (fixed wing and drone)
- Specialised asset inspections - critical assets, UG equipment, substations, and transmission lines.



RISK MANAGEMENT

- Development of a Bushfire Strategy and Plan
- Development of Fire Risk Formal Safety Assessment
- Bushfire Risk Network Modelling
- Chartered internal Bushfire Risk Assurance Panel.



NETWORK OPERATIONS

- Emergency response planning
- Fault and dispatch management
- Modifying electronic protection devices for safety on Total Fire Ban days
- Monitoring of weather conditions
- RFS information feeds.



PLANNING AND DESIGN

- Review of protection settings for bushfire risk days
- Poor performing feeder analysis
- Replacement and conversion of bare overhead lines to underground or insulated systems
- Application of standards to build network resilience
- ASP management.

15.0 SUMMARY OF CONTACTS & APPROVAL**Essential Energy****Bushfire Risk Mitigation Plan - contacts**

Office Address:	8 Buller St, Port Macquarie, NSW 2444
Telephone:	13 23 91

Person Responsible for Plan Preparation:	Ian Fitzpatrick
Position:	Manager Network Risk & Resilience
Office Address:	8 Buller St, Port Macquarie, NSW 2444
Postal Address:	PO Box 5730, Port Macquarie, NSW 2444
Telephone:	(02) 6589 8212

Person(s) Responsible for Plan Implementation:	Chief Executive Officer
Office Address:	8 Buller St, Port Macquarie, NSW 2444
Postal Address:	PO Box 5730, Port Macquarie, NSW 2444
Telephone:	02 6589 8702

Emergency Contact Number for Immediate Action:	24 hour operations desk Queanbeyan Ph:13 20 80 Ph: 02 6122 3006
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Approved:	
	Adam Causley
	Asset Management and Regulatory Strategy Manager

16.0 REFERENCES

- [CEOM8047](#) – Electricity Network Safety Management System Plan
- [CECM1000.13](#) – HSE Manual: Bushfire Prevention & Survival
- [CECM1000.77](#) – HSE Manual: Flora & Fauna
- [CEOH4502.11](#) – How to Manage Complaints
- [CEOP2446](#) – Maintenance Strategy – Pole and Line Inspection
- [CEOM7097](#) – Overhead Design Manual
- [CEOM7099](#) – Overhead Construction Manual
- [CEOP2062](#) – System Operations: Manual Reclosing of Overhead Lines
- [CEOP0002.21](#) – Company procedure – Risk Management
- [CEOP2087](#) – Bushfire Mitigation Index
- [CEOP2137](#) – Electrical Networks Escalation and Recovery Plan
- [CEOP2223](#) – Major Issues Management
- [CEOP2513.06](#) – Connection Policy – Connection Charges
- [CEOP8004](#) – Customer Installation Safety
- [CEOP8005](#) – Public Electrical Safety Awareness
- [CEOP8008](#) – Vegetation Management Plan
- [CEOP8009](#) – Maintenance Management: Distribution Substation & Switchgear
- [CEOP8010](#) – Electricity Network: Asset Inspection
- [CEOP8011](#) – Sub-Transmission & Zone Substation: Maintenance
- [CEOP8042](#) – Networks: Asset Identification & Operational Labels
- [CEOP8022.02](#) – Private Network Owner Bushfire Preparedness Reporting
- Essential Energy’s Asset Management System (WASP)
- Essential Energy’s Training Database
- Essential Energy’s Policy Library Database
- Essential Energy’s TotalSAFE Database
- Essential Energy website www.essentialenergy.com.au
- ISSC33 Guideline for network configuration during high bushfire risk days
- NSW Electricity Supply Act 1995
- NSW Electricity Supply (Safety and Network Management) Regulation 2014
- NSW Rural Fires Act 1997
- Planning for Bush Fire Protection 2019



17.0 REVISIONS

Issue Number	Section	Details of Changes in this Revision
3	All	References updated Changes throughout document
4	All	References updated Minor changes throughout document
5	All	References updated Minor changes throughout document
6	All	Major review considering Black Saturday Fires 2009 in Victoria and changes throughout document to most sections
7	All	References, template & logo change in line with Essential Energy branding.
8	7.1	Additional information added to 2 nd dot point in this section – regarding industry guidelines
	16	ISSC Guideline added to references
9	All	Consultation, Feedback and Review added (Sect.1.1 & 1.2) All references to the Victorian franchise areas removed. Essential Energy map updated to 5 region structure (Sect. 3) EE Preference for Underground of new private service lines in rural areas added (Sect. 12). EE structure changes - Executive GM references removed. etc. (attachment 14.1). Training references updated as per reviewer comments (Sect. 13.2).
10	All	Change to template
11	3, 14	Section 1 – Telephone numbers changed to 132391 Section 3 - Network map updated to 4 region model Section 4.2.8 – Deleted, was Recovery Action Plans by region, now covered in Section 4.2.6 Section 4.2.12 – Deleted, was Customer Complaint Handling, now covered in Section 5.14 Section 4.4 – Deleted, Document Management Section 5.2 – Corridor reclamation program reference deleted Section 5.6 – Was Industry research. Technology added Section 5.13 – Phoenix Rapid Fire reference added Section 5.14 – Customer enquiries and complaints reworded Section 7.1 – References to Recovery Action Plans deleted Section 14 - Organisational chart revised. Section 17 – References list revised

12	2.1, Table 1 and minor changes in other places	Document titles and Legislative requirements amended to take account of the remaking of the Regulation - Electricity Supply (Safety and Network) Regulation 2104
13	4.1 4.2 4.5 4.10 4.11 5.1 10.1 12 & 13.1	<p>Several changes to this version to incorporate recommendations from the IPART audit.</p> <p>Identification of hazardous bushfire areas - Added reference to determination of fire risk locations.</p> <p>4.1 Updated to clarify scope of pre-summer aerial inspection activity.</p> <p>Private Lines - Updated comments and combined with other section on private lines. Added ESAct Div2A – s53 reference.</p> <p>4.5 Added this to explain the BRAP and BRWG functions as preventative instruments.</p> <p>4.10 Added this section to explain the reporting functions and the BMI utilisation.</p> <p>4.11 Asset condition monitoring (inspections) – work programs: described the pre-summer inspection program as it relates to high fire risk locations.</p> <p>5.1 Updated information relating to BMI reporting</p> <p>10.1 Updated org structure reference. Including update of Attachment, A: Org Responsibility Diagram.</p> <p>Various wording tidy up throughout document and update of Essential Energy Map. Moved section 4 Policy References toward back (now section 13).</p>
14	10 15 16	Updated section Contacts updated Update references
15	4.1 6.5 14 14.1 14.5 14.6 14.7	Updated Map 6.5 Section update Attachment numbering updated 14.1 Updated Organisational Chart 14.5 – Attachment added 14.6 TotalSafe Reporting added 14.7 Network Fire Coding Added
16	6.4 7.1 7.3 13.2.2 16	Added paragraph providing for a PSBI review mechanism Updated the point relating to automatic suppression of automatic reclose of total fire ban days Updated the RFS and Queensland Rural Fire website Added CEOP8047.06 Bushfire Formal Safety Assessment Added CEOP8047.06 Bushfire Formal Safety Assessment

17	4.5	4.5.1 Added detail relating to the requirement for HVCs to have a compliant ISMP that has been certified as being compliant by an auditor and included provision for periodic audit of a HVCs ISMP and that the ISMP has been implemented on the site that it refers to. 4.5.2 Created para specific to management of bushfire risk associated with LV customers
18	3 4.5.1 4.8 4.10 5.2 12.2.2 14.8 14.9 16	Replaced depot area map with new boundaries Included reference to Attachment G Removed reference to LiDAR as an emerging technology Amended the function of the BRAP and the chair Amended language related to the utilisation of LiDAR data Added skills and competencies matrix document number Added Attachment G which describes the external audit requirements for a proponents/HVCs ISMP and provides audit checklist and certificate of compliance letters. Added Bushfire Mitigation Factsheets (x2) Added CEOP8022.02 and Planning for Bushfire Prevention 2019 to reference list
19	4.5.1 Attachment G	Updated with reference to suitable auditor criteria in Attachment G Added suitable auditor criteria in Table 2
20	All	Minor amendment. Stamp added to page 1
21	All	Updated Fire Risk Mapping and classification (section 4.1) and TFB special conditions, Org Structure and other minor changes
22	Minor changes	Changes made to reflect the BPT transition for CTS vegetation works. Watermark removed, old P1-P4 map removed, Veg transition in 4.4 noted.

