ANNUAL BUSHFIRE RISK MANAGEMENT REPORT

2016/17

essential energy

1. Introduction

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

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

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

Bushfire Risk Management Committees

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

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

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

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

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

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

2. Climatic Conditions – consideration by Essential Energy

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

Table 1 – RFS temporary variations to fire danger period declaration

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

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

Table 2 – RFS permanent Variations to fire danger period declaration

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

RFS segregate fire declaration periods into;

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

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

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

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

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

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

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

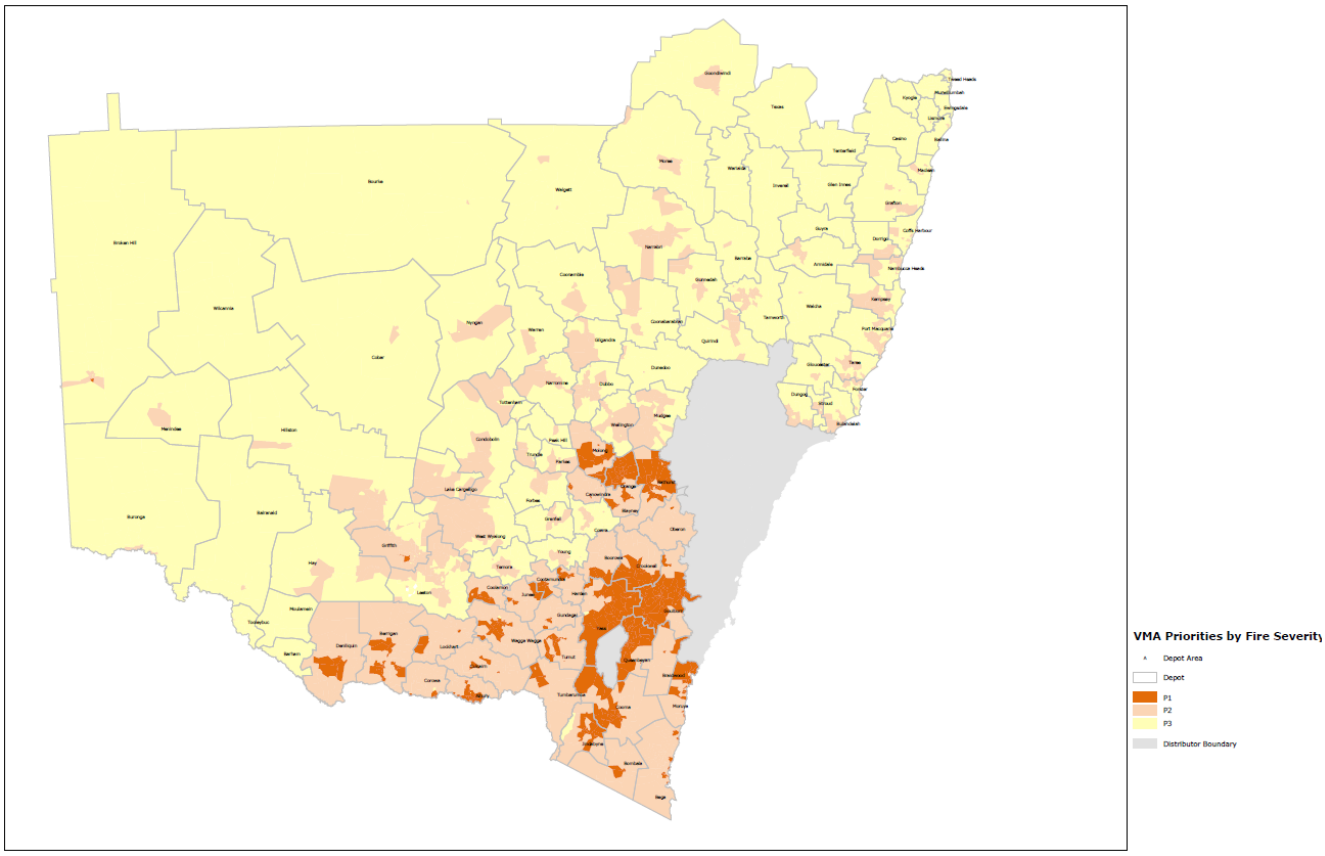
- Essential Energy Corporate internal communications are released each year leading up to the fire danger periods. This includes information about the temporary earlier declarations to make field crews aware of the conditions and why maintenance priorities are required. Ongoing communications are issued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

Identification of hazardous bushfire areas

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

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

Figure 1 Map indicating fire risk prioritisation zones.



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

3. Statistical Reporting

Table 3 Data on bushfire risk preparation works

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

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

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

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

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

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

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

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

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

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

Table 7 Bushfire Starts and Risk Management

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

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

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

Table 8 Task Severity Classifications

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

Table 9 Vegetation Spans Open & Outstanding

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

Table 10 Asset Defects Impacting Bushfire Risk

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

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

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

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

Table 11 Asset Defects Impacting Bushfire Risk

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

Results as reported at 25th October 2017

ENO Comments

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

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

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

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

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

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

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