Electricity Network Safety Management System Performance & Bushfire Preparedness Report

1 October 2018 to 30 September 2019

October 2019

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Part A – ENSMS Annual Performance Report

1. Tier 1 – Major Incidents

Tier 1 incidents are defined as a 'Major Incident' in accordance with the Electricity networks reporting manual – Incident reporting (Incident reporting).

Table 1: Major incidents

ESSNM Objective		Description of major incident reported under the incident reporting requirements
Safety of members of the public		No major incidents reported
Safety of persons working on network		No major incidents reported
Protection of property	Third party property	8 August 2019 – Chambigne – A large gum tree was observed over conductors with a fire in the vicinity. 9 August 2019 – Dondingalong – Rural Fire Service (RFS) reported a fire in the vicinity of Essential Energy assets. 9 August 2019 – Alice – RFS reported a fire in the vicinity of Essential Energy assets
	Network property	No major incidents reported
Safety risks arising from loss of electricity supply		15 December 2018 – Tamworth - The Tamworth 813 66kV line supplying Currabubula, Werris Creek, Quirindi, Murrurundi, Spring Ridge, Colly Blue and Caroona tripped due to pole failure at 15:37. 5,772 Customers affected for 604 minutes. 20 December 2018 – Tamworth - Supply was lost to Tamworth Base Hospital at approximately 19:50 due to a tree impacting HV conductors during severe storms. 481 customers affected for 143 minutes.

2. Tier 2 – Incidents

Table 2: Incidents

ESSNM Objective	Description of each incident reported under the incident reporting requirements
Safety of members of the public	21 January 2019 – Young - Member of the public contacted insulated service conductors and sustained an electric shock and burns to their hand. They received treatment from a health care professional.
Safety of persons working on the network	23 May 2019 – Brogo - ENO worker completing replacement works on a 33kV vertical strain pole had his left thumb jammed in a crimper as the crimper retracted. The injury required surgical treatment and hospital admission. 14 June 2019 – Wirrinya - ENO worker operating powered drill sustained compound fracture of his thumb, when glove became caught in drill bit. 23 February 2019 – Sleepy Hollow - ENO worker sustained head and facial injuries after being struck on the back of the head by a falling ladder whilst completing a service replacement in high winds. The worker fell onto the road after the ladder impacted the back of his head, striking his face on the road. Worker received treatment as an inpatient in hospital.

ESSNM Objective	Description of each incident reported under the incident reporting requirements
Protection of third-party property	15 December 2018 – Bewleys Lane, Harwood – A fire was observed within the vicinity of Essential Energy assets. 31 December 2018 – Algona Road, Missile Brother – A fire was observed within the vicinity of Essential Energy's overhead power lines. 3 January 2019 – Harrington Road, Coopernook – A fire occurred with the vicinity of Essential Energy assets. 21 January 2019 – Coach Road, Culcairn – A fire occurred in the vicinity of Essential Energy assets. 23 January 2019 – Panorama Drive, Diamond Beach – A fire was observed in the vicinity of Essential Energy assets. 5 February 2019 – Glen Cush Drive, Taree – There were reports of a fire caused by a tree impacting Essential Energy's network. Earth works were being conducted in the area. 5 February 2019 – Foxs Road, Rollands Plains – A tree was observed over high voltage conductors and a fire was in the vicinity. 23 February 2019 – Scrub Road, Tenterfield – Two fires had started in the vicinity of Essential Energy assets. 11 August 2019 – Pappinbarra Road, Lower Pappinbarra – The NSW RFS reported a fire within the vicinity of Essential Energy assets. 7 September 2019 – Princess Highway, Cobargo – A fire started in the vicinity of Essential Energy assets.
Safety risks arising from loss of electricity supply	13 December 2018 – Northern NSW – Storm damage across the Northern Region 15 December 2018 – Quirindi/Murrurundi - High winds in the Quirindi / Murrurundi area caused sub-transmission poles to come down along with conductors 16 December 2018 – Kootingal/Bendemeer - Storms in the Kootingal/Bendemeer area caused multiple faults - largest fault of sub-transmission conductors down 20 December 2018 – Northern/North Coast NSW - Severe storms including high winds across the Northern/North Coast area 21 December 2018 - Northern/North Coast NSW - Severe storms including high winds across the Northern/North Coast area 22 December 2018 – Murwillumbah - Storms across the North Coast and Northern areas - earth wire came down into 66kV affecting the Murwillumbah zone 23 January 2019 – Northern NSW - Storms across the Northern area - including Parkes

3. Tier 3 – Control failure near miss

Table 3: Network assets failures

Performance Measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)					
			Unassisted			Assisted		
			No fire	Fire		No Fire	Fire	
				Contained	Escaped		Contained	Escaped
Towers	189	0	0	0	0	0	0	0
Poles (including street lighting columns/poles & stay poles)	1,391,153	530	185	3	9	355	0	33
Pole-top structures	1,816,838	816[1]	337	18	13	435	0	1
Cross Arm			296	2	5	280	0	0
Insulator			41	15	7	154	0	0
Other			0	1	1	1	0	1
Conductor – Transmission OH	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Conductor – Transmission UG	0	n/a	n/a	n/a	n/a	n/a	n/a	n/a
Conductor – HV (including sub-transmission) OH	159,266km	1256[1]	539	8	39	713	0	69
Splice			92	0	0	295	0	0
Tie			75	5	4	125	0	0

[1] Average annual functional failure rate based on 2 years of failure history

Performance Measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)					
			Unassisted			Assisted		
			No fire	Fire		No Fire	Fire	
				Contained	Escaped		Contained	Escaped
Other			372	3	35	293	0	69
Conductor – HV (including sub-transmission) UG	2,766km	361[1]	219	3	2	109	0	3
Conductor – LV OH	21,616km	178[1]	72	1	16	92	0	5
Conductor – LV UG	4,462km	261[1]	152	1	1	90	0	0
Service line OH	494,075	2037[1]	1279	1	8	566	0	3
Service line UG	232,771	154[1]	88	0	0	50	0	0
Power transformers								
Distribution transformers	141,007	1059[1]	261	4	4	849	0	6
Reactive plant	695	17[1]	10	1	0	5	0	0
Switchgear – zone / sub transmission / transmission substation	15,181	3.2	9	0	0	0	0	0
Switchgear – distribution (Overhead)	447,374	5831	315	3	26	217	0	7
Switchgear – distribution (Ground based)	41,922	711	6	0	0	0	0	0

Performance Measure	Population	5-year average annual functional failures	Annual functional failures (for reporting period)					
			Unassisted			Assisted		
			No fire	Fire		No Fire	Fire	
				Contained	Escaped		Contained	Escaped
Protection relays or systems	5440	40	44	0	0	0	0	0
Zone / sub transmission / transmission substation SCADA system	359	18.8	30	0	0	0	0	0
Zone / sub transmission / transmission substation Protection Batteries	415	-	42	0	0	0	0	0

Table 4: Vegetation contact with conductors

Performance measure	Event count – 1 October 2018 – 30 September 2019	Event count – 1 October 2017 – 30 September 2018	Event count – 1 October 2016 – 30 September 2017	Event count – 1 October 2015 – 30 September 2016	Event count – 1 October 2014 – 30 September 2015	Comments
Fire starts – grow in	1	5	6	4	4	
Fire start – fall in and blow in	43	38	28	21	25	
Interruption – grow in	147	147	167	200	270	
Interruption – fall in and blow in	1,883	1,367	1,672	1,901	1,455	

Table 5: Unintended contact, unauthorised access and electric shocks

Detail	Event count – 1 October 2018 – 30 September 2019	Event count – 1 October 2017 – 30 September 2018	Event count – 1 October 2016 – 30 September 2017	Event count – 1 October 2015 – 30 September 2016	Event count – 1 October 2014 – 30 September 2015	Comments
Electric shock and arc flash incidents originating from network assets including those received in customer premises						
Public	241	-	-	-	-	
Public worker	6	-	-	-	-	
Network employee / network contractor	6	-	-	-	-	
Accredited Service Provider	0	-	-	-	-	
Livestock or domestic pet	18	-	-	-	-	
Contact with energised overhead network asset (e.g. conductor strike)						
Public road vehicle	342	-	-	-	-	
Plant and equipment	77	-	-	-	-	
Agricultural and other	250	-	-	-	-	
Network vehicle	5	-	-	-	-	
Contact with energised underground network asset (e.g. conductor strike)						
Plant and equipment	52	-	-	-	-	
Person with handheld tool	1	-	-	-	-	
Unauthorised network access (intentional)						
Zone / BSP / Transmission substation / switching station	3	-	-	-	-	

Detail	Event count – 1 October 2018 – 30 September 2019	Event count – 1 October 2017 – 30 September 2018	Event count – 1 October 2016 – 30 September 2017	Event count – 1 October 2015 – 30 September 2016	Event count – 1 October 2014 – 30 September 2015	Comments
Distribution substation	3	-	-	-	-	
Towers / poles	7	-	-	-	-	
Other (e.g. communication sites)	3	-	-	-	-	
Safe Approach Distance (SAD)						
Network employee / network contractor	2	-	-	-	-	
Accredited Service Provider	3	-	-	-	-	
Public	5	-	-	-	-	
Public Worker	31	-	-	-	-	

Note: Historical data not available for Table 5 as this is a new reporting requirement.

Table 6: Reliability and Quality of Supply

Performance Measure	Event count – 1 October 2018 – 30 September 2019	Event count – 1 October 2017 – 30 September 2018	Event count – 1 October 2016 – 30 September 2017	Event count – 1 October 2015 – 30 September 2016	Event count – 1 October 2014 – 30 September 2015	Comments
High voltage into Low voltage	13	-	-	-	-	
Sustained voltage excursions outside emergency range	359	-	-	-	-	
Reverse polarity	6	-	-	-	-	
Neutral integrity due to poor workmanship or incorrect procedure	15	-	-	-	-	
Neutral integrity due to asset defect or failure	33	-	-	-	-	

Note: Historical data not available for Table 6 as this is a new reporting requirement.

Table 7: Reliability and Quality of Supply – Critical infrastructure incidents

Type of critical infrastructure (e.g. hospital, tunnel)	Minutes of supply lost	Cause	Consequential safety impacts associated with supply issue
Hospital	143	Supply was lost to Tamworth Base Hospital at approximately 19:50 on 20/12/2018 for 143 minutes. The event occurred due to a tree impacting HV conductors during severe storms.	The restoration of supply was given priority due to the type of customers affected. No safety impacts were reported.

Table 8: Network-initiated property damage events

Detail	Event count – 1 October 2018 – 30 September 2019	Event count – 1 October 2017 – 30 September 2018	Event count – 1 October 2016 – 30 September 2017	Event count – 1 October 2015 – 30 September 2016	Event count – 1 October 2014 – 30 September 2015	Comments
Third party property (assets including vehicles, buildings, crops, livestock)						
Damage (e.g. Fire, Physical impact or Electrical)	41	-	-	-		
Network property (including non-electrical assets including vehicles, buildings)						
Damage (e.g. Fire, Physical impact or Electrical	2	-	-	-	-	

Note: Historical data not available for Table 8 as this is a new reporting requirement.

4. Tier 4 - Control implementation

Table 9: Amendments and improvements to Formal Safety Assessments (FSA) or associated risk treatments

FSA	Amendments/Improvements
Loss of supply	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA. Risk assessment revised and updated.
Protection of property	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA. Risk assessment revised and updated.
Bushfire	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA. Risk assessment revised and updated.
Public Safety	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA.
Environmental Management	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA.
Worker Safety	Reviewed and updated stakeholder engagement content to clarify the input of the identified stakeholders into the FSA.

Table 10: Design, construction and commissioning

Performance measure	1 October 2018 – 30 September 2019	1 October 2017 – 30 September 2018	1 October 2016 – 30 September 2017	1 October 2015 – 30 September 2016	1 October 2014 – 30 September 2015
Designs for which Safety in Design (SiD) Reports have been completed	1,445	-	-	-	-
Designs for which Safety in Design (SiD) Reports have been audited	62	-	-	-	-
Contestable designs certified	1,837	-	-	-	-
Contestable installations reviewed	1,569	-	-	-	-
Project closeout reports completed	6,234	-	-	-	-
Project closeout reports audited	0	-	-	-	-

Note: Historical data not available for Table 10 as this is a new reporting requirement.

Table 11: Inspections (assets)

Performance measure	Inspection tasks		Corrective action tasks			Comments
	Annual target	Achieved	Tasks identified (all categories)	Open	Outstanding	
Transmission Substations	n/a	n/a	n/a	n/a	n/a	
Zone Substations	2,609	2,593	2,792	352	343	
Distribution Substations	2,224	1,769	1,959	4,379	1,761	Excludes overhead substations
Transmission OH	n/a	n/a	n/a	n/a	n/a	
Transmission UG	n/a	n/a	n/a	n/a	n/a	
Distribution OH	302,876	304,043	148,910	197,733	18,961	Includes overhead substations
Distribution UG	10,395	6,233	1,175	1,631	443	

Table 12: Inspections (vegetation) Aerial/Ground based

Bushfire risk category	Population (spans / poles)	Target	Achieved	Outstanding	Comments
Aerial					
LiDAR – Engineering (poles)	1,391,153	57,750	57,750	0	LiDAR not separated by bushfire risk category
LiDAR – Vegetation (poles)	1,391,153	110,393	110,393	0	LiDAR not separated by bushfire risk category
P1 - Pre-summer bushfire inspection (PSBI)	100,511	100,511	100,511	0	
Total	2,882,817	268,654	268,654	0	
Ground-based					
P1	120,975	37,460	51,912	486	Of the 76,458 spans classified as 'Outstanding'; - 26,342 spans were inspected since the reporting period ended. - 31,521 spans are scheduled for 2020 reporting period - 1,819 spans are scheduled for 2021 reporting period. - 16,776 spans to be rescheduled.
P2	390,254	196,900	195,729	25,847	
P3	606,751	176,629	166,518	35,186	
P4	270,664	280,307	280,721	14,808	
Unclassified[2]	2,509	131	0	131	
Total	1,391,153	691,427	694,880	76,458	

[2] Includes private assets

Table 13: Public electrical safety plans and activities

Network operator public safety programs / campaigns	Details
Public Electrical Safety Awareness Plan 2018-19 (PESAP)	PESAP for period of FY18 was released in June 2019.
Storm Safety	Targeted to the general public located in the Essential Energy network area. The campaign included press, radio, digital advertising and social media and ran from November to February. The purpose of the campaign was to promote key safety messages about what to do before, during and after severe weather events including always staying at least eight metres away from fallen powerlines and avoid contact with them, look out for indicators of damage to the electricity network and after a flood always have a qualified electrician inspect all wiring before turning electricity back on.
Bushfire Safety	Targeted to the general public located in the Essential Energy network area. The campaign included press, digital and social media and ran from October to November. The purpose of the campaign was to communicate key messages relating to bushfire management and vegetation clearance zones. Key call to actions included encouraging customers to contact Essential Energy if they see vegetation overhanging our powerlines, directing the community to our Plan Before You Plant guidelines for planting around powerlines and the tree-trimming distances required to reduce the risk of bushfires.
Motor Vehicle collision with the network	Media release targeting the general public, focussed on high incident areas (Ballina, Port Macquarie, Tweed Heads) and released in July.
Renovation and DIY	Social Media posts on Essential Energy social media accounts which promoted key safety messaging in relation to remaining safe around the network while completing renovation and DIY works.
General Public - Christmas Lights Safety	Media Release distributed in November communicating the key safety measures to put in place prior to hanging festive season decorations in order to prevent electrical incidents.
General Public – Vandalism	Media Release distributed in November, communicating the dangers stemming from malicious damage or tampering to the electricity network, such as serious injuries or fatalities.

Network operator public safety programs / campaigns	Details
Agriculture – Grain Harvest	Targeted to the agribusiness at-risk group in the Essential Energy network area. The campaign included press, radio and digital advertising and ran in October. The campaign this year focussed on being aware of overhead powerlines when operating high machinery. The availability of free safety resources such as safety stickers for farm machinery were promoted on Essential Energy's Facebook account.
Look Up and Live	The key message of Look Up and Live was promoted through a digital marketing campaign which ran from February to March. The message of Look Up and Live highlights the importance of identifying overhead powerlines and marking these at ground level The campaign encouraged the use of our electricity network maps for individuals and companies involved in activities including aerial spraying and mapping, aerial inspections, leisure activities such as hot air ballooning, gliding or parachuting, general aviation, farming and agricultural activities and general water activities in Essential Energy's area of operation. These maps show the location of our overhead electricity network which are an important planning tool.
Agriculture – Sugar Cane Harvest	Media release published in industry magazine.
Aviation – Aviation industry and cotton industry	Targeted to the aviation industry operating in the Essential Energy network area. The campaign included press, radio and digital advertising and ran in March and April. One of the key objectives of the campaign was to promote the availability of powerline markers and overhead electricity network maps from the Essential Energy website.
Building/Construction/Demolition – Including construction safety/Dial before you dig	Media release distributed in October, reminding those renovating or excavating to check for underground utilities before beginning work to minimise the risk of damage to assets or disruption to vital services.
Transport - High Loads Safety	Targeted to the transport group operating in the Essential Energy network area. The campaign included a media release and press advertising which ran in May, November and December. A media release was distributed in May 2018.

Network operator public safety programs / campaigns	Details
Agriculture - Community presence	Attendance at Field Days in the Essential Energy network area including Ag Quip (August), Henty (September) and Primex (May). The objective of attending the field days is to share public safety information with the general public and our key at-risk groups such as agribusiness. A range of free resources are available at our site including safety stickers, fact sheets, brochures and more. Essential Energy employees are on site to answer any questions the general public may have and to show safety devices such as our powerline markers.
Incident response	Responsive social media campaigns implemented on Essential Energy's social media accounts to address emerging safety issues, trends and incidents.
Safety collateral	A range of free stickers are available for the general public to order through the Essential Energy website. Assortment of Safety stickers for order through Essential Energy website – always available to order.

Table 14: Internal audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit scope	Identified non-compliances	Actions
Nil		

Table 15: External audits performed on any aspect of the ENSMS (as per AS 5577 clause 4.5.4)

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria[3]	Recommendation	
Implementation, measurement and evaluation, management review and change management of the asset management components of an electricity network safety management system.	1	A.2(6)	It is recommended that Essential Energy develop a plan of how it will integrate its ENSMS through the business. This should consider systems and artefacts, as well as decision criteria and support tools.	Establish a plan to improve the integration of the ENSMS into BAU decision making/risk management
	2	A.2(6) and A.4(1)	It is recommended that Essential Energy detail clear action plans for improving its ENSMS; (where cost vs. benefits warrant) identifying actions, owners, resourcing, and implementation timelines. Minimally, these should be developed for identified Critical Controls that have an effectiveness rating of Poor, and for residual risks where ALARP has not yet been achieved.	1. Identification and development of clear roles and accountabilities across the ENSMS (RASCI) 2. Establish formal arrangements to monitor the timely, effective and efficient delivery of the systems of control defined in the FSAs, including identified risk controls and treatments
	3	A.2(6) and A.4(1)	It is recommended that Essential Energy create (or append to an existing committee) an ENSMS committee that has responsibility for the general health of the ENSMS. Essential Energy is periodically reviewing the FSA content and corporate procedures, however, whilst the FSAs are being reviewed there is no dedicated forum for the review and management of high-risk threats to Essential Energy. This forum would aim to discuss and ensure that all associated risk treatments are being delivered, reviewed and improved on.	Add the ENSMS to the HSE Peak Committee – to monitor the performance of the ENSMS as a system

[3] Audit criteria as defined in IPART Electricity networks audit guideline – Safety management systems audits

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria[3]	Recommendation	
	4	A.2(6) and A.4(1)	It is recommended that process is embedded to monitor that FSAs are being reviewed in accordance with the FSA Development & Review guidance document; in our opinion, this should occur consistent with the frequencies identified for stakeholder engagement. We note that some FSAs make reference to CEOP0002.21 (Company Risk Management Procedure) as mechanism for FSA review but it is the FSA Development & Review guidance document that supports the trigger for review of an FSA.	As per actions for references 1, 2 and 3, and Establish formal arrangements to monitor the timely review and improvement of the FSAs
	5	A.2(6)	It is recommended that Essential Energy ensure it applies suitable risk-based asset management to its operations, including abnormal operations and contingency planning. This should include a risk-based assessment of potential gaps in contingency plans.	1. Contingency plans for project work/network augmentation. Have contingency plans in place (as part of the project definition) as a project transitions from Gate 2 to Gate 3 for final approval. The project manager would be able to identify associated costs for the risk-based approach and would provide contingency plans in a timeframe where they can be implemented. 2. Distribution back feeds for Radial Zone Substations. Identify how far back feeds on distribution could go to supply sites with single sub transmission line of transformer.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria[3]	Recommendation	
	6	A.3(1)	It is recommended that Essential Energy perform a holistic review of information requirements to ensure that all information needed is being considered and captured, with a view of supporting the analysis required for effective monitoring of all Causes and Hazardous Events detailed in the FSA Bow-Ties / Threat Barrier diagrams.	1. Undertake analysis and identification of information requirements in order to undertake analysis required for effective monitoring of all Causes and Hazardous Events detailed in the FSA Bow-Ties / Threat Barrier diagrams 2. Identify gaps between the current state information and the future state and feed identified gaps into the broader Essential Energy data / information program of works (long term) 3. Identify quick wins and improvement opportunities to both current data sets, people/skills/capability in order to close the gap between current and future state (short term) 4. Feed the above requirements into wider business transformation programmes. Establish assurance, monitoring and reporting through transformation works on delivery
	7	A.3(1)	It is recommended that Essential Energy enhance visibility of the analysis undertaken into programme delivery to impact what is being delivered, particularly as it relates to leading safety indicators / hazardous event causes articulated in the FSAs e.g. through management dashboards (defect category reporting, longest outstanding defects, issues with capital delivery).	1. Define clear criteria and a program to improve current visibility of programme delivery and the impact the programme will have on safety indicators articulated through the FSA documentation 2. Establish formal arrangements to monitor the timely, effective and efficient delivery of the systems of control defined in the FSAs, including identified risk controls and treatments

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria[3]	Recommendation	
	8	A.3(1)	It is recommended that Essential Energy enhance routine monitoring of leading safety indicators (in addition to safety consequence outcomes) i.e. routine monitoring of the occurrence of causes and hazardous events identified in the FSA bow ties. Currently performance monitoring done in relation to leading indicators appears focussed on reliability and captures safety where there is an overlap e.g. asset failures and defects.	As per actions for reference 7.
	9	A.4(1) and A.4(2)	It is recommended that Essential Energy define criteria for when Post Implementation Reviews are required, and what should be involved in the review. There is no definition of when a post implementation review should occur throughout the ENSMS. Generally, it was not evident that post implementations are being undertaken, and where they do occur that these are being performed in consistent manner. For significant change to the network, it is not evident that the ENSMS undergoes post implementation review and where required modification to adapt to the network change.	1. Define criteria for when Post Implementation Reviews are required, and what should be involved in the review 2. Define review cycles throughout the ENSMS 3. Define and develop process measures to ensure process is being applied consistently and continuously improving

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria[3]	Recommendation	
	10	A.4(1) and A.4(2)	It is recommended that Essential Energy define criteria for when formal change management is required, and what should be involved in the process. Whilst there is multiple evidence of change management processes, with the lack of an overarching change management framework, it is difficult to ascertain if technical and non-technical change is repeatable across the ENSMS. It is suggested that an overarching change management framework would offer appropriate guidance to persons directing change to ensure that the correct change management process is applied covering both technical and non-technical change. In particular – the change management process would pressure test impacts to the hazardous controls defined within the FSAs.	1. Define criteria for when formal change management is required, and what should be involved in the process 2. Define / develop technical change management process across the ENSMS whilst incorporating and aligning to the corporate change management process. Key here is to ensure consistent / repeatable application – the change management process would pressure test impacts to the hazardous controls defined within the FSAs.

Part B – Bushfire Preparedness Report

1. Bushfire risk profile across Essential Energy's supply area

Identification of Hazardous Bushfire Areas

Essential Energy has identified locations which are generally bushfire prone. The bushfire-prone lands are further segmented into bushfire risk classifications based on scientific bushfire risk modelling. The modelling considers the impact of fires which may originate from network assets.

Bushfire risk priority classifications (P1, P2, P3, & P4) are applied and determine bushfire mitigation work priorities, pre-summer inspection requirements, investment program priorities, and operational procedures. Figure 1 Maintenance area bushfire risk priority indicatorbelow is a sample map of these zones based on designated maintenance areas within the Essential Energy footprint.

The P1 - P4 classifications are a blend of ratings from two different bushfire risk models:

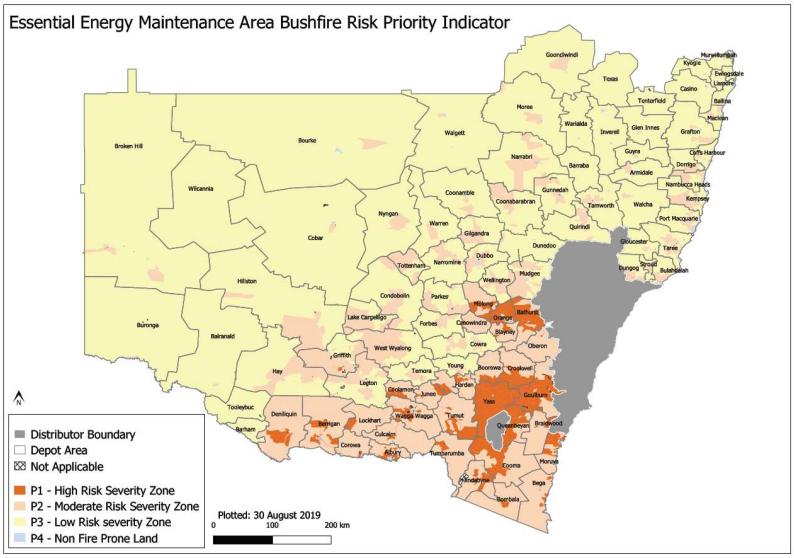
a. Essential Energy Fire Risk model, and
b. Phoenix Rapid Fire model (developed by leading fire researchers and the BNHCRC).

These are defined in Table 16: Bushfire risk classifications

Table 16: Bushfire risk classifications

Bushfire Risk Classification	Definition
P1	High risk severity
P2	Moderate risk severity
P3	Low risk severity
P4	Non-bushfire prone

Figure 1 Maintenance area bushfire risk priority indicator



Essential Energy's Bushfire Risk Strategy provides an over-arching approach to managing fire risk. It sets out amongst other things, the inter-relationship with the ENSMS, and associated risk controls and related plans.

One of those plans is the Bushfire Risk Management Plan which describes the activities undertaken to mitigate fire ignition potential. The plan is published on our website essentialenergy.com.au and public feedback is welcome.

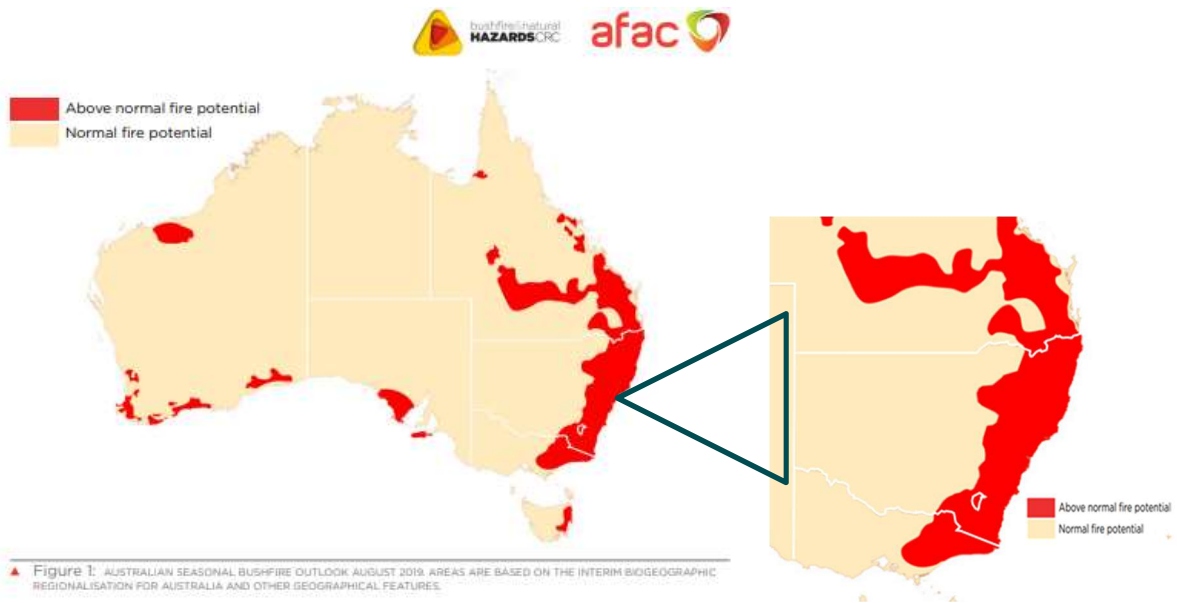
The Plan includes details of the fire risk profile across the supply area based on fire risk modelling with classifications P1, P2, P3 and P4.

Commentary from BRMC for forthcoming bushfire season

Essential Energy regularly reviews research related to upcoming climactic conditions from the NSW Rural Fire Service (RFS), Bureau of Meteorology (BOM) and the Bushfire and Natural Hazards Cooperative Research Centre (BNHCRC). This research is used to prepare for the forthcoming bushfire season. Essential Energy participates in pre-summer briefings with NSW RFS and can access the RFS operations system (ICON) for 4-day weather outlooks.

For example, the BNCRC Hazard Note 63 released on 28 August 2019 shows an above normal fire potential for the Eastern part of the state. "*Above normal bushfire potential refers to the ability of a large fire to take hold when you take into consideration the recent and predicted weather for a particular area, the dryness of the land and forests, recent fire history and local firefighting resources*." It has been noted that the year to date has been warm and dry across the country. Specifically, in NSW it has been exceptionally dry. Nearly all of NSW is drought affected. The short to medium range climate outlooks indicate warmer and drier than average conditions across the state. While being fully cured, there is below average quantity or load of fuel. Figure 2 BNHCRC Seasonal outlook below shows the eastern part of NSW having above normal fire potential.

Figure 2 BNHCRC Seasonal outlook



2. Permanent / temporary declaration of areas by RFS and network operator's actions

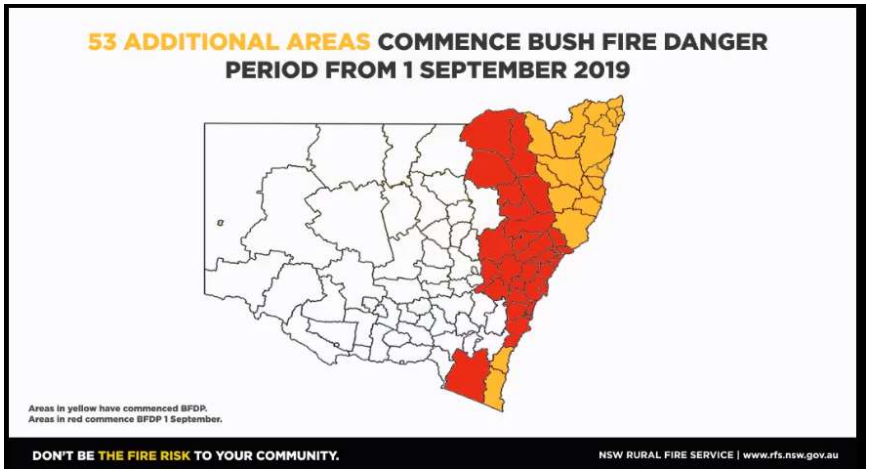
Essential Energy monitors fire season district declaration notifications from NSW RFS.

The 2019/20 climatic outlook indicated an expected early start with above normal fire potential. This resulted in early fire season declarations in some fire districts within the Essential Energy's distribution network footprint. This included six Local Government Areas (LGA) with declarations on 1 August 2019 in addition to four permanent August early declarations. A further nine LGA's were declared on 17 August 2019, and a number of LGAs were declared as of 1 September 2019.

Figure 3 RFS Media Release 30 August 2019

These early starts can be summarised in Figure 4 below.

Figure 4 RFS Early Bushfire Danger Period at 1 September 2019



Essential Energy undertakes a number of actions in preparation for the bushfire season. This includes:

- Producing a pre-fire season communication plan for its employees. For example, the primary communications included information on:
  - the early start to the 2019/20 bushfire danger period,
  - the procedures in place to be followed in periods of higher fire danger
  - how to enrol in receiving SMS Total Fire Ban updates,

- information on access to RFS fires near me app, and where to contact for further information

> A briefing on the upcoming fire season is conducted with Operations Manager. This includes expected early starts to the fire danger period and the research from the BOM and BNHCRC. This provides an opportunity to refresh staff awareness of the Essential Energy policies in place on days of elevated fire risk.

> Issuing an Essential Energy Safety Brief to operational employees on the early start to the fire season to ensure appropriate risk mitigation measures are put in place.

> Monitoring and reviewing of research into fires and the changing climatic conditions e.g. via relationships with organisations such as the Bushfire Natural Hazards Cooperative Research Centre (BNHCRC) and universities.

> Conducting regular operational Bushfire Preparedness meetings to assess maintenance tasks priorities including prioritisation of tasks associated with the annual network Pre-Summer Bushfire Inspections in high fire risk areas

> Pre-season briefing presentations from NSW RFS management to Essential Energy's managers and senior leaders including seasonal outlooks.

3. Aerial consumer mains on bushfire prone private land (HV and LV)

Low Voltage Private Lines

Essential Energy's asset inspectors undertake regular ground-based patrols of private overhead lines as part of routine network asset inspections. Customers are notified of maintenance tasks identified on a private line.

As an example, in 2018/19 we inspected in the order of 24,228 private poles resulting identification of approximately 1,243 private maintenance tasks which required follow up notification and consultation with our customers.

Essential Energy has a dedicated private lines team that manages customer engagement in regard to notifiable tasks to ensure safety related matters are dealt with. Essential Energy has in place hardship arrangements for customers who may have limited financial means to deal with the costs of maintenance of private lines.

Essential Energy has processes in place to regularly review private line tasks to ensure they are correctly classified as private tasks and customers receive the appropriate information to deal with maintenance of their assets.

High Voltage Private Lines

Essential Energy has a small proportion of customers connected to the network as Private High Voltage Installations. At these sites, customers take supply at high voltage and they own and operate their own private electrical network under special requirements set out in the Connection Agreements and the NSW Service and Installation Rules.

Essential Energy communicates annually with high voltage customers connected to its network about their obligations to implement a suitable safety management system or plan. This includes drawing specific attention to their obligation to maintain private electrical installations such that they mitigate the risk of these assets becoming a source of bushfire ignition.

Table 17: Aerial consumer mains on bushfire prone private land (HV and LV)

Performance Measure	1 October 2018 – 30 September 2019		1 October 2017 – 30 September 2018		1 October 2016 – 30 September 2017		1 October 2015 – 30 September 2016		1 October 2014 – 30 September 2015	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Private LV lines checked by the network operator	25,996	24,228	-	12,592	-	11,416	-	13,390	-	17,716
Number of directions for bushfire risk mitigation issued to LV customers by the network operator	n/a	1,243	n/a	311	n/a	-	n/a	-	n/a	-
Number of directions for bushfire risk mitigation issued to LV customers by the network operator that are outstanding by more than 60 days	n/a	67	n/a	206	n/a	-	n/a	-	n/a	-
HV customers (metering point count) advised to undertake pre-season bushfire checks in accordance with ISSC31	150	150	-	-	-	-	-	-	-	-
HV customers (metering point count) providing statements of compliance in accordance with ISSC31	150	141	-	-	-	-	-	-	-	-
HV customers (metering point count) requiring additional risk mitigation prior to start of the reporting year	n/a	9	-	-	-	-	-	-	-	-
HV customers (metering point count) where additional risk mitigation has been completed prior to start of the reporting year	n/a	0	n/a	-	n/a	-	n/a	-	n/a	-

Table 18: Pre-summer bushfire inspections

Pre-summer bushfire inspections	Population (spans/poles)	Target	Achieved	Outstanding	Comments
Inspections	100,511 poles	100,511	100,511	0	

Table 19: Vegetation Tasks

Bushfire risk category	Status	Encroachment classification A1	Encroachment classification A2	Encroachment classification A3	Encroachment classification A4	Hazard Trees
P1	Open	10	16	96	122	267
	Outstanding[4]	5	6	4	3	0
P2	Open	324	817	2,009	2,123	1,428
	Outstanding	125	94	125	185	223
P3	Open	805	3,000	4,120	3,915	529
	Outstanding	432	659	1,407	1,524	51
P4	Open	3,173	3,927	3,875	2,446	465
	Outstanding	663	656	77	123	31
Unclassified[5]	Open	1	1	3	10	7
	Outstanding	0	0	1	1	0
Total	Open	4,313	7,761	10,103	8,616	2,696
	Outstanding	1,225	1,415	1,614	1,836	305

[4] As at 31 October 2019 all reported outstanding P1 defects have been completed

[5] Includes private assets

Table 20: Asset tasks

Bushfire risk category	Status	Category 1	Category 2	Category 3	Category 3A	Category 4	Totals
P1	Open	0	10	4,161	2	10,007	14,180
	Outstanding[6]	1	2	1,144	0	82	1,229
P2	Open	0	50	13,680	1,007	37,118	51,855
	Outstanding	2	27	4,783	0	271	5,081
P3	Open	1	109	23,439	3,986	95,114	122,649
	Outstanding	134	68	11,692	0	672	12,566
P4	Open	0	42	4,427	151	11,453	16,073
	Outstanding	0	30	2,907	0	46	2,983
Unclassified[7]	Open	1	8	1,258	2	1,260	2,529
	Outstanding	1	14	516	0	24	555
Total	Open	2	219	46,965	5,148	154,952	207,286
	Outstanding	136	141	21,042	0	1,095	22,414

Table 20 contains information relating to all asset tasks identified which are in progress (Open) and those where the nominated rectification timeframe has elapsed (Outstanding) before completion. Outstanding tasks are monitored on a fortnightly basis and risk assessed to determine the appropriate course of action. Tasks may be outstanding due to wet weather and access issues or where time extensions have been approved based on a risk assessment.

[6] As at 31 October 2019 the reported outstanding P1 Category 1 and 2 tasks have been completed

[7] Includes private assets