Electricity Network Safety Management System Performance & Bushfire Preparedness Report

1 July 2019 to 30 June 2020

October 2020

Version 2

Table of Contents

List of Figures

List of Tables

Introduction

This document is the Annual Performance Report for the Essential Energy Electricity Network Safety Management System (ENSMS).

It is produced to meet the requirements set out in the Independent Pricing and Regulatory Tribunal (IPART) Electricity Networks Reporting Manual (September 2020). As such, it is intended to provide sufficient information for IPART or members of the public and customers to assess Essential Energy's performance against its ENSMS.

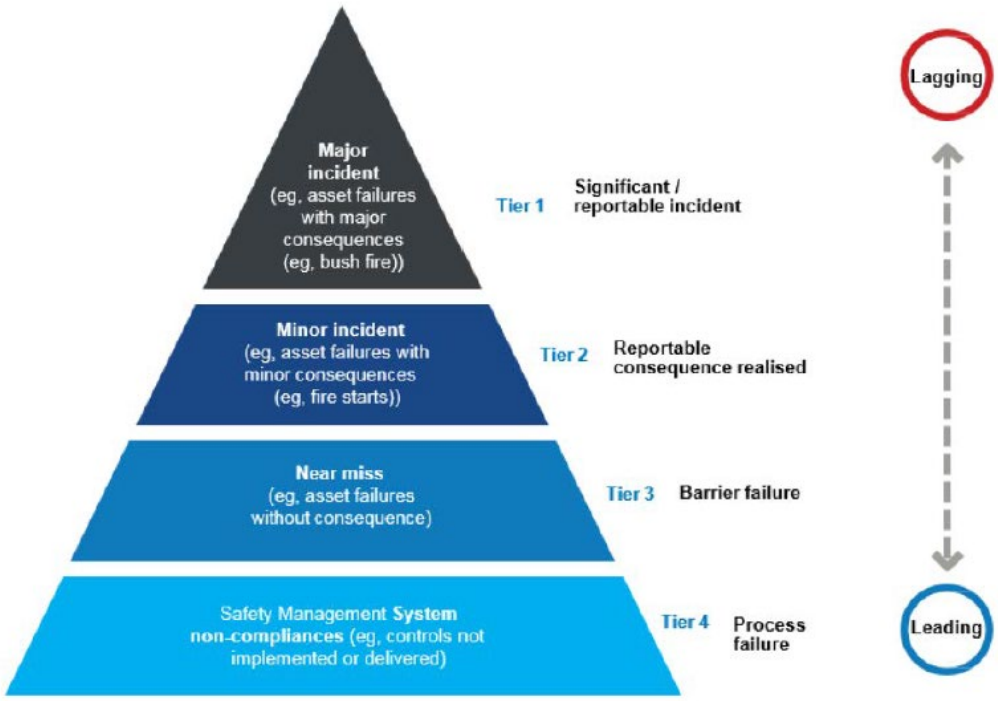
It is structured in two parts:

- Part A sets out the annual safety performance for the period 1 July 2019 to 30 June 2020
- Part B sets out Essential Energy's bushfire preparedness activities undertaken for the period 1 October 2019 to 30 September 2020

Part A – ENSMS Annual Performance Report

Part A reports against a framework of safety performance indicators defined within the Electricity Network Reporting Manual as per Figure 1:

Figure 1: IPART Safety Performance Monitoring Framework



Part A is structured around the four 'Tiers' defined in Figure 1 as follows:

- Section 1 describes Tier 1 indicators (Major incidents)
- Section 2 describes Tier 2 indicators (Minor incidents)
- Section 3 describes Tier 3 indicators (Control failure near misses)
- Section 4 describes Tier 4 indicators (Control implementation)

1. Tier 1 – Major Incidents

Major incidents are those that result in significant consequences such as fatalities, life changing or life-threatening injuries, where the electricity network was the cause of the incident, for example due to an asset failure. Major incidents also include incidents resulting in significant loss of property e.g. due to major bushfires that were started by the network, as well as significant power outages.

Table 1 provides a brief description of all 'Major Incidents' that occurred on the Essential Energy network during the reporting period. Each of these was reported to IPART during the year, in accordance with definitions and timeframes set out by IPART.

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

ESSNM Objective		Description of major incident reported under the incident reporting requirements
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 • 8 October 2019 – Ramornie – A tree fell over HV conductors, a fire was found in the vicinity. • 26 October 2019 – Failford – A tree limb was found over HV conductors, a fire was observed in the vicinity. • 30 December 2019 – Tarbuck Bay – A tree fell over HV conductors, a fire was found in the vicinity. • 30 December 2019 – Coopernook – A tree fell over HV conductors, a fire was found in the vicinity. • 23 January 2020 – Bombala – A tree from outside of required clearances failed at the base, falling over HV conductors. It is believed this resulted in a fire ignition.
	Network property	No major incidents reported
Safety risks arising from loss of electricity supply		8 October 2019 - Lismore - 79,400 Customers off supply due to TransGrid Lismore 330kV 89 Feeder tripping during bushfires. 132kV 967 feeder out of service for the installation of overhead fibre optic cable. 31 December 2020 - South Coast Bushfires - Network damage on the transmission network between Batemans Bay and Milton and Batemans Bay and Moruya due to south coast bushfires. Widespread damage to the distribution network adding to outage rectification times. 4 January 2020 - South Coast Bushfires - The primary incident which included damage to the Endeavour segment of the 132kV interconnection interrupting supply to the Batemans Bay area. Due to destruction of network and access for Endeavour staff to the bushfire area this outage took additional time to repair.

2. Tier 2 – Minor Incidents

Minor incidents are those that result in safety consequences such as hospitalisation and a person receiving care from a health care professional, where the electricity network was the cause of the incident, for example due to an asset failure. This category also includes lower level impacts to public property (such as smaller fires) and smaller power outages.

Table 2 provides a brief description of all 'Minor Incidents' that occurred on the Essential Energy network during the reporting period. Each of these was reported to IPART during the year, in accordance with definitions and timeframes set out by IPART.

Table 2: Incidents

ESSNM Objective	Description of each incident reported under the incident reporting requirements
Safety of members of the public	No incidents reported
Safety of persons working on the network	10 December 2019 – Port Macquarie – 2 x electricity network workers undertaking switching works at Settlement City Shopping Centre/Panthers Club in Port Macquarie were involved in an incident where both workers suffered burn injuries. Both were transported to hospital for further treatment. Damage to the network occurred.
Protection of third-party property	• 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. • 13 November 2019 – Thuddungra – A fire was observed in the vicinity of Essential Energy Assets. An incorrect splice was used when joining a conductor. Said conductor failed where a fire was observed in the vicinity • 23 January 2020 – Oberon – An earthed conductor struck a live HV conductor due to vibration/fatigue of the mechanical components.
Safety risks arising from loss of electricity supply	26 October 2019 - Storms and bushfires across the Mid North Coast. 31 December 2019 - South Coast bushfires. 23 January 2020 - Storms and bushfires across NSW. 3 February 2020 - Storms across the North Coast.

3. Tier 3 – Control failure near miss

This section sets out events such as an asset failures or where a worker, member of the public or livestock or a pet came into contact with the network, but that didn't result in a safety consequence reported in Sections 1 and 2 above. These are categorised as 'near misses' and are reported across six tables as follows:

- Table 3 sets out near misses related to 'functional' **failures of network assets**. These are generally complete failures of an asset e.g. broken wires, due to factors both within and outside of Essential Energy's control.
- Table 4 sets out near misses related to trees or branches ('**vegetation**') coming into **contact** with overhead wires ('conductors') and resulting in either fire starts or supply interruptions.
- Table 5 sets out near misses related to **unintended contact, unauthorised access and electric shocks** originating from network assets. 'Unintended contact' describes incidents such as construction or agricultural vehicles coming into contact with overhead or underground conductors. 'Unauthorised access' describes incidents such as trespass onto the Essential Energy network e.g. into zone substations.
- Table 6 sets out further detail around near misses related to **electric shocks**, due to specific causes related to network assets and workmanship. Table 6 also details near misses related to the **quality of the electricity supply**.
- Table 7 sets out near misses due to supply interruptions to '**critical infrastructure**' e.g. hospitals.
- Table 8 sets out network-initiated **property damage** events, for example where public property including cars, buildings, crops or livestock have been damaged by the network. Table 8 also includes events where non-electrical assets belonging to Essential Energy have been damaged by the network e.g. damage to Essential Energy vehicles or buildings.

The remainder of this section provides a brief description of each of the tables, to explain the terms used and provide some context for the reported performance. This is followed by each of the tables that sets out the performance for the reporting period.

3.1 Network Asset Failures

Table 3 lists those asset failures that occurred on the Essential Energy network during the reporting period, split by the major asset types. These are reported in the context of the total population for each asset type and the 5-year average annual failure numbers.

For each asset type, the table reports the failures that occurred during the reporting period, broken out by:

- 'Unassisted' and 'Assisted' failure types, where:
    - 'unassisted' failures are those considered to be within the control of Essential Energy. For example, failures caused by asset degradation and aging due to corrosion, termite attack and wood decay.
    - 'assisted' failures are those attributed to external causes, for example vehicle impacts, vandalism, lightning, fires and storms that resulted in wind speeds in excess of relevant design standards.
- Whether the failure resulted in a fire, or no fire; and

- If the failure did result in a fire, was the fire limited to the asset ('Contained'), or did it spread to the surrounding environment ('Escaped')

Of particular note in Table 3 is the number of assisted pole failures during the reporting period, which is substantially higher than the 5-year annual average as it includes the impact of the Black Summer bushfires on the Essential Energy network.

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	191	0	0	0	0	0	0	0
Poles (including street lighting columns/poles & stay poles)	1,397,255	956	130	8	4	2,421	0	39
Pole-top structures	1,864,516	819[1]	405	16	12	433	0	2
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[2] (including sub-transmission) OH[3]	146,909 km	1092[1]	518	3	47	600	0	59
Conductor – HV (including sub-transmission) UG[4]	2,754 km	51[1]	30	4	0	22	0	1

[1] Average annual functional failure rate based on 3 years of failure history
[2] High Voltage (HV)
[3] Overhead (OH)
[4] Underground (UG)

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
Conductor – LV[5] OH	25,439 km	725[1]	444	3	9	302	0	7
Conductor – LV UG	6,641 km	312[1]	181	1	5	153	0	0
Service line OH	567,266	2,243	1,701	0	1	709	0	6
Service line UG	166,418	36	22	0	0	8	0	0
Power transformers	696	1.8	1	0	0	0	0	0
Distribution transformers	139,500	1,261	471	2	6	779	0	6
Reactive plant	413	20.8	10	1	0	9	0	0
Switchgear – zone / sub transmission / transmission substation	15,137	3.5	3	0	0	0	0	0
Switchgear – distribution (Overhead)	447,450	558	324	1	21	209	0	3
Switchgear – distribution (Ground based)	42,675	25	26	1	0	6	0	0
Protection relays or systems[6]	5,526	40.4	42	0	0	0	0	0
Zone / sub transmission / transmission substation SCADA system	364	25.4	50	0	0	0	0	0

[5] Low Voltage (LV)

[6] As per previous ENSMS Reports, population is based on Zone Substation Protection Systems

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
Zone / sub transmission / transmission substation Protection Batteries	673	38.6[7]	27	0	0	0	0	0

3.2 Vegetation Contact with Conductors

Table 4 breaks out the numbers and causes of vegetation contact with conductors into the following categories:

- 'Grow in' vegetation is any vegetation that has grown into the space around the conductors, allowing for contact to occur. This might come from trees that are below, to the side or above the conductors.
- 'Fall in' vegetation is usually dead or dying vegetation from trees surrounding or above the conductor that has fallen onto the conductor e.g. dead branches that fall onto the conductors when they drop from a nearby tree.
- 'Blow in' vegetation is usually branches that have been picked up by high winds from some distance away from the conductors and which has been 'blown into' the conductors.

For context, Essential Energy has in the region of 550,000 vegetated spans across its network.

Table 4: Vegetation contact with conductors

Performance measure	Event count – 1 July 2019 – 30 June 2020	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	Comments
Fire starts – grow in	1	1	5	6	4	None
Fire start – fall in and blow in	48	43	38	28	21	None
Interruption – grow in	138	147	147	167	200	None
Interruption – fall in and blow in	1,570	1,883	1,367	1,672	1,901	None

[7] Figure provided is 3 year average due to data availability.

3.3 Unintended Contact, Unauthorised Access and Electric Shocks

Table 5 breaks records events that resulted in electric shocks that were not classified as 'Major' or 'Minor' incidents in accordance with the IPART reporting criteria. Table 5 also records instances of unintended or unauthorised contact or close access to the electricity network that had the potential to result in an electric shock.

Examples of events included in Table 5 could include:

- Member of the public receiving an electric shock (not classified as a major or minor incident), due to a faulty network connection to a residence
- Tipper truck contacting overhead powerlines while operating
- Construction excavator contacting underground powerlines while operating
- Theft of copper earth wires from power poles
- Construction scaffolding erected too close to the network

Table 5: Unintended contact, unauthorised access and electric shocks

Detail	Event count – 1 July 2019 – 30 June 2020	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	Comments
Electric shock and arc flash incidents originating from network assets including those received in customer premises						
Public	262	241	-	-	-	None
Public worker	2	6	-	-	-	None
Network employee / network contractor	9	6	-	-	-	None
Accredited Service Provider [8]	3	0	-	-	-	None
Livestock or domestic pet	17	18	-	-	-	None
Contact with energised overhead network asset (e.g. conductor strike)						
Public road vehicle	355	342	-	-	-	None
Plant and equipment	93	77	-	-	-	None

[8] ASPs are persons who have been accredited through a NSW Government-recognised accreditation scheme, to undertake contestable work on the Essential Energy network

Detail	Event count – 1 July 2019 – 30 June 2020	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	Comments
Agricultural and other	107	250	-	-	-	Impact of drought on agriculture activities
Network vehicle	2	5	-	-	-	None
Contact with energised underground network asset (e.g. conductor strike)						
Plant and equipment	47	52	-	-	-	None
Person with handheld tool	4	1	-	-	-	None
Unauthorised network access (intentional)						
Zone / BSP [9] / Transmission substation / switching station	0	3	-	-	-	None
Distribution substation	20	3	-	-	-	Field added to TotalSAFE partway through FY19
Towers / poles	14	7	-	-	-	None
Other (e.g. communication sites)	1	3	-	-	-	None
Safe Approach Distance (SAD)						
Network employee / network contractor	3	2	-	-	-	None
Accredited Service Provider	3	3	-	-	-	None
Public	8	5	-	-	-	None
Public Worker	44	31	-	-	-	None

Note: This reporting requirement was introduced from October 2018; historical data is not available beyond this date

[9] Bulk Supply Point (BSP)

3.4 Reliability and Quality of Supply

Table 6 details occurrences of:

- three types of events that resulted in electric shocks that were not classified as 'Major' or 'Minor' incidents in accordance with the IPART reporting criteria, but that were reportable to IPART (High voltage into Low voltage, Reverse polarity and Neutral integrity due to poor workmanship or incorrect procedure)
- events resulting in sustained periods where the voltage on the network was sufficiently outside of range that it resulted in a complaint from a customer (Sustained voltage excursions outside emergency range), and
- electric shocks that were caused by defective neutral connection that resulted from asset defects or failures, but that were not reportable to IPART (Neutral integrity due to asset defect or failure)

Table 6: Reliability and Quality of Supply

Performance Measure	Event count – 1 July 2019 –30 June 2020	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	Comments
High voltage into Low voltage	16	13	-	-	-	Based on IPART reportable incidents
Sustained voltage excursions outside emergency range	259	359	-	-	-	Based on validated Power Quality complaints
Reverse polarity	1	6	-	-	-	Based on IPART reportable incidents
Neutral integrity due to poor workmanship or incorrect procedure	1	15	-	-	-	Based on IPART reportable incidents
Neutral integrity due to asset defect or failure	190	173 [10]	-	-	-	Based on validated Public Shocks, attributed to network asset faults

[10] Following a data review the previously reported number of Neutral integrity due to asset defect or failure for 1 Oct 2018 – 30 Sep 2019 has been updated from 33 to 173.

Note: This reporting requirement was introduced from October 2018; historical data is not available beyond this date

3.5 Reliability and Quality of Supply – Critical Infrastructure Incidents

Table 7 details events where supply was lost to critical infrastructure, such as hospitals. There were no events of this type within the reporting period.

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
Nil	-	-	-

3.6 Network-initiated Property Damage Events

Table 8 details events where public or network property was damaged and it is considered that there is a reasonable likelihood that the damage was caused by the network.

Table 8: Network-initiated property damage events

Detail	Event count – 1 July 2019 – 30 June 2020	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	Comments
Third party property (assets including vehicles, buildings, crops, livestock)						
Damage (e.g. Fire, Physical impact or Electrical)	44	41	-	-	-	None
Network property (including non-electrical assets including vehicles, buildings)						
Damage (e.g. Fire, Physical impact or Electrical	1	2	-	-	-	None

Note: This reporting requirement was introduced from October 2018; historical data is not available beyond this date

4. Tier 4 - Control implementation

This section sets out Essential Energy's performance in planning, implementing, delivering and reviewing key safety risk controls, as set out in the Electricity Network Safety Management System. It is structured as follows:

- Table 9 details amendments and improvements made to Essential Energy's suite of **Formal Safety Assessments** and associated risk treatments during the reporting period
- Table 10 sets out activities undertaken in connection with **design, construction and commissioning** work on the Essential Energy network
- Table 11 sets out activities undertaken and outstanding in relation to **asset inspections** and '**corrective action tasks**'
- Table 12 sets out activities undertaken and outstanding in relation to **vegetation inspections**
- Table 13 sets out activities undertaken in relation to **public electrical safety awareness**
- Table 14 sets out **internal audit** activities performed on aspects of the ENSMS
- Table 15 sets out **external audit** activities performed on aspects of the ENSMS

4.1 Amendments and improvements to Formal Safety Assessments

The Essential Energy ENSMS is underpinned by a suite of Formal Safety Assessments (FSAs). These identify and assess the safety risks associated with the electricity network, determine the effectiveness of current risk controls and identify improvements.

The Formal Safety Assessments are subject to a three-year review cycle. None of the Essential Energy FSAs fell due for a three-year review during the reporting period. However, work has commenced to undertake a proactive review of the Bushfire FSA, in response to Essential Energy's experience and learnings during the Black Summer fires.

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

FSA	Amendments
Loss of supply	No changes during the reporting period
Protection of property	No changes during the reporting period
Bushfire	No changes during the reporting period
Public Safety	No changes during the reporting period
Environmental Management	No changes during the reporting period

FSA	Amendments
Worker Safety	No changes during the reporting period

4.2 Design, Construction and Commissioning

Table 10 details metrics relating to the design, construction and commissioning of new or altered network assets during the reporting period. This includes 'contestable' designs and installation, undertaken by Accredited Service Providers, which are certified and reviewed by Essential Energy.

Table 10: Design, construction and commissioning

Performance measure	1 July 2019 – 30 June 2020	1 October 2018 – 30 September 2019	1 October 2017 – 30 September 2018	1 October 2016 – 30 September 2017	1 October 2015 – 30 September 2016
Designs for which Safety in Design (SiD) Reports have been completed	1,200	1,445	-	-	-
Designs for which Safety in Design (SiD) Reports have been audited	58	62	-	-	-
Contestable designs certified	1,785	1,837	-	-	-
Contestable installations reviewed	1,554	1,569	-	-	-
Project closeout reports completed	6,432	6,234	-	-	-
Project closeout reports audited	0	0	-	-	-

Note: This reporting requirement was introduced from October 2018; historical data is not available beyond this date

4.3 Inspections (Assets)

Table 11 details asset inspections undertaken during the reporting period. It also details 'corrective action tasks' addressing inspections undertaken during the reporting period or within previous reporting periods, that fell due during the reporting period. Within the 'corrective action tasks' section of Table 11:

- 'Tasks identified' are those that reported during the reporting period
- 'Tasks achieved' are those that were completed during the reporting period
- 'Open' tasks are tasks that were identified prior to or during the reporting period, but that did not fall due during the reporting period, and
- 'Outstanding' tasks are tasks that fell due during the reporting period, but that weren't completed

Table 11: Inspections (assets)

Performance measure	Inspection tasks		Corrective action tasks				Comments
	Annual target	Achieved	Tasks identified (all categories)	Achieved	Open	Outstanding	
Transmission Substations	n/a	n/a	n/a	n/a	n/a	n/a	Nil transmission assets
Zone Substations	2,544	2,525	6,771	4,505	1,072	182	See Note
Distribution Substations	2,622	2,669	2,141	3,357	3,043	599	Excludes overhead substations See Note
Transmission OH	n/a	n/a	n/a	n/a	n/a	n/a	Nil transmission assets
Transmission UG	n/a	n/a	n/a	n/a	n/a	n/a	Nil transmission assets
Distribution OH	314,000	312,374	183,458	101,128	143,428	24,977	Includes overhead substations See Note
Distribution UG	12,859	12,810	3,865	2,464	3,263	442	See Note

Note: Tasks may be outstanding due to issues such as wet weather and access constraints. Outstanding tasks are monitored on an appropriate basis and risk assessed to determine the appropriate course of action.

4.4 Inspections (Vegetation)

Table 12 details vegetation inspection tasks undertaken during the reporting period. The table includes two types of vegetation inspections; those undertaken using aerial inspection methods and those undertaken using ground-based inspection methods.

Essential Energy carries out aerial pre-summer bushfire inspections across its 'P1' bushfire risk areas. These are the parts of the network considered the highest bushfire risk. Further detail of Essential Energy's approach to bushfire risk prevention is provided in Part B of this report.

Other terms used in Table 12 are similar to those used in Table 11.

Table 12: Inspections (vegetation) Aerial/Ground based

Bushfire risk category	Population (spans / poles)	Target	Achieved	Outstanding	Comments
Aerial					
P1 - Pre-summer bushfire inspection (PSBI)	100,450	100,450	100,453	0	Streetlight, urban, sub-transmission in P2 distribution areas removed
Total	100,450	100,450	100,453	0	None
Ground-based					
P1 [11]	120,927	61,955	52,640	9,315	Outstanding spans are included in the 2020/21 inspection program.
P2 [12]	393,107	158,505	149,884	8,621	Outstanding spans are included in the 2020/21 inspection program.
P3 [13]	608,493	215,517	191,367	24,150	Outstanding spans are included in the 2020/21 inspection program.

[11] Areas considered High bushfire risk

[12] Areas considered Moderate bushfire risk

[13] Areas considered Low bushfire risk

Bushfire risk category	Population (spans / poles)	Target	Achieved	Outstanding	Comments
P4 [14]	275,029	292,048	280,941	11,107	Outstanding spans are included in the 2020/21 inspection program.
Unclassified [15]	1,069	598	468	130	Outstanding spans are included in the 2020/21 inspection program.
Total	1,398,625	728,623	675,300	53,323	None

4.5 Public Electrical Safety Plans and Activities

Table 13 details activities undertaken as part of Essential Energy's Public Electrical Safety Awareness Plan (PESAP). This outlines the programs and activities that we initiate or continue to perform in order to promote public safety awareness and education relating to the electricity network.

Table 13: Public electrical safety plans and activities

Network operator public safety programs / campaigns	Details
Public Electrical Safety Awareness Plan 2019-20 (PESAP)	The PESAP for 2019/2020 covers the period of 01/07/2019 to 30/06/2020. This PESAP is available at pesap.essentialenergy.com.au.

[14] Areas considered non-bushfire prone

[15] Includes private assets

Network operator public safety programs / campaigns	Details
General public	• Summer safety campaign; in market from Dec 2019 - Feb 2020, campaign included digital advertising across multiple websites, social media including Facebook and Instagram newsfeed and stories, campaign landing page on the Essential Energy website https://www.essentialenergy.com.au/summersafety. • Bushfire safety campaign; in market from Dec 2019 - Feb 2020, campaign included radio, social media (paid and organic) and digital advertising. Bushfire safety messages were also integral in all of our bushfire responsive communications, including a strong push to share the 'stay 8 metres way from fallen powerlines' message. • The campaign messaging focused on the key actions to take during a bushfire event and directed the audience to a Summer Safety campaign landing page which acted as a central point of safety information for the campaign, including further detailed information and factsheets • Storm safety campaign; in market from Dec 2019 - Feb 2020, campaign included social media (paid and organic) and digital advertising. • Electrical Safety Week (ESW), official ESW September 2019, campaign included communications in the lead up to, and during the week with resource packs delivered to registered schools and social media posts. • Christmas lights safety messaging – media release and organic social media posts Nov and Dec 2019 • Vandalism – organic social media in March 2020 discouraging any kind of vandalism of the electricity network (including copper theft). • Shocks and tingles – social media communications in Feb 2020. The Electrical Safety Office QLD post was shared on our social channel along with another organic post raising awareness of this issue and what to do in this situation. • DIY/Renovation – Social media message to always check for powerlines before cleaning gutters, painting, planting or trimming trees (December 2019). • In 2020, a trial of including safety message on Essential Energy vehicles commencing. This messaging promoted the "Stay clear when powerlines are near" safety message and was displayed through a visible magnet which will be seen by other road users while Essential Energy vehicles are in transit. If successful, this trial will roll out more broadly in the remainder of the year.

Network operator public safety programs / campaigns	Details
Agribusiness	• Free safety resources available from the Essential Energy website year-round, resources include stickers advising of clearances stickers for agricultural machinery and emergency escape procedures. Availability of resources is promoted on our website and social media. • Sowing Safety - Campaign promoting electrical safety while sowing was in market during May and June 2019. This was primarily digital focussed in relevant areas (those involved in wheat sowing). We also developed a new radio ad to support this campaign. • Sugar Cane harvest – press ad placed in industry magazine (Sugar Cane Guide – Greenmount Press). • Stubble burn – organic social media boosted to relevant areas showing incident imagery (from previous years) – as these kinds of posts tend to receive greater engagement. • Cotton Harvest safety - was in market April and May 2020 and included press and digital advertising and organic social media boosted to cotton harvest areas. This campaign included a newly developed illustrative style creative. An advertisement was also placed in the Cotton Guide to Safety Wall Chart, which was distributed to 3,500 members, including a copy of the Emergency Escape Procedure sticker. The ad was also inserted into the Cotton Growers magazine. • Grain harvest safety – was in market in late 2019 however due to a smaller than usual grain harvest because of drought conditions, the campaign was scaled back to radio and press only, targeted to grain harvest areas. This was supported by organic social media safety messaging. • Attendance at Field Days in the Essential Energy network area including Ag Quip (August 2019) and Henty (September 2019). 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. • Responsive organic social media content – published when incident trends are identified. The content is boosted to relevant areas as a reminder for those working on the land to stay vigilant.
Building/Construction/Demolition – Including construction safety/Dial before you dig	• Construction Industry - Stay clear when powerlines are near campaign; in market June 2020, targeted digital advertising (network wide) and organic social media. This campaign focussed on maintaining clearance distances from powerlines – particularly for those using scaffolding on worksites and working on or around construction sites. • Free safety resources available from the Essential Energy website year-round, resources include "If you don't know, then don't dig" video created in conjunction with SafeWork NSW, Endeavour Energy and Ausgrid. • A DVD copy of this video was available to order through the website, along with fact sheets promoting safety messaging in relation to construction and scaffolding.

Network operator public safety programs / campaigns	Details
Transport - High Loads Safety	• Look up and live campaign; safety messaging promoted year-round free stickers (double sided cabin stickers) available to order from the Essential Energy website. • High loads messaging is also integrated into agribusiness campaigns with reference to transporting farm machinery or harvested crops particularly on public roadways. • Organic social media posts raising awareness of the dangers of operating high loads and the need to know the height of machinery before commencing work or travelling on public roads. • In 2020, a trial of including safety message on Essential Energy vehicles commencing. This messaging promoted the "Stay clear when powerlines are near" safety message and was displayed through a visible magnet which will be seen by other road users while Essential Energy vehicles are in transit. If successful, this trial will roll out more broadly in the remainder of the year.
Emergency services & Public Authorities	• Emergency services safety DVD, available year-round, this DVD is available for SES and Rural Fire Service to order and promotes key safety messaging in relation to this at-risk group. • Volunteer Magazine & Police News advertisement – advertisement placed in the Volunteer Magazine and Police News Handbook in the second half of 2019. The ad focussed on education Emergency Service workers of the services Essential Energy can provide to help keep them safe when working around the electricity network. • Collaboration with Emergency Services and Public Authorities to identify opportunities for sharing of safety content and relevant messaging, including working closely with the RFS during Bushfire season and the instigation of regular meetings with Councils to discuss topical issues.
Aviation Safety	• Aviation safety radio campaign – pre-cotton harvest radio campaign (in market in March) targeted to cotton harvest areas. This was supported by organic social media and boosted to high incident areas in response to incidents. • Overhead powerline markers – are available on request and can be fitted by Essential Energy. These are advertised in the majority of our PESAP campaigns in addition to organic social media posts encouraging pilots and landowners to consider the need to mark overhead powerlines. These markers were promoted on social media in June 2020. • Working relationship with CEO of AAAA where aviation safety information is shared from Essential via the CEO directly to their members, particularly post incidents.

4.6 Internal Audits

Table 14 details internal audits performed on any aspects of the ENSMS during the reporting period. There were no related internal audits during the reporting period.

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
None	None	None

4.7 External Audits

Table 15 details external audits performance on any aspect of the ENSMS during the reporting period.

During 2019/20 there were two external audits performed:

- Bushfire Risk Management Audit
- Public and Worker Safety

Table 15 sets out the findings from both of these audits, along with the recommendations and agreed actions, which Essential Energy is now working to deliver.

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 [16]	Recommendation	
Asset Bushfire Risk Management Controls **Vegetation Bushfire Risk Management Controls** Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NCR-1	Clause 1.5.1	In order to comply with the Regulation, Essential Energy's safety management system should deal with the management of bushfire risk relating to aerial consumer mains on bushfire prone land that is private land. In order to achieve this, the contents of the HVC ISMP should be considered, either by Essential Energy, or an independent third party, to confirm that the ISMP appropriately deals with the management of bushfire risk from the HVCs assets. If a third party reviews the ISMP, Essential Energy should require evidence of the review to confirm appropriate controls are in place. Essential Energy should consider all windfarm, solar and other generation connections to be HVCs from the perspective of achieving compliance with the regulation.	1. Essential Energy to amend the Connection Guideline for High Voltage Customers (HVC) to include the requirement for HVCs to provide a certificate of compliance from an independent auditor stating that the ISMP considers risks and includes controls that are deemed sufficient to control the safety and bushfire risk related to the operation of an electricity network in accordance with the relevant Acts, Regulations and Standards pertaining to an ISMP referenced in *ISSC31 September 2019.* 2. Essential Energy to update the relevant aspects of the safety management system to require independent certification of the HVCs ISMP that is maintained as required under the NSW Service and Installation Rules 7.4.2. Essential Energy to include information relating to the update to the ENSMS in the annual compliance communication to existing HVCs. 3. Essential Energy treats generator connections to the electricity distribution network similarly to HV customers with respect to achieving compliance with the regulation. Essential Energy document CEOP8022.02 Private Network Owner Bushfire Preparedness reporting refers to connections. For future reporting, Essential Energy will clarify that for the purposes of compliance reporting, HV customers include HV loads and generators.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria [16]	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC-2020-01	A2.1	We recommend that measures are implemented to formally embed the ENSMS as a business management system. This should include but not be limited to: requirements and discipline relating to documentation and files, roles and responsibilities, management of the system and its processes, and interfaces and awareness across business functions and stakeholders. Our opinion is that this would be best achieved through a holistic ENSMS development project (rather than an action plans isolated to audit recommendations). Ideally this would have formal project management and resourcing, and a project plan that is aligned with business Transformation initiatives and the development of the Asset Management System (AMS). The focus of the project described above is not necessarily to create new initiatives, but to ensure that the requirements are planned, progressed and monitored.	The specific measures identified in the recommendation will be addressed through a series of projects as follows: • **Embedding the ENSMS into Transformation**: this project will address audit finding NC-2020-01 and will ensure that line of sight to the ENSMS is systematically embedded into relevant Transformation initiatives. • **ENSMS Document & Records Management**: this project will address audit finding NC-2020-01 and develop a suitable document hierarchy and numbering system for the ENSMS and apply this to the existing ENSMS documents. The project will also ensure ENSMS requirements are fed into the enterprise Records & Content Management System upgrade project, being delivered through Transformation. • **ENSMS Roles, Responsibilities & Resources**: this project will address audit findings NC-202-01, NC(NM)-2020-01, NC(NM)-2020-08 and NC(NM)-2020-10 and establish and embed ENSMS roles and responsibilities into the business, including incorporating the completed RASCI into relevant ENSMS documentation. It will also review safety roles associated with the ENSMS, to ensure that the variety and quantity of roles is sufficient to achieve SFAIRP/ALARP.

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

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria [16]	Recommendation	
				• **Managing the Management System**: this project will address audit findings NC-2020-01, NC(NM)-2020-06 and NC(NM)-2020-07 and establish and embed functioning management arrangements for the ENSMS, to meet the requirements of AS5577 and IPART audit criteria. The project will define and embed interfaces with related management systems; it will also embed the ENSMS into related business processes and IT systems. • **ENSMS Sharepoint Site**: this project will address audit finding NC-2020-01 through the development of an ENSMS Sharepoint site. The site will be to provide end-users easy access to and visibility of the ENSMS. The site will be developed in collaboration with the business owners of the Work Health & Safety, Environmental and Asset Management Systems, with the aim of providing end-users with a similar 'look and feel' to these key management systems associated with management of the Electricity Network. •

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria [16]	Recommendation	
				• **ENSMS Development Program**: as per the audit recommendations, we will establish an ENSMS Development Program to co-ordinate the delivery of all work relating to the systemic integration and management of the ENSMS as a consistent whole-of-business management system. Projects included in this program will include: Establish ENSMS System Owner, Embed the ENSMS into Transformation Initiatives, Overarching Change Management Framework, ENSMS Committee Structure, ENSMS Documentation & Records Management, ENSMS Roles, Responsibilities & Resources, ENSMS Sharepoint Site, ENSMS Awareness & SFAIRP Culture, Managing the Management System, Electricity Network Safety & ENSMS Performance Reporting, ENSMS Audit Plan, ENSMS Assurance Plan and ENSMS Compliance Plan. Further detail of each of these projects is described in the remainder of this Table, alongside the various audit actions that they address.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-01	A2.4	We recommend that Essential Energy complete the development of its RASCI for the ENSMS (refer to agreed actions in response to NC(NM) 2019-02). This understanding of the ENSMS requirements should feed into the annual functional planning processes as well as organisational restructuring considerations being implemented as part of the business transformation. Mapping of ENSMS requirements to divisions and managers should be sufficient to support improved understanding and internal communication of roles and functions in relation to the ENSMS; including management of the ENSMS itself and implementation of ENSMS processes and controls. The complete RASCI should be incorporated as appropriate within relevant ENSMS documentation such as the ENSMS Plan and FSAs.	The specific measures identified in the recommendation will be addressed through the following project: • **ENSMS Roles, Responsibilities & Resources**: this project will address audit findings NC-202-01, NC(NM)-2020-01, NC(NM)-2020-08 and NC(NM)-2020-10 and establish and embed ENSMS roles and responsibilities into the business, including incorporating the completed RASCI into relevant ENSMS documentation. It will also review safety roles associated with the ENSMS, to ensure that the variety and quantity of roles is sufficient to achieve SFAIRP/ALARP.
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-02	A4.1	We recommend that Essential Energy formalise the inclusion of the ENSMS under the charter of a management committee and ensure that the committee reviews the holistic performance of the ENSMS on an ongoing basis. Minimally, IPART's Expectations under Table A.4(1) should be covered.	The specific measures identified in the recommendation will be addressed through the following project: **ENSMS Committee Structure**: this project will address audit finding NC(NM)-2020-02 and develop a fit for purpose ENSMS Committee Structure, defined and implemented to provide holistic oversight of the ENSMS performance and meet the organisation's needs for governance, collaboration and stakeholder consultation. Minimally, the project shall meet IPART's expectations under Table A.4(1).

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-03	A2.6	We recommend that, in addition to formally embedding the ENSMS (refer to NC(NM)-2020-01), Essential Energy: • Roll out an ENSMS awareness campaign across the business. This should focus on ensuring that all employees adopt SFAIRP culture across all activities and decisions; and • Give consideration to developing simple SFAIRP tools that can be used at decision points and incorporated into feedback loops e.g. WHSE Safe Design Tool, NIRs, TotalSAFE forms and EMWLs (refer to the various non-material non-compliances and opportunities to improve where this would be beneficial).	The specific measures identified in the recommendation will be addressed through the following projects: • **ENSMS Awareness & SFAIRP Culture**: this project will address audit finding NC(NM)-2020-03 and develop and deliver tailored ENSMS awareness to the business. The material will include relevant content on 'SFAIRP culture' to ensure all employees have an appropriate understanding of this concept and how it relates to their role. • **SFAIRP Tools (Tactical)**: this project will address audit finding NC(NM)-2020-03 through ensuring appropriate reference to the SFAIRP principle is embedded into decision tools that are already in the process of development e.g. the eHIRAC (or eRisk Assessment) • **SFAIRP Tools (Strategic)**: this project will address audit finding NC(NM)-2020-03 through the development of a top-down suite of fit-for-purpose SFAIRP tools that have appropriate coverage of key decision points affecting electricity network safety.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-04	A2.6	We recommend that Essential Energy develop an understanding of its key risks, and where appropriate, detail specific contingency and response plans across the following areas: • Major load centres • Critical network elements • Types of events e.g. flood, fire, terrorism, pandemic, etc. • Critical customers / infrastructure e.g. hospitals, stadiums, airports, comms, water, etc. This should consider changes to risk factors including scenarios of heightened risk and / or consequence, and include specific points of contact and response measures e.g. for a regional centre that hosts a large annual event, joint planning with event hosts, and strategic positioning of emergency generation units may be appropriate. Another example might be ensuring people are prepared to work from home for extended periods of time with laptops, adequate internet, etc. Our view is that there are high-risk scenarios, which require specific solutions to specific features of problems, that can vary for different aspects of the functions of the business. Our opinion is that these can only be understood following a risk-based process of thinking through the scenarios.	Discussions relating to this recommendation have identified significant uncertainties regarding contingency planning objectives. As such, the first action to address this recommendation will be to meet with IPART to understand expectations with regard to contingency and response plans. Once this is complete, an appropriate action plan will be developed. Once the action plan is agreed, resources will be mobilised to commence work. The remaining actions and due date to meet the recommendation will be added to this plan once agreed with IPART.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-05	A2.6	We recommend that processes for ensuring compliance with design standards be reviewed and controls strengthened to reduce non-compliance with design standards. This review should consider: training of crews in accordance with design standards, availability of design standards for reference, compliance checks against standards, identification of design standard non-compliances within the inspection process, and feedback loop to correct non-compliant practices.	The specific measures identified in the recommendation will be addressed through the following projects: • **Design Standards Compliance Process Review**: this project will address audit action NC(NM)-2020-05 through an end-to-end review of the current processes for ensuring compliance with design standards. This will identify areas where improvements are required. • **Implement Design Standards Compliance Process Improvements**: this project will address audit action NC(NM)-2020-05 through a targeted set of improvements to current controls, as identified from the Process Review project.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-06	A2.1	We recommend that agreed actions and timeframes are reviewed for suitability. This should involve suitable challenge from ENSMS owners (i.e. AM&E and HSE) to other business functions responsible for the actions (e.g. Customer & Network Services and Transformation), and perhaps an independent review. A demonstrable level of assurance and monitoring should be achieved that actions will address the issues; particularly where other business functions and transformation initiatives are being relied upon. Where Transformation initiatives are being relied upon, meeting the ENSMS requirements should be included as objectives within the defined scope of the initiatives (if this isn't reasonable, Essential Energy may wish to reconsider whether the identified Transformation initiative is a suitable mechanism to address ENSMS requirements). Interim measures should be considered where there are extended timeframes to implement the agreed actions. This recommendation should be considered in conjunction with our recommendation to formally embed the ENSMS (refer to NC-2020-01).	This recommendation was practically met for the purpose of establishing this action plan. Going forward, arrangements for meeting the recommendation will be formalised through the following project: • **Managing the Management System**: this project will address audit findings NC-2020-01, NC(NM)-2020-06 and NC(NM)-2020-07 and establish and embed functioning management arrangements for the ENSMS, to meet the requirements of AS5577 and IPART audit criteria. In the context of this recommendation, the project will include establishing appropriate processes and forums for agreeing and monitoring progress against actions.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-07	A2.6	We recommend that progress against the action plan is monitored such that timelines are achieved. There should be a suitable escalation process where issues arise that prevent the required actions from being implemented within the agreed timeframes.	The specific measures identified in the recommendation will be addressed through the following project: • **Managing the Management System**: this project will address audit findings NC-2020-01, NC(NM)-2020-06 and NC(NM)-2020-07 and establish and embed functioning management arrangements for the ENSMS, to meet the requirements of AS5577 and IPART audit criteria. In the context of this recommendation, the project will include establishing appropriate processes and forums for monitoring progress against actions and escalating issues affecting the delivery of actions to meet agreed timeframes.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-08	A2.2	We note that Essential Energy has a strong focus on integrated safety activities, aligned with its core value of "making safety your own" and "leader led safety improvement". This is evidenced through the toolbox talk process and supervisor Site Safety Interactions. Notwithstanding, we recommend that Essential Energy undertake a top down review of its safety focussed roles across the organisation (for both public and worker safety). The review of dedicated safety roles should consider requirements in view of both dedicated and integrated activities. It should be demonstrable that the variety of roles and quantity of resources performing these roles is sufficient to achieve SFAIRP / ALARP by structural and functional design. Essential Energy may wish to consider this as part of its seventh "system" FSA that it has identified for development.	The specific measures identified in the recommendation will be addressed through the following projects: • **ENSMS Roles, Responsibilities & Resources**: this project will address audit findings NC-202-01, NC(NM)-2020-01, NC(NM)-2020-08 and NC(NM)-2020-10 and establish and embed ENSMS roles and responsibilities into the business, including incorporating the completed RASCI into relevant ENSMS documentation. It will also review safety roles associated with the ENSMS, to ensure that the variety and quantity of roles is sufficient to achieve SFAIRP/ALARP.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-09	A3.1	We recommend that holistic reporting against agreed network performance criteria established by the business is defined and embedded. These should include, amongst other items, the performance requirements from the FSA suite of documents i.e. leading and lagging indicators as defined by the bow tie diagrams for each FSA (threats, control effectiveness, hazardous events, consequences). We note that there was a similar recommendation in the previous audit which related to routine monitoring of safety indicators (NC(NM)-2019-06). The NC(NM)2020-09 recommendation relates more to holistic reporting of the ENSMS, which would likely include rolled up reporting of the safety indicators such that executive management can gain a view of the status of the ENSMS.	The specific measures identified in the recommendation will be addressed through the following project: • **Electricity Network Safety & ENSMS Performance Reporting**: this project will address audit finding NC(NM)-2020-09 and establish reporting against an agreed set of network safety and ENSMS performance metrics. This will include lead and lag indicators defined in consideration of the FSAs and will provide line of sight (roll-up / drill-down) capability, to inform management overview as well as tactical decision making. The due date for this project reflects the intent to address this action once the Asset Performance Management Framework is developed, as part of the overall Asset Management System.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-10	A3.4	We recommend that Essential Energy develops a holistic view of the scope of assurance activities required for the ENSMS, and ensure that organisational activities are adequate to support this. Ensuring that the scope of ENSMS assurance activities are adequate to meet the AS-5577 audit requirements should be the responsibility of the ENSMS System Owner as defined by the recently developed ENSMS RASCI. That is, whilst the ENSMS System Owner should consider the assurance activities that are undertaken by Essential Energy's internal audit team and compliance team (including independent audits required by IPART), it should not be assumed that their activities will meet the requirements of the ENSMS. Considering that non-compliance with procedures is a contributing factor in a portion of safety incidents, this should include assessing "compliance with, and effectiveness of, the ENSMS's plans and procedures" in accordance with AS-5577. It should be noted that, ideally, management systems should have a risk-based audit plan that covers the scope of the system over a three year period. In relation to field auditing, consideration should be given to "persons working on or near the network", including the various types of employees, contractors and ASPs	The specific measures identified in the recommendation will be addressed through the following projects: • **ENSMS Audit Plan**: this project will address audit finding NC(NM)-2020-10 through the development of a risk-based ENSMS Audit Plan, that takes due account of audits planned by Essential Energy's Internal Audit team, and by external parties, including IPART. The plan will be developed in the context of the ENSMS Assurance and Compliance Plans (see below) and focus on compliance and assurance activities delivered specifically through audits. The timing of the project has been identified to align with the development of the Internal Audit Plan. • **ENSMS Assurance Plan**: this project will address audit finding NC(NM)-2020-10 through the development of a fit-for-purpose plan of ENSMS assurance activities, focussing on the effectiveness of the ENSMS. The due date for the project reflects the intent to address this action once the Enterprise Integrated Assurance and Network Assurance Frameworks are developed, thereby establishing a robust '3 Lines of Defence' assurance model as the basis for the ENSMS Assurance Plan.

Audit scope	Identified non-compliances			Actions
	Ref	Audit Criteria	Recommendation	
			.	• **ENSMS Compliance Plan**: this project will address audit finding NC(NM)-2020-10 through the development a fit-for purpose plan of ENSMS compliance activities, focussing on (i) the compliance of the ENSMS with relevant requirements and (ii) compliance with the ENSMS.
Public Safety Risk Management Controls Assess the Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system **Worker Safety Risk Management Controls** Assess the Planning and preparation, Implementation, measurement and evaluation, and management review and change management of an electricity network safety management system	NC(NM)-2020-11	A4.2	We recommend that Essential Energy implement the agreed actions in relation to previous audit NC(NM) 2019-10. We note that the previous non-compliance and subsequent recommendation related to the asset management components of the ENSMS; Essential Energy should ensure that the scope of its Agreed Actions include the scope of public and worker safety risk management controls.	The specific measures identified in the recommendation will be addressed through the following project: **Overarching Change Management Framework**: this project will address audit finding NC(NM)-2020-11 alongside the agreed actions from the previous audit NC(NM)-2019-10. The project will develop an overarching change management framework, that includes appropriate consideration of safety change management (including management of change).

Part B – Bushfire Preparedness Report

Part B reports against a framework of indicators aimed at demonstrating Essential Energy's bushfire preparedness, leading up to the 2020 bushfire season, covering the period 1 October 2019 to 30 September 2020.

Part B is structured as follows:

- Section 5 describes the bushfire risk profile across Essential Energy's supply area
- Section 6 identifies the permanent and temporary fire risk declarations by Rural Fire Service and outlines Essential Energy's actions taken in response
- Section 7 describes the scope of private lines ('aerial consumer mains') on bushfire prone land
- Section 8 describes the status of Essential Energy's pre-summer bushfire inspections, vegetation and asset maintenance tasks

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

5.1 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 below 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:

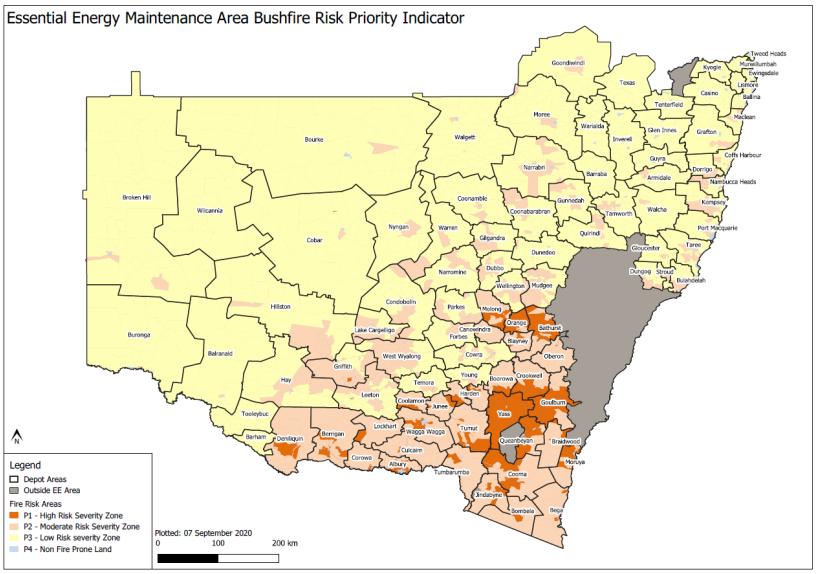
a. Essential Energy Fire Risk model, and
b. Phoenix Rapid Fire model (developed by leading fire researchers and the BNHCRC).

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.

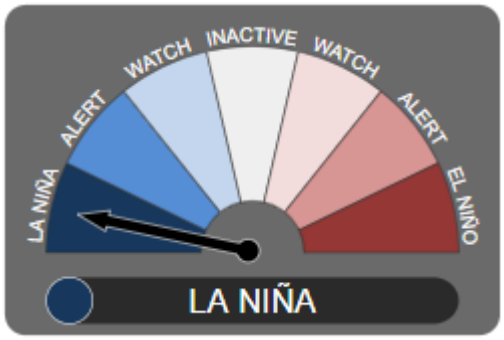
The Plan includes details of the fire risk profile across the supply area based on fire risk modelling with classifications P1, P2, P3 and P4.

5.2 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.

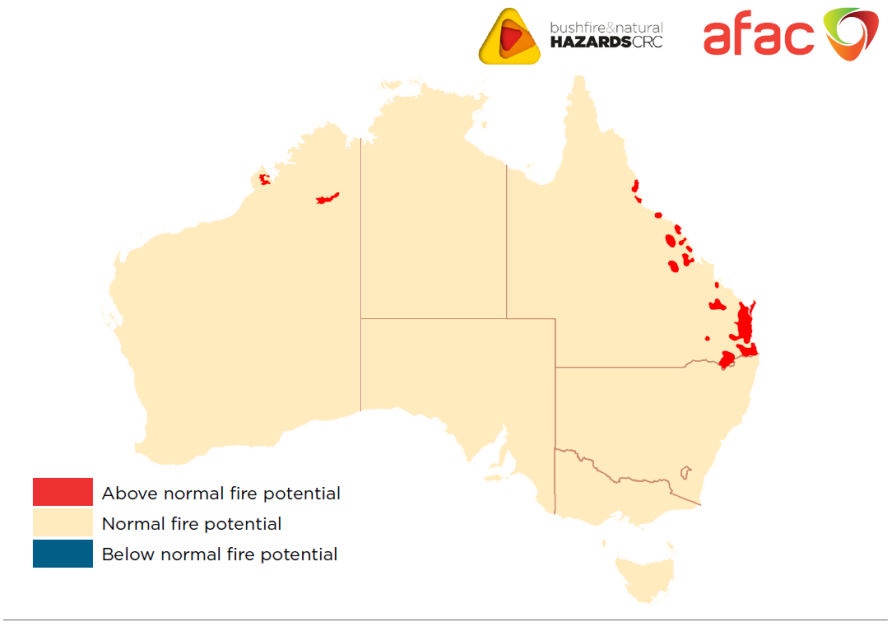
For example, the BNCRC Hazard Note 77 released in August 2020 shows a normal fire potential for New South Wales. This contrasts with the previous year's outlook of above normal fire potential for eastern Australia.

Figure 2: La Nina underway in the tropical Pacific, source: BOM



The Bureau of Meteorology has declared that a La Nina event is currently established "The Bureau's ENSO Outlook has moved to LA NIÑA, indicating La Niña is established in the tropical Pacific. All surveyed international climate models indicate this La Niña will persist until at least January 2021." The Bureau also states that "Both La Niña and negative IOD typically increase the chance of above average rainfall across much of Australia during spring. Above average summer rainfall is also typical across eastern Australia during La Niña. Current climate outlooks indicate the remainder of 2020 will be wetter than average across the eastern two thirds of Australia."

Figure 3 BNHCRC Seasonal outlook



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

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

It is noted that six local government areas were declared on 1 August, and a further 21 were declared on September. This is in line with permanent early declarations for these areas.

Figure 4 RFS Media Release 1 and 31 August 2020


NSW GOVERNMENT

NSW RURAL FIRE SERVICE

MEDIA RELEASE

Six areas begin Bush Fire Danger Period early in NSW

1 August 2020

The NSW Rural Fire Service (NSW RFS) today announced six Local Government Areas (LGAs) will commence the Bush Fire Danger Period (BFDP) today, due to prevailing local conditions.

NSW GOVERNMENT

NSW RURAL FIRE SERVICE

MEDIA RELEASE

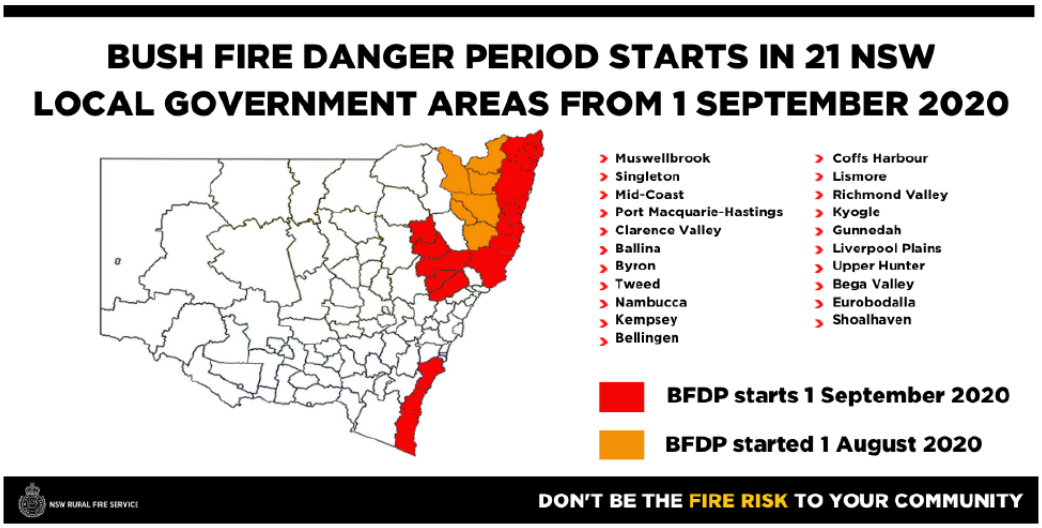
Bush Fire Danger Period starts in a further 21 areas

31 August 2020

An additional 21 areas will begin the bush fire season tomorrow due to local conditions.

These early starts can be summarised in Figure 4 below.

Figure 5 RFS Early Bushfire Danger Period on 1 September 2020



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 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 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.

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

7.1 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 2019/20 we inspected in the order of 23,478 private poles resulting in the identification of approximately 1,492 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.

7.2 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.

7.3 Activities undertaken to manage the risk of aerial consumer mains on bushfire prone private land

Table 17 details the activities undertaken to manage the risk of aerial consumer mains on bushfire prone private land. This is broken into performance measures describing activities relating to private LV lines and HV customers.

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

Performance Measure	1 October 2019 – 30 September 2020		1 October 2018 – 30 September 2019		1 October 2017 – 30 September 2018		1 October 2016 – 30 September 2017		1 October 2015 – 30 September 2016	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
Private LV lines checked by the network operator	23,494	23,478	25,996	24,228	-	12,592	-	11,416	-	13,390
Number of directions for bushfire risk mitigation issued to LV customers by the network operator	n/a	1,492	n/a	1,243	n/a	311	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	212	n/a	67	n/a	206	n/a	-	n/a	-
HV customers [17] (metering point count) advised to undertake pre-season bushfire checks in accordance with ISSC31	128	128	150	150	-	-	-	-	-	-
HV customers (metering point count) providing statements of compliance in accordance with ISSC31	128	106	150	141	-	-	-	-	-	-
HV customers (metering point count) requiring additional risk mitigation prior to start of the reporting year	n/a	22	n/a	9	-	-	-	-	-	-

[17] For this section HV Customers includes Load and Generator customers

Performance Measure	1 October 2019 – 30 September 2020		1 October 2018 – 30 September 2019		1 October 2017 – 30 September 2018		1 October 2016 – 30 September 2017		1 October 2015 – 30 September 2016	
	Target	Actual	Target	Actual	Target	Actual	Target	Actual	Target	Actual
HV customers (metering point count) where additional risk mitigation has been completed prior to start of the reporting year	n/a	0	n/a	0	n/a	-	n/a	-	n/a	-

Note: This reporting requirement was introduced from October 2018; historical data is not available beyond this date

8. Bushfire inspections, vegetation and asset maintenance tasks

Table 18 describes the status of pre-summer bushfire inspections, undertaken via aerial inspection methods and as described in Table 12.

Table 18: Pre-summer bushfire inspections

Pre-summer bushfire inspections	Population (spans/poles)	Target	Achieved	Outstanding	Comments
Inspections	100,450 poles	100,450	100,453	0	As per 'Aerial' inspections described in Table 12

Table 19 describes the status of vegetation tasks as of 30 September 2020.

Table 19: Vegetation Tasks

Bushfire risk category	Status	Encroachment Classification A1 [18]	Encroachment Classification A2 [19]	Encroachment Classification A3 [20]	Encroachment Classification A4 [21]	Hazard trees [22]
P1	Identified	286	824	4,509	8,542	1,468
P1	Completed	279	800	4,224	7,554	1,525
P1	Open	9	26	320	938	177
P1	Outstanding	0	0	3	2	0
P2	Identified	1,872	2,932	8,944	12,791	5,228
P2	Completed	2,048	3,524	10,431	14,291	6,188
P2	Open	113	125	1169	298	377
P2	Outstanding	4	2	5	2	67
P3	Identified	3,477	11,157	18,630	18,697	5,253
P3	Completed	3,791	12,252	18,785	18,146	4,271
P3	Open	444	1,795	4,835	4,034	1,175

[18] A1 vegetation has encroached as far as 75-100% into the minimum vegetation clearances, as defined in ISSC3 *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*

[19] A2 vegetation has encroached as far as 50-75% into the minimum vegetation clearances, as defined in ISSC3 *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*

[20] A3 vegetation has encroached as far as 25-50% into the minimum vegetation clearances, as defined in ISSC3 *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*

[21] A4 vegetation has encroached as far as 0-25% into the minimum vegetation clearances, as defined in ISSC3 *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*

[22] Hazard Trees are blow-in/fall-in vegetation hazards as defined in ISSC3 *Guide for the Management of Vegetation in the Vicinity of Electricity Assets*

Bushfire risk category	Status	Encroachment Classification A1 [18]	Encroachment Classification A2 [19]	Encroachment Classification A3 [20]	Encroachment Classification A4 [21]	Hazard trees [22]
P3	Outstanding	137	455	1,257	1,234	29
P4	Identified	8,227	26,284	37,013	28,833	1,789
P4	Completed	10,608	26,549	38,761	30,374	1,910
P4	Open	488	2,507	1,790	928	323
P4	Outstanding	16	14	18	26	26
Not specified	Identified	4	18	5	23	0
Not specified	Completed	4	19	8	33	6
Not specified	Open	0	0	0	0	0
Not specified	Outstanding	0	0	0	0	0
Total	Identified	13,866	41,215	69,101	68,886	13,738
Total	Completed	16,730	43,144	72,209	70,398	13,900
Total	Open	1,054	4,453	8,114	6,198	2,052
Total	Outstanding	157	471	1283	1264	122

Table 20 details the status of asset tasks as of 30 September 2020. This includes all asset tasks identified which are in progress (Open) and those where the nominated rectification timeframe for completion has elapsed (Outstanding). Tasks may be outstanding due to issues such as wet weather and access constraints. Outstanding tasks are monitored on an appropriate basis and risk assessed to determine the appropriate course of action.

Table 20: Asset tasks

Bushfire risk category	Status	Category 1[23]	Category 2[24]	Category 3[25]	Category 3A[26]	Category 4[27]	Totals
P1	Identified	556	417	7,109	1,203	4,968	14,253
	Completed	545	393	10,450	108	3,492	14,988
	Open	0	15	1,289	530	8,846	10,680
	Outstanding	0	1	948	0	613	1,562
P2	Identified	1,489	1,388	25,284	4,186	12,363	44,710
	Completed	1,480	1,358	34,369	547	9,289	47,043
	Open	0	51	5,928	2,497	28,757	37,233
	Outstanding	2	23	4,390	24	2,004	6,443
P3	Identified	2,958	2,203	41,698	6,639	19,965	73,463
	Completed	3,015	2,242	47,774	975	15,540	69,546
	Open	2	102	12,645	5,833	65,229	83,811

[23] CAT 1 (Emergency) Defects, faults, failures, or situations that present an immediate threat to the safety of the public, staff, network availability or environment. These tasks require immediate response and resources may need to be diverted to isolate, control, and repair the task.

24 CAT 2 (Urgent) Defects, faults, failures, or situations that are expected to deteriorate rapidly and therefore pose a high risk to the safety of the public, staff, network availability or environment.

25 CAT 3 (Risk – Near Term) Defects, faults, failures, or situations that are assessed to be a moderate risk to the safe or reliable operation of the network.

[26] CAT 3A (Risk – Medium Term) Defects, faults, failures, or situations that are expected to deteriorate to pose a moderate risk in the medium term, or for defects that present a low risk, but that have high consequences of failure.

[27] CAT 4 (General Maintenance) These are general maintenance tasks on assets which present a low risk but if left untreated can in the long term have the potential to affect the safety or reliability of the network.

Bushfire risk category	Status	Category 1[23]	Category 2[24]	Category 3[25]	Category 3A[26]	Category 4[27]	Totals
	Outstanding	2	47	11,665	24	2,673	14,411
P4	Identified	1,026	1,070	14,703	3,333	6,409	26,541
	Completed	1,031	901	16,741	104	3,245	22,022
	Open	0	56	4,022	1,096	11,425	16,599
	Outstanding	2	45	2,661	0	431	3,139
Unclassified[28]	Identified	299	371	3,935	866	2,703	8,174
	Completed	258	297	3,612	40	1,514	5,721
	Open	0	14	1,724	201	2,089	4,028
	Outstanding	1	17	524	0	41	583
Total	Identified	6,328	5,449	92,729	16,227	46,408	167,141
	Completed	6,329	5,191	112,946	1,774	33,080	159,320
	Open	2	238	25,608	10,157	116,346	152,351
	Outstanding	7	133	20,188	48	5,762	26,138

[28] Includes private assets