



Jemena Electricity Networks

Bushfire Mitigation Plan
2019-2024

Document No. JEN PL 0100



Liability Disclaimer

This Bushfire Mitigation Plan (**BMP**) has been prepared to inform relevant stakeholders of the asset management approach, processes and strategies applied to the management of the Jemena Electricity Networks (**JEN**). This BMP has also been prepared for the purposes of the *Electrical Safety Act 1998* and the Electricity Safety (Bushfire Mitigation) Regulations 2013.

Some of the information and statements contained in the BMP are comprised of, or are based on, assumptions, estimates, forecasts, predictions and projections made during JEN's annual Asset Management planning cycle. In addition, some of the information and statements in the BMP are based on actions that JEN currently intends it will take in the future. Circumstances will change, assumptions and estimates may prove to be wrong, events may not occur as forecasted, predicted or projected, and JEN may at a later date decide to take different actions to those it currently intends to take.

Except for any statutory liability which cannot be excluded, JEN will not be liable, whether in contract, tort (including negligence), equity or otherwise, to compensate or indemnify any person for any loss, injury or damage arising directly or indirectly from any person using, or relying on any content of, the BMP.

When considering any part of the BMP, persons should take appropriate expert advice in relation to their own circumstances and must rely solely on their own judgement and expert advice obtained.

June 2019

Foreword

Welcome to Jemena Electricity Networks (**JEN**) Bushfire Mitigation Plan (**BMP**), which has been prepared for the purposes of the *Electrical Safety Act (1998)* and the Electricity Safety (Bushfire Mitigation) Regulations 2013 and to inform stakeholders of the asset management approach, processes and strategies adopted for bushfire mitigation.

JEN is committed to providing a safe and reliable supply of electricity and to conduct its business in an environmentally responsible manner. JEN expects that the operation of its assets will meet or exceed the requirements of relevant Victorian and Federal legislation. JEN is committed to meeting its legislative, regulatory and duty of care obligations to provide a safe and compliant workplace.

JEN's intentions regarding meeting its obligations are set out below.

- Comply with all current legislation requirements and regulatory obligations relating to occupational health and safety, public safety and environmental management by ensuring that an active compliance system is in place to minimise the risk of breaches and prosecutions under the *Electrical Safety Act*; and
- Deliver on the commitments required by the Safety Management Schemes and further enhance these Schemes to minimise risks and to proactively manage the minimisation of network incidents by analysis of root causes to enhance the safety of employees and the public.

Significant effort is dedicated each year to update the BMP with careful consideration of comments received from various sources including internal and independent audits, the states technical regulator Energy Safe Victoria, municipal councils, JEN's maintenance, asset inspection and vegetation management contractors and the ever changing perception of the community. Page 3 contains a list of the main procedures that have been developed or altered with a view to achieving compliance with the relevant legislation.

We hope you find this BMP informative and your comments are welcome on it or any other aspect of JEN's performance.

Comments can be emailed to customerrelations@jemena.com.au.

General Manager Asset Management – Electricity Distribution

Signatories

Prepared by

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Date:

Endorsed by

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Date:

Approved by

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Date:

Revision Log

Issue	Comments	Date Issued	Prepared by
1.0	Updated to better reflect REFCL requirements and project progress.	June 2019	██████████

Acknowledgements

This BMP is prepared for the purposes of Electrical Safety Act (1998) and the Electricity Safety (Bushfire Mitigation) Regulations 2013. The BMP outlines Jemena's strategy for reducing the risk of powerline bushfire ignition. We would like to acknowledge continued support from Energy Safe Victoria towards the development of this BMP.

List of Amendments from Previous Version

Page	Section	Change
Page 88	BFM18	Necessary changes identified by ESV evaluation. Updated to better reflect REFCL requirements and project progress
Page 130	BFM27	Strengthened commitment to fault energy management.

Key Contacts List

These are the prescribed contact particulars to satisfy the regulatory requirement (ref. clause 7 (1)(a)(b)(c) and (d)) of the Electricity Safety (Bushfire Mitigation) Regulations 2013.

Clause	Name	Position	Address	Telephone
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7(1)(d) & 7(1)(da)	Jemena Network Operations and Control (24 Hr)	Report Room	Level 16, 567 Collins Street, Melbourne, VIC 3000	131 626

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Regulation Compliance Information

The purpose of this section is to provide assistance to quickly locate in this BMP the specific items as required by the Electricity Safety (Bushfire Mitigation) Regulations 2013, regulation 7(1).

Regulation	Requirement	Reference in this BMP
7(1)	Prescribed particulars for bushfire mitigation plans. For the purposes of Section 113A(2)(b) of the Act, a bushfire mitigation plan submitted by a major electricity company must specify –	
7(1)(a)	the name, address and telephone number of the major electricity company;	See Key Contacts List (Page 4)
7(1)(b)	the position, address and telephone number of the person who was responsible for the preparation of the plan;	See Key Contacts List (Page 4)
7(1)(c)	the position, address and telephone number of the persons who are responsible for carrying out the plan;	See Key Contacts List (Page 4)
7(1)(d)	the telephone number of the major electricity company's control room so that persons in the room can be contacted in an emergency that requires action by the major electricity company to mitigate the danger of bushfire;	See Key Contacts List (Page 4)
7(1)(d)(a)	The telephone number of the major electricity company that members of the public can call in an emergency that requires action by the major electricity company to mitigate the danger of bushfire.	See Key Contacts List (Page 4)
7(1)(e)	the bushfire mitigation policy of the major electricity company to minimise the risk of fire ignition from its supply network;	Requirements 2 (Page 16)
7(1)(f)	the objectives of the plan to achieve the mitigation of fire danger arising from the major electricity company's supply network;	Requirements 2.2 (Page 17)
7(1)(g)	a description, map or plan of the land to which the bushfire mitigation plan applies;	Requirements 2.5 (Page 19), 2.6 (Page 20) and 2.8 (Page 21)
7(1)(h)	the preventative strategies and programs to be adopted by the major electricity company to minimise the risk of the major electricity company's supply networks starting fires;	Requirements 2.7 (Page 20), 18 (Page 28) and Procedure BFM18 (Page 88)
7(1)(ha)	details of the preventative strategies and programs referred to in paragraph (h) (including details in relation to timing and location) by which the major electricity company will ensure that –	
7(1)(ha)(i)	in its supply network, each polyphase electric line originating from a selected zone substation has the required capacity; and	Procedure BFM18 (Page 88)
7(1)(ha)(ii)	on and from 1 May 2023, in its supply network, each polyphase electric line originating from every zone substation specified in Schedule 2 has the required capacity;	Procedure BFM18 (Page 88)
7(1)(hb)	details of testing that will be undertaken before the specified bushfire risk period each year by which the major electricity company will ensure that its supply network can operate to meet the required capacity in relation to each polyphase electric line in accordance with paragraph (ha);	Procedure BFM18 (Page 88)

Regulation	Requirement	Reference in this BMP
7(1)(hc)	details of the preventative strategies and programs referred to in paragraph (h) (including details in relation to timing and location) by which the major electricity company will ensure that, on and from 1 May 2016, within an electric line construction area, each electric line with a nominal voltage of between 1 kV and 22 kV that is constructed, or is wholly or substantially replaced, in its supply network is a covered or underground electric line;	Procedure BFM18 (Page 88)
7(1)(hd)	details of the processes and procedures by which the major electricity company will ensure that, before 1 May 2023, the major electricity company has installed an Automatic Circuit Recloser in relation to each SWER line in its supply network;	See 2 Bushfire Mitigation Requirements (Page 16)
7(1)(i)	a plan for inspection that ensures that—	
7(1)(i)(i)	the parts of the major electricity company's supply network in hazardous bushfire risk areas are inspected at intervals not exceeding 37 months from the date of the previous inspection; and	Procedure BFM18 (Page 88)
7(1)(i)(ii)	the parts of the major electricity company's supply network in other areas are inspected at specified intervals not exceeding 61 months from the date of the previous inspection;	Procedure BFM18 (Page 88)
7(1)(j)	details of the processes and procedures for ensuring that each person who is assigned to carry out inspections referred to in paragraph (i) and of private electric lines has satisfactorily completed a training course approved by Energy Safe Victoria and is competent to carry out such inspections;	Requirements 13 (Page 26) and Procedures BFM11 (Page 67) and BFM12 (Page 68)
7(1)(k)	details of the processes and procedures for ensuring that persons (other than persons referred to in paragraph (j)) who carry out or will carry out functions under the plan are competent to do so;	Requirements 13 (Page 26) and Procedures BFM11 (Page 67) and BFM12 (Page 68)
7(1)(l)	the operation and maintenance plans for the major electricity company's supply network—	Requirements 18.3 (Page 29)
7(1)(l)(i)	in the event of a fire; and	Procedures BFM8 (Page 60); BFM26 (Page 118) and BFM27 (Page 129)
7(1)(l)(ii)	during a total fire ban day; and	Procedures BFM26 (Page 118) and BFM27 (Page 129)
7(1)(l)(iii)	during a fire danger period;	Procedures BFM8 (Page 60); BFM26 (Page 118) and BFM27 (Page 129)

Regulation	Requirement	Reference in this BMP
7(1)(m)	the investigations, analysis and methodology to be adopted by the major electricity company for the mitigation of the risk of fire ignition from its supply network;	Requirements 16 (Page 27), 17 and 8 (Page 28) and Procedures BFM16 Page 85, BFM17 (Page 87), and BFM18 (Page 88)
7(1)(n)	details of the processes and procedures by which the major electricity company will –	
7(1)(n)(i)	monitor the implementation of the bushfire mitigation plan; and	Requirements 6 (Page 23) and 9 (Page 24) and Procedures BFM1 (Page 41), BFM2 (Page 43) and BFM6 (Page 54)
7(1)(n)(ii)	audit the implementation of the plan; and	Requirements 14 (Page 26) and Procedures BFM1 (Page 41), BFM2 (Page 43) and BFM6 (Page 54)
7(1)(n)(iii)	identify any deficiencies in the plan or the plan's implementation; and	Requirements 14 and Procedures BFM1 (Page 41), BFM2 (Page 43) and BFM6 (Page 54) and BFM12 (Page 68)
7(1)(n)(iv)	change the plan and the plan's implementation to rectify any deficiencies identified under subparagraph (iii); and	Procedure BFM7 (Page 58)
7(1)(n)(v)	monitor the effectiveness of inspections carried out under the plan; and	Requirements 8 (Page 24) and Procedure BFM6 (Page 54)
7(1)(n)(vi)	audit the effectiveness of inspections carried out under the plan;	Requirements 8 (Page 24) and 14 (Page 26) and Procedures BFM6 (Page 54) and BFM12 (Page 68)
7(1)(n)(vii)	before the specified bushfire risk period each year, report to Energy Safe Victoria the results of testing undertaken in that year in accordance with regulation 7(1)(hb);	Requirements 7 (Page 23) and Procedure BFM4 (Page 49)
7(1)(o)	the policy of the major electricity company in relation to the assistance to be provided to fire control authorities in the investigation of fires near the major electricity company's supply network;	Requirements 10 (Page 25) and Procedures BFM7 (Page 58) and BFM8 (Page 60)
7(1)(p)	details of processes and procedures for enhancing public awareness of –	Requirements 18.5 (Page 31)
7(1)(p)(i)	the responsibilities of owners of private electric lines that are above the surface of the land in relation to maintenance and mitigation of bushfire danger;	Requirements 19.3 (Page 33) and Procedure BFM25 (Page 105)
7(1)(p)(ii)	the obligation of the major electricity company to inspect private electric lines that are above the surface of the land within its distribution area;	Requirements 19.3 (Page 33) and Procedure BFM25 (Page 105)
7(1)(q)	a description of the measures to be used to assess the performance of the major electricity company under the plan.	Requirements 8 (Page 24) and Procedure BFM6 (Page 54)

Regulation	Requirement	Reference in this BMP
7(3)(a)	the major electricity company must select a sufficient number of zone substations so that –	
7(3)(a)(i)	at 1 May 2019, the points set out in column 6 of the Table in Schedule 2 in relation to each zone substation selected, when totalled, are not less than 30; and	Refer to 7(3)(b)
7(3)(a)(ii)	at 1 May 2021, the points set out in column 6 of the Table in Schedule 2 in relation to each zone substation selected, when totalled, are not less than 55; or	Refer to 7(3)(b)
7(3)(b)	if there are an insufficient number of zone substations (specified in Schedule 2) in a major electricity company's supply network for the major electricity company to comply with paragraph (a) (i) or (ii), the major electricity company must ensure that each polyphase electric line originating from every zone substation that is specified in Schedule 2 and is in its supply network has the required capacity	Procedure BFM18 (Page 88)

Requirements

1 The Jemena Business Plan

This section provides a summary of the Jemena Business Plan and shows how the BMP relates to it. The plan provides:

- Strategic direction for Jemena’s Asset Management Policy, Asset Business Strategy, and Asset Management Plan (incorporating the Bushfire Mitigation Plan, and Electric Line Clearance Management Plan) by detailing the corporate vision, values, objectives, requirements, and key success measures; and
- A reference guide and a source of strategic direction for JEN to ensure the asset strategy and objectives, bushfire mitigation and the vegetation management strategic approach are consistent with the corporate strategy as a whole.

1.1 Purpose and Vision

Jemena’s purpose and vision as shown in Figure 1.1 is supported by a series of strategy directives and measurements of success that are intended to provide concrete guidance for achieving its aims.

Our Purpose



Our Vision

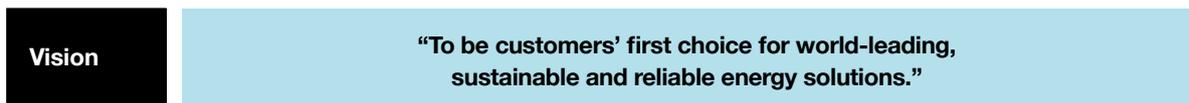


Figure 1.1 Jemena’s Purpose and Vision

1.2 Values

Jemena’s values aim to support our vision to be customers’ first choice for world-leading, sustainable and reliable energy solutions. Figure 1.2 shows the five key elements that compose Jemena’s values: health and safety, teamwork, customer focus, excellence, and accountability. Working ‘the Jemena Way’ is about doing what we say we’re going to do and working as one team and following one way of doing things wherever possible.



Figure 1.2 Jemena’s Values

HEALTH AND SAFETY

We care; we are successful when we identify risks and seek out healthier and safer ways to work, encourage questioning and entertain doubt, care for the physical and mental wellbeing of our people and ensure health and safety is considered appropriately in our decision-making.

TEAMWORK

We act as one team; we are successful when we value diversity and treat all people with dignity and respect, individually understand how the business works and the role that we play, work together to achieve better outcomes, ensure decisions are based on what is best for the whole business and are willing to sacrifice our own goals for the benefit of Jemena.

CUSTOMER FOCUS

We consider our customers in everything we do; we are successful when we seek opportunities to engage with our customers, hear, listen and think to understand what our customers want, deliver exceptional customer service in and beyond our work areas, evaluate decisions in terms of the impact on our customers.

EXCELLENCE

What we do, we do well; we are successful when we are committed to benchmarking ourselves against the world's best and set our standards accordingly, have an open mind to change, will look for better, simpler and a consistent way of operating, learn from our successes as well as failures and take active steps to improve performance.

ACCOUNTABILITY

We do what we say we will do; we are successful when we do what we say we will do to meet deadlines and honour our commitments, encourage honest constructive discussions and are willing to learn from mistakes, are clear on roles and responsibilities and ensure our goals are SMART and we exercise appropriate initiative and judgment.

1.3 Objectives and Measures

Jemena's business plan is designed to see Jemena evolve and position itself for a long, successful and sustainable future. Jemena's strategic objectives are detailed below:

- To grow profitably and sustainably;
- To have our customers advocate for us based on their experience of our services;
- To ensure we have the right people and capabilities to deliver the strategy; and
- To build scalable operations that deliver top quartile performance.

1.4 Strategy

The Jemena strategy which links the vision, strategic objectives and priorities is detailed below in Figure 1.3. It summarises how Jemena plans to establish a strong foundation, become a leader in the energy delivery industry and extend the business to capitalise on new opportunities.

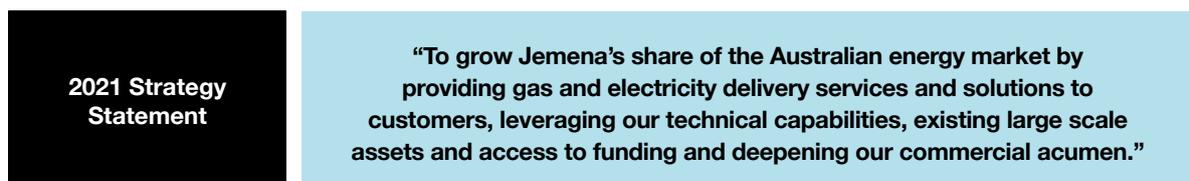


Figure 1.3 Strategic Themes

1.5 About Jemena

**‘Millions of Australians rely on us
to deliver their gas and electricity – all day, every day’**

Jemena is a unique Australian infrastructure company that builds, owns and maintains a combination of major electricity, gas and water assets. We own more than \$8.5 billion worth of Australian utility assets and specialise in both transmission and distribution of electricity and gas.

At Jemena, our sense of community and commitment to customers is at the heart of everything we do.

We are committed to delivering energy safely, reliably, sustainably and affordably to our customers.

We acknowledge the strong support of our shareholders, Singapore Power and State Grid Corporation of China.

1.6 The Jemena Business Plan

OUR OBJECTIVES	SAFETY:	PEOPLE:	PERFORMANCE:	CUSTOMER:	GROWTH:
	<ul style="list-style-type: none"> Embed a world-class safety culture. 	<ul style="list-style-type: none"> Be a high-performing an engaged workplace that attracts, develops and retains industry leaders. 	<ul style="list-style-type: none"> Deliver operational and financial efficiencies aligned to business plan. 	<ul style="list-style-type: none"> Deliver energy services that are safe, reliable, affordable and responsive to our customers' preferences. 	<ul style="list-style-type: none"> Grow scale to be an influential market leader with strong customer, regulatory, stakeholder and community relationships. Deliver financial performance that is superior to our industry peers.
KEY MEASURE BY 2020	<ul style="list-style-type: none"> Top quality industry safety performance. 	<ul style="list-style-type: none"> Top quality employee engagement performance. 	<ul style="list-style-type: none"> Costs at or below Regulatory Allowance. 	<ul style="list-style-type: none"> Cost/Customer trending downward, with no deterioration in service levels. 	<ul style="list-style-type: none"> Additional growth value created over base business.
OUR STRATEGY					
ESTABLISH	Implement the HSEQ strategy to build and continuously improve: <ul style="list-style-type: none"> Embed a world-class safety culture. Risk and assurance. Learning and planning. Health and wellbeing. Systems, processes and reporting. 	<ul style="list-style-type: none"> Successfully relocate staff in our Melbourne, Sydney and Newcastle offices. Attract the industry's best and develop our people and future leaders through implementation of Jemena's Talent strategy. Empower leaders to act and make decisions to transform the culture and embed the values through implementation of the Jemena culture program, with a focus on diversity and inclusion. Provide end to end integrated HR tools for managers and employees. Enhance our performance management disciplines and engage employees to deliver better outcomes. 	<ul style="list-style-type: none"> Complete JGN and JEN price review strategy to achieve regulatory outcomes aligned to the business plan. Implement consistent end-to-end processes and enterprise wide systems to enable Jemena to operate as a single integrated business. Implement a common project management methodology. Measure and benchmark physical and financial results and achieve financial targets. 	<ul style="list-style-type: none"> Implement the pipelines recontracting strategy for long-term utilisation of the pipelines. Revise KPIs to be more customer focused. Proactively engage with our customers to explore mutually beneficial energy solutions. 	<ul style="list-style-type: none"> Develop scalable business model and build capability to integrate any future investments. Build an effective Business Development function.
2015 to 2017 Complete establishment of strong foundation for Jemena					
LEAD					
2015 to 2018 Lead the energy delivery industry as a world class owner and manager	<ul style="list-style-type: none"> Evaluate new business opportunities to enable our business to grow in a changing external environment. Extend into logical adjacencies where viable 	<ul style="list-style-type: none"> Achieve externally certified asset management systems across all Jemena managed assets Deliver regulatory price reviews and outperform regulatory allowance Achieve \$60M of total savings per annum from business transformation. Embed continuous improvement and process optimisation in business as usual. Consistently deliver against capital and operating plans. 	<ul style="list-style-type: none"> Prepare Jemena for a competitive market by improving our visibility and relationships with our customers, while driving a customer-centric culture. Deliver on our customer focused KPIs. 	<ul style="list-style-type: none"> Implement pipelines growth strategy to become a strategic, active second player in the gas transmission industry Implement networks growth to become a top three player in privately owned energy distribution networks. Optimise asset portfolio. 	
EXTEND					
2016 to 2020 Extend the business to capitalise on new opportunities					

Figure 1.4 The Jemena Business Plan

2 Bushfire Mitigation Requirements and Strategic Drivers

It is a requirement of Jemena Electricity Networks (**JEN**) to achieve high levels of public safety and supply reliability through preventative and corrective maintenance programs which are designed to minimise the risk (Jemena's maintenance philosophy is to eliminate risk wherever and whenever possible) of fire ignition from the JEN supply networks.

This BMP details the requirements and procedures that are to be followed by these programs in order to achieve compliance with the *Electricity Safety Act 1998*, the Electricity Safety (Bushfire Mitigation) Regulations 2013 and the Electricity Safety (Electric Line Clearance) Regulations 2015.

2.1 Introduction

JEN is committed to operating its electricity network in full compliance with the requirements of the Act and Regulations administered by Energy Safe Victoria.

Due to prevailing weather conditions and country environments conducive to bushfires JEN acknowledges the need to act proactively in designing and operating its electricity distribution assets in a way which minimises the possibility of a bushfire ignition. Being an authority in the distribution of electricity in its franchise area, JEN acknowledges its responsibility to the local community by considering all relevant practical technologies available to minimise the bushfire risk.

The creation of this BMP and the requirements and procedures herein, demonstrate the commitment from all levels of management within JEN to the minimisation of bushfire ignition risk due to electricity assets. The aim of this BMP is to be a primary reference for all bushfire related requirements and procedures and to manage the bushfire ignition risk using approved techniques.

These requirements and procedures are communicated to all relevant employees and contractors. This includes the application of JEN standards to both the design and construction phases of maintenance and augmentation work. Regular bushfire mitigation audits are carried out to ensure compliance.

A copy of this BMP, accepted by ESV, will be available for inspection at Level 16, 567 Collins Street, Melbourne CBD during normal business hours. The availability for inspection extends to the corporate systems (SAP and GIS) upon reasonable request for information regarding the location of supply networks and excluding commercially sensitive material. An authorised employee is required to supervise all SAP and GIS inspections granted to the public.

Fire History

Three significant and devastating days of fires have ravaged significant parts of Victoria since 1977.

12 February 1977

There were 68 separate fires reported in Victoria on that day, 16 of which were major.

16 February 1983

There were 180 separate fires reported in Victoria on that day, the majority of which were major. Twenty-nine were alleged to involve electricity assets. Seventy people perished because of these fires in South Australia and Victoria.

7 February 2009

The devastating 'Black Saturday' fires on 7 February 2009 were the worst fires in Australia's history, costing 173 lives and over 2,000 dwellings were destroyed in fires that raged throughout the northern and eastern areas in the outer suburbs and small towns within 100km of Melbourne.

In 1977, nine major fires were attributed to the State Electricity Commission (**SEC**). As a result of these fires the Government established an inquiry headed by Sir Esler Barber QC. The Barber Report effected the creation and adherence to the Bushfire Mitigation Plan.

The findings of the Barber Report exist in 65% of the physical environment in which Jemena Electricity Networks (JEN) operates and therefore Jemena recognises the need to continue operating under Energy Safe Victoria (ESV) guidelines of bushfire mitigation.

The 2009 Victorian Bushfires Royal Commission was established on 16 February 2009 to investigate the causes and responses to the bushfires which swept through Victoria in February 2009. The Commission delivered its Interim Report on 17 August 2009 and its Final Report on 31 July 2010.

JEN followed the progress of the Royal Commission during its deliberations to identify any potential opportunities for improvement to JEN's network management practices. As a result of this, JEN implemented a major initiative in relation to steel conductor on the JEN supply networks in the HBRA.

Early in 2010 an inspection of galvanised steel conductor in the JEN HBRA resulted in approximately 90km of replacement. In addition to the conductor being replaced Jemena took the opportunity to replace other pole top assets such as wood with steel crossarms, ties, insulators, vibration dampers and armour rods.

In the second quarter of 2014, Jemena completed another inspection of overhead high voltage conductor in the JEN HBRA.

Another project directly linked to the Victorian Bushfires Royal Commission is the replacement of Single Wire Earth Return (SWER) systems with three phase or single phase technologies. The foundation of a SWER system is a completely independent earthing system. This generally presents an elevated fire risk (in the event of failure) when compared with three phase systems. Three phase systems have the advantage of being protected by modern sophisticated and fast protection relays. In addition to the reduced fire risk, replacing the SWER system also yields additional benefits, including standardisation, less spare holdings, increased capacity for future load growth, retirement of aged conductor, improved power quality, improved safety/protection, and the ability for customers to connect to a three-phase supply.

Given there was only 13km of SWER in the JEN HBRA, it was decided that all SWER lines be replaced with standard single (two wire) or three phase high voltage lines. This project was completed in May 2013, eliminating all SWER from the JEN network.

As a result of the Victorian Bushfire Royal Commission and Recommendation 33, Energy Safe Victoria (ESV) has directed JEN under section 141(2)(d) of the *Electricity Safety Act* and via letters dated 4 January 2011 to amend its Electricity Safety Management Scheme (ESMS) to include the development (or reinforcement) of plans and procedures in relation to the fitting of spacers/spreaders, vibration dampers and armour rods. This project was completed in February 2016, retrofitting spacers/spreaders, vibration dampers and armour rods in line with Jemena standards on the JEN network.

2.2 Objectives of the BMP

The objective of this BMP is to clearly define the requirements and procedures of JEN in relation to mitigation of bushfire danger. These being:

- To establish requirements and procedures that will minimise the risk (refer to BFM18 for more detail) of network assets or operational activities being the cause of a bushfire;
- To demonstrate JEN's commitment in carrying out its corporate and community responsibilities; and
- To implement the requirements of the Electricity Safety Act 1998, the Electricity Safety (Bushfire Mitigation) Regulations 2013 and the Electricity Safety (Electric Line Clearance) Regulations 2015.
- To mitigate the bushfire ignition risk from electricity distribution assets to the community and the environment. JEN supports this objective by instilling the following values:
 - Use of skilled people and modern technology;
 - Continue to develop and improve methods of environmental management of fire safe distribution assets;
 - Implementation of training standards to provide the 'best practice' management of vegetation; and
 - Provision of an excellent and responsive customer service.

- To ensure that vegetation clearances, electrical distribution assets and Private Overhead Electric Lines (POELs) are maintained in accordance with the relevant ESV Acts and Regulations. At all times these activities will be carried out with attention to:
 - Ensuring public safety;
 - Ensuring private property security;
 - Ensuring continuity of supply;
 - Delivery of quality service;
 - Responsible Environmental Management;
 - Commitment to work place safety;
 - Minimising of community cost; and
 - Notification/consultation/negotiation with relevant stakeholders.

The application of these objectives is throughout the JEN area (see Figure 1.5. Area to which this BMP Applies) and involves a broad category of assets and vegetation throughout the region.

2.3 Definitions

Bushfire Mitigation Plan (BMP)

This document is prepared by JEN and submitted to ESV to comply with the Electricity Safety Act 1998 Section 113A (1).

ESV

Energy Safe Victoria.

JEN

Jemena Electricity Networks (JEN) is an electricity distribution company wholly owned by Jemena. JEN distributes electricity to the northern and western suburbs of Melbourne, Victoria. It is one of five licensed electricity distribution networks in Victoria.

Asset Management

Asset Management (AM) is an assets-based business that will focus on the ownership and management of assets.

Service Delivery

Service Delivery (SD) provide operations, construction and maintenance services.

2.4 References

- Electricity Safety Act 1998;
- Electricity Safety (Bushfire Mitigation) Regulations 2013;
- Electricity Safety (Electric Line Clearance) Regulations 2015;
- JEN Electric Line Clearance Management Plan;
- JEN Customer Complaints Procedure; and
- JEN Electricity Safety Management Scheme.

2.5 Scope

This BMP defines JEN’s strategic approach, requirements and procedures for mitigating the risk of bushfire ignition due to electricity assets or contact with electrical assets, including responsibilities and accountabilities. It includes references to other plans or instructions, which combine with the BMP to cover all activities that are carried out by AM and SD employees and contractors in hazardous bushfire risk areas and which have an impact on the risk of bushfire ignition.

The following map shows the land to which this Bushfire Mitigation Plan applies with respect to the JEN distribution area. The map identifies the HBRA in green, LBRA in orange.

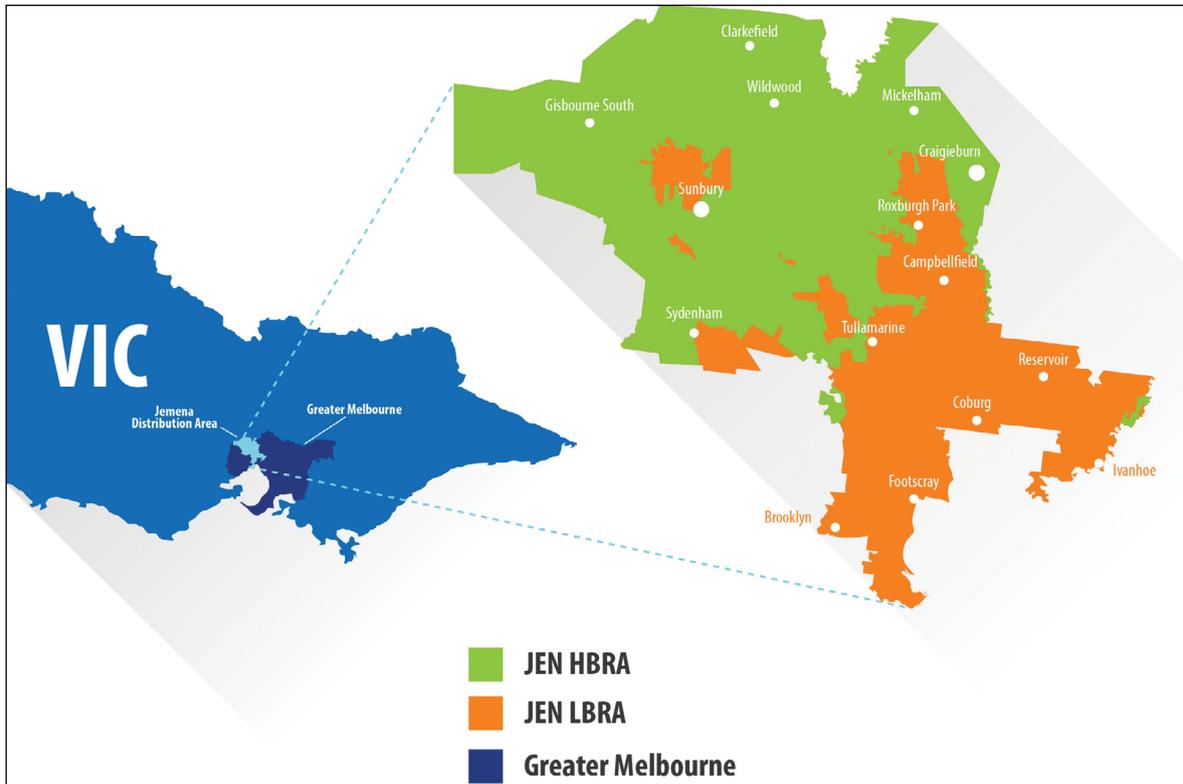


Figure 1.5 Area to which this BMP applies.

As displayed in the above map the JEN franchise area predominantly covers the western and north western suburbs of Melbourne with:

- Williamstown and Newport along its southern boundary;
- Tullamarine to Gisborne South along its western boundary;
- Clarkefield to Craigieburn in the north; and
- Reservoir to Heidelberg and Coburg in the east.

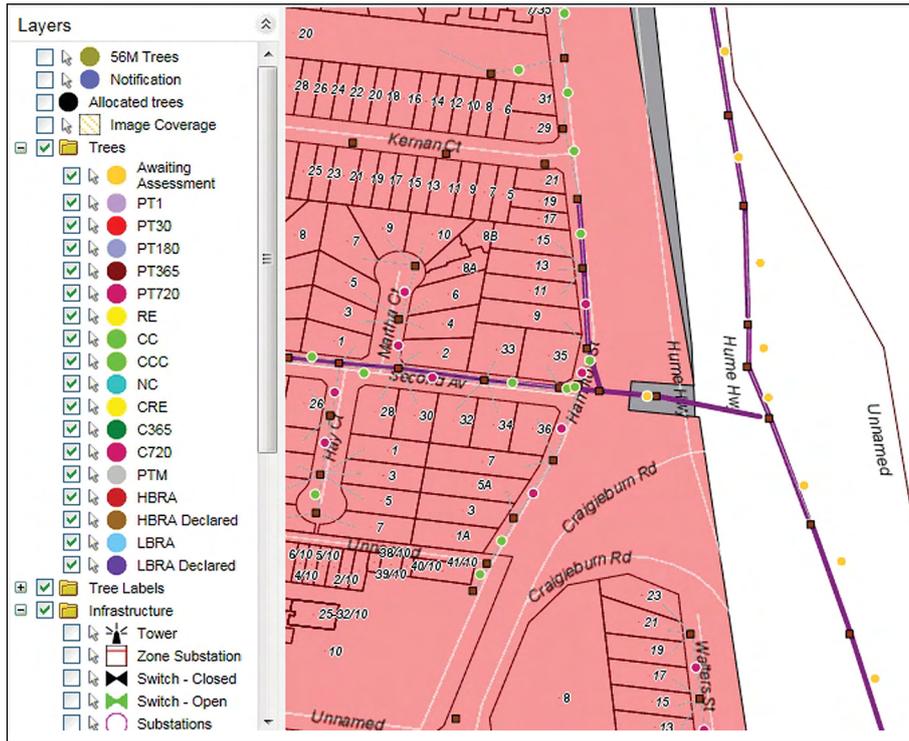
The JEN franchise boundary is also shown as a wide orange line and labelled ‘Jemena’ in Edition 40 of the Greater Melbourne street directory published by Melway – refer to Key Maps page 5 to page 9.

Access to Electricity Asset Records

The JEN GIS system has been designed, and is used, as the definitive repository of all network asset and operating environment characteristic information. As at January 2009, all vegetation related data is stored in the vegetation management contractor’s Zinfra VMS database. This database is also used to generate performance status and statistics on a monthly basis and is available to Jemena staff for monitoring and reporting functions.

The GIS is accessible to authorised personnel via a tiered security logon. Broadly the tiers range from Data Entry (full read/write access) to Information only where only preset objects will be displayed without ‘write’ permission. Most employees have access to the GIS via the internal web based ‘view only’ licence. Municipal councils also have a restricted access via the internet.

The following screen shot illustrates some of the information available in the VMS.



LEGEND			
Pink Areas	Low Bushfire Risk Areas	Coloured Dots	Various Tree Codes (Refer Legend)
White Areas	Hazardous Bushfire Risk Areas		
Grey Areas	Declared Areas		
Purple Lines	22kV Feeders	Brown Squares	JEN Poles
Light Grey Lines	LV Overhead Lines		

2.6 Statistics

The JEN network, which covers approximately 950 square kilometres, consists of approximately 107,000 poles with over 4,500km of overhead power lines and 180,000 overhead service lines.

The JEN area has been divided by the fire control authority into two categories, HBRA and LBRA in compliance with Part 8, Section 80 of the Electricity Safety Act 1998.

Specific asset standards and vegetation management requirements apply in these areas:

Low Bushfire Risk Areas	Predominantly urban and making up approximately 37% of the JEN geographical area and containing approximately 99,000 poles.
Hazardous Bushfire Risk Area	Predominantly rural and making up approximately 63% of the JEN geographical area and containing approximately 5,100 poles.

2.7 Strategies

The core bushfire mitigation strategies adopted by JEN are:

- Rigorous management processes – requirements and procedures shall be documented and understood by all relevant employees and contractors, and systems shall be in place to:
 - Monitor and audit the implementation of the plan;
 - Identify any deficiencies in the plan or the plan's implementation; and
 - Improve the plan and the plan's implementation if there are any deficiencies identified.
- Preventative programs – these shall be based on the analysis of fire risk and the implementation of appropriate instructions and programs;
- Asset condition monitoring – the condition of the assets shall be closely monitored through a program of inspections, testing and recording. Systems shall be put in place to:
 - Monitor and audit the effectiveness of inspections carried out under the plan;
 - Ensure that any training necessary for persons assigned to perform functions under the plan is provided; and
 - Monitor and audit the competence of the persons assigned to carry out inspections under the plan.
- Programs for days of total fire ban – appropriate operational procedures shall be maintained and implemented on days of total fire ban.

2.8 Operational Environment and Assumptions

In implementing the Bushfire Mitigation program within JEN the following operational assumptions and arrangements are made:

- The JEN geographical area is located within the Central and North Central Fire Districts defined by the CFA;
- The fire danger period for JEN is usually declared in mid-November. Pre-fire danger period works are usually scheduled to finish by the end of October. The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for advising the General Manager Network Operations and Control of possible variations in this date;
- At present, the number of assets to be maintained or replaced will not vary significantly from the numbers estimated from previous years. These estimates are reflected by information contained in the Asset Management System (GIS/SAP) for the JEN network. The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for setting these estimates;
- Approximately 95% of trees affecting the supply network in the HBRA can be maintained to the Code specification by cyclic and pre-summer tree cutting or removal programs. The remaining 5% of trees require special arrangements (e.g. important or significant vegetation);
- The majority of assets in the JEN area are accessible throughout the year. However, there are a few assets on hilltops and in gullies where access difficulties can occur. The majority of these assets are located in the Sunbury area. The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for ensuring that those difficult to access assets will be managed without compromising the bushfire mitigation program; and
- Funding for carrying out the bushfire mitigation program will be made available as part of the normal budgeting process.

3 The Role of Senior Management

Purpose

To clearly demonstrate, internally and externally, senior management's commitment to bushfire mitigation.

Objectives

To visibly and actively participate in the implementation of the Bushfire Mitigation Plan including:

- Attending scheduled meetings;
- Attending Senior Management Briefings;
- Liaison with regulatory authorities when required; and
- Minimising the number of fire starts from network assets.

Accountabilities

Senior management is responsible for:

- Visibly and actively participating in the promulgation, communication and operation of the Bushfire Mitigation requirements and program;
- Carrying out periodic audits of the Bushfire Mitigation Management System;
- Establishing key performance measures as senior management controls;
- Ensuring preventative programs are in place to minimise fire starts from network assets; and
- Fostering an ongoing culture of continuous improvement and proactive reduction in network defects or faults which may lead to fire ignition.

Requirements

Further details are contained in Requirements 4 and in the Management Structure Procedure BFM2.

4 Bushfire Mitigation Management System

Purpose

To ensure that all activities which contribute to the mitigation of bushfire risk are properly identified, documented and managed.

Objectives

- To identify and document the management processes, procedures and activities (and the relationships between them) associated with managing the risk of bushfires; and
- To identify the management control mechanisms for the activities critical to the management of fire risk.

Accountabilities

- The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for updating the management system;
- The Network Integrity and Performance Manager shall endorse the management system.

Requirements

This BMP provides the elements that support the Bushfire Mitigation Management System.

The Bushfire Mitigation Management System is detailed in the Bushfire Mitigation Management System Procedure BFM1.

5 Management Structure

Purpose

To ensure a clear understanding of the responsibilities for the implementation and control of all activities related to bushfire mitigation.

Objectives

- To have in place a formal, documented management structure for bushfire mitigation;
- For each position, to have clearly identified responsibilities with assigned authority and accountability; and
- To identify the inter-relationships between those that manage, perform, record and verify bushfire mitigation activities.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for documenting the bushfire mitigation management structure.

Requirements

The responsibilities, authority and accountability for each position shall be documented in position descriptions. The Management Structure is detailed in the Management Structure Procedure BFM2.

6 Management Reporting

Purpose

To ensure all personnel responsible for bushfire mitigation activities are fully informed on the status of all matters critical to the performance of their bushfire mitigation responsibilities.

Objectives

To provide appropriate and timely reports to all levels of the bushfire mitigation management structure.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for the compilation and circulation of reports.

Requirements

Further details are contained in the Management Reporting Procedure BFM3.

7 Reporting to ESV

Purpose

To keep Energy Safe Victoria (**ESV**) informed of relevant matters associated with bushfire mitigation.

Objectives

To ensure that ESV is provided with all necessary information required by them, in relation to bushfire mitigation activities.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for the compilation of reports and forwarding them to ESV and the preparation of the BMP.

Requirements

Regular reports will be provided to ESV covering information and in a format agreed between JEN and ESV.

Additional information will be provided to ESV on request and every effort will be made to provide such information in a timely manner.

Details of the process for the application of the requirements are contained in the Reporting to ESV Procedure BFM4.

8 Systems for Measuring and Validating Performance

Purpose

To ensure that the status of the bushfire mitigation program and the effectiveness of the management system are measured and validated. This includes the effectiveness of JEN's performance in relation to fire starts.

Objectives

To establish appropriate measures and targets for:

- The status of the bushfire mitigation program (i.e. the Bushfire Mitigation Index); and
- The performance in relation to alleged fire starts (i.e. the F-factor scheme).

Accountabilities

The Network Integrity and Performance Manager is responsible for the establishment of the measures, setting the targets, data capture and evaluation of the results.

Requirements

Further details are contained in the following Procedures:

- Bushfire Mitigation Index Procedure BFM5;
- Annual Program of Activities Procedure BFM6; and
- Reporting, Investigation and Analysis of Fire Ignitions Procedure BFM16.

9 Bushfire Mitigation Plan

Purpose

To plan and document JEN's approach to managing the fire risk.

Objectives

- To prepare a five-yearly annual plan covering the identification of the risks, the environment, the works program (including auditing), communication and required actions; and
- To meet legislative and regulatory requirements.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for the preparation of the BMP.

Requirements

The BMP shall be prepared annually, in accordance with the Bushfire Mitigation Plan Procedure BFM7.

10 Coordination with Other Organisations

Purpose

To ensure effective liaison with other organisations relevant to bushfire mitigation activities.

Objectives

- To maintain communication links and emergency protocols with other organisations relevant to bushfire mitigation activities; and
- Foster and maintain mutual support arrangements with these organisations.

Accountabilities

- The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for the ongoing liaison with other bodies; and
- The Control and Dispatch Electricity Manager is responsible for emergency communications.

Requirements

JEN will coordinate with:

- MFB Metropolitan Fire & Emergency Services Board
- CFA Country Fire Authority
- DELWP Department of Environment, Land, Water & Planning
- ESV Energy Safe Victoria
- Municipal Councils and Other Responsible Persons
- Other Distribution and/or Transmission companies.

Further details are contained in the Coordination with Other Authorities Procedure BFM8.

11 Technology Implementation

Purpose

To take advantage of available technologies to minimise the fire risk.

Objectives

- To implement available technologies to minimise the risk of fires from electricity assets, where there is a business benefit; and
- To work towards creating an environment where Electric Line Clearance requirements are minimised.

Accountabilities

- The Manager Primary Plant and Distribution Systems and the Manager Network Technology and Measurement are responsible for the assessment of technologies; and
- Network Integrity and Performance Manager, in consultation with the Network Technology and Measurement Manager, is responsible for the implementation of technologies to reduce the fire risk.

Requirements

JEN supports existing programs that ensure lines in all new greenfield residential estates are underground. Construction and maintenance work on the existing network provides the opportunity to install supply systems that reduce effects on the natural environment. In rural areas and along easements, JEN will be sensitive to the land use in the adjacent area.

JEN encourages and will support community groups or public authorities that have viable propositions to reduce the effect of electrical assets on vegetation. Such proposals will be evaluated in relation to public safety, cost, community conservation values and the characteristics of the affected vegetation.

Appropriate projects shall be included in the annual budget submission. Technologies considered shall include:

- The application of insulated cable systems; and
- The management of fault energy levels.

Further details are contained in the Technology Implementation and Development Procedure BFM9.

12 Step Change to Industry Practice

Purpose

To ensure, by proper process, that changes to established bushfire mitigation practices or programs will not measurably increase the risk of bushfire and that due diligence has been applied.

Objectives

- To ensure that a rigorous process is followed for the implementation of step changes to industry practices; and
- To ensure that key stakeholders (e.g. ESV and insurers) are consulted.

Accountabilities

The Network Integrity and Performance Manager is responsible for the application of the requirements.

Requirements

Further details are contained in the Step Change to Industry Practice Procedure BFM10.

13 Training and Competency

Purpose

To ensure that personnel, including contractors, engaged in bushfire mitigation activities are appropriately trained and have the competency to undertake the task.

Objectives

To maintain an effective system for the assessment and training of employees and contractors.

Accountabilities

The Electricity Maintenance Manager is responsible for ensuring field operations employees and contractors engaged on bushfire mitigation activities meet the training requirements.

Requirements

Further details are contained in the Training Procedure BFM11.

14 Audit and Review

Purpose

To ensure the ongoing effectiveness of the Bushfire Mitigation Management System.

Objectives

- To ensure that bushfire mitigation procedures are followed and are meeting their objectives;
- To ensure the timeliness and effectiveness of responses; and
- To review the value of performance measures.

Accountabilities

Senior management is responsible for the audit and review of the Bushfire Mitigation Management System.

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for arranging audits of the Bushfire Mitigation Management System incorporating procedures contained in this BMP and for the review of the value of performance measures.

The Electricity Maintenance Manager is responsible for all audits associated with OHS and quality in the field.

Requirements

Further details are contained in the Audit and Review Procedure BFM12.

15 Document Control and Records Management

Purpose

To ensure the currency, retention and security of bushfire mitigation records.

Objectives

To ensure that the information relating to bushfire mitigation activities is:

- Up to date;
- Stored securely and with controlled access; and
- Kept for an appropriate length of time.

To ensure that the appropriate level of management approves bushfire mitigation requirements and procedures.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for managing the storage of information relating to bushfire mitigation activities.

The Network Integrity and Performance Manager is responsible for the approval process relating to the requirements and procedures contained in this BMP.

Requirements

Document control shall be conducted in accordance with JEN's Quality System.

Further details are contained in:

- Jemena Content Management Policy (JEM PO 0700);
- BFM Management System Control and Approved Procedure BFM13; and
- Management of Critical Information Procedure BFM14.

16 Reporting, Investigation and Analysis of Fire Ignition

Purpose

To ensure that the cause of every fire ignition is understood so the potential risk can be assessed and appropriate actions taken.

Objectives

- To respond to, report, investigate and analyse every fire ignition involving network assets; and
- To respond to, report, investigate and analyse every incident or reported situation with the potential to cause fire ignition.

Accountabilities

The General Manager Maintenance is responsible for communicating to the control room incident details which may include potential fire starts and the completion any mandated documentation/forms.

The General Manager Network Operations and Control is responsible for the recording of known fire starts into the Outage Management System (OMS) or creating a notification for events which do not result in an outage, and creation of an Osiris Incident Report.

The Network Integrity & Performance Manager is responsible for reviewing all information submitted relating to fire starts on JEN, investigate as required and determine which events are reportable to regulatory bodies.

Requirements

Further details are contained in:

- Response to Reported Unsafe Situations Procedure BFM15; and
- Reporting, Investigation and Analysis of Fire Ignitions Procedure BFM16.

17 Risk Assessment

Purpose

To assess the risk of causes and potential causes of fire ignition from the supply networks to enable appropriate action to minimise the risk.

Objectives

- To carry out a rigorous risk assessment for potential causes of fire ignition; and
- From the risk assessment, to implement appropriate actions.

Accountabilities

The Network Integrity and Performance Manager is responsible for the implementation of these requirements.

Requirements

Further details are contained in the Risk Assessment Procedure BFM17.

18 Preventative Programs

JEN preventative programs are condition based giving consideration to the replacement, modification and maintenance due to a condition assessment based on cyclic inspection programs, trend analysis or risk assessments.

Further details are contained in Network Assets Preventative Programs Procedure BFM18.

18.1 Network Assets

Purpose

To remove or minimise the causes of fire ignition by the supply networks.

Objectives

- To establish and implement preventative programs for all potential causes of fire ignition; and
- To maintain a system of design, construction, operation and maintenance standards for all works associated with the network that have been developed to take account of fire safety.

Accountabilities

The Network Integrity and Performance Manager is responsible for the planning and development of asset management programs.

The Electricity Maintenance Manager is responsible for the coordination and management of all cyclic inspection programs on network assets and the coordination and management of maintenance and emergency response programs.

Requirements

Network assets shall be maintained in a safe and serviceable condition through the following strategies:

- The rectification of damaged or defective items;
- Regular maintenance to ensure operational effectiveness; and
- Replacement of identified deteriorating items (approaching the end of their effective operational life).

Further details are contained in the Network Assets Preventative Programs Procedure BFM18.

18.2 Electric Line Clearance Management

Purpose

To ensure that adequate clearances are maintained between vegetation and network assets.

Objectives

- To maintain programs for achieving statutory clearances between vegetation and network assets; and
- To have in place an Electric Line Clearance Management Plan, approved by ESV.

Accountabilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for preparation of the ELCMP.

The Network Integrity and Performance Manager is responsible for the endorsement and submission of the ELCMP.

The General Manager Field Services Electricity is responsible for implementing the ELCMP.

The General Manager Asset Strategy Electrical is responsible for approving the ELCMP.

Requirements

JEN's Electric Line Clearance management program will comply with the Electricity Safety (Electric Line Clearance) Regulations 2015.

Further details are contained in the Electric Line Clearance Management Procedure BFM19.

18.3 Operational Instructions and Maintenance Procedures

Purpose

To ensure operational instructions and maintenance procedures are maintained for activities in the event of a fire, a day of total fire ban and during a fire danger period.

Objectives

- To maintain a system of operational instructions for inspection, testing and assessment of network assets;
- To maintain a system of operational instructions for the JEN network and field personnel in the event of a fire;
- To maintain a system of operational instructions and maintenance plans for days of total fire ban and during a fire danger period; and
- To maintain a system of standards for the design, construction, operation and maintenance of the network, in line with Regulatory requirements and good industry practice.

Accountabilities

The Network Integrity and Performance Manager is responsible for development and maintaining the instructions for the inspection, testing and assessment of network assets.

The Primary Plant and Distribution Systems Manager is responsible for the standards for the design, construction, operation and maintenance of the network.

The Electricity Maintenance Manager and the Control & Dispatch Electricity Manager are jointly responsible for operational instructions in relation to the JEN network and field personnel in the event of a fire and for the implementation of plans for days of total fire ban and during a fire danger period and are also responsible for the implementation of any operational instructions for inspection, testing and assessment of network assets.

Requirements

Details of the operational instructions are contained in the Jemena Operations Manual.

Operational instructions and technical standards shall be subject to audit and review.

Further details are contained in the following procedures:

- Coordination with Other Authorities Procedure BFM8;
- Audit and Review Procedure BFM12;
- Technical Standards for Design, Construction, Operation and Maintenance Procedure BFM20;
- Use of Vehicles in Periods of Fire Risk Procedure BFM21; and
- Operational Contingency Plans Procedure BFM26.

18.4 Procurement of Equipment and Services

Purpose

To ensure that equipment and services procured for works on the JEN supply networks in the HBRA do not compromise JEN's bushfire mitigation standards.

Objectives

- To ensure that contractors providing services on the supply networks in the HBRA meet the same standards as AM employees; and
- To ensure that equipment purchased for use on the JEN supply networks in the HBRA has been assessed in relation to the risk of fire ignition.

Accountabilities

The Primary Plant and Distribution Systems Manager is responsible for ensuring that equipment purchased for use on the JEN supply networks in the HBRA has been assessed in relation to the risk of fire ignition.

The Electricity Maintenance Manager is responsible for ensuring that contractors providing services on the JEN supply networks in the HBRA are aware of and comply with JEN's requirements in relation to bushfire mitigation programs.

Requirements

Contractors who fail to meet the required standards in relation to bushfire mitigation activities shall not be employed. Equipment assessed as not meeting the required performance in relation to bushfire mitigation shall not be purchased.

Further details are contained in:

- Evaluation of Materials, Plant and Equipment Procedure BFM22; and
- Use of Contractors Procedure BFM23.

18.5 Public Awareness

Purpose

To enhance public awareness of bushfire mitigation issues.

Objectives

- To increase community awareness of the risks of POELs and of the dangers of work in the vicinity and on vegetation near such lines; and
- To increase the contribution by the community to minimising the risk of fires.

Accountabilities

The Senior Asset Performance & Bushfire Mitigation Engineer is responsible for ensuring information is passed to the community in regard to the management of vegetation and POEL inspections.

The Network Integrity and Performance Manager is responsible for targeted public awareness programs.

Requirements

JEN shall provide information and community support as detailed in:

- Electric Line Clearance Management Procedure BFM19; and
- Private Overhead Electric Lines Procedure BFM25.

19 Network Monitoring

19.1 Asset Management System

Purpose

To maintain a database of information to enable the effective management of JEN assets.

Objectives

- To identify and record the location of network assets; and
- To record the condition and status about each item identified.

Accountabilities

The Network Integrity and Performance Manager is responsible for the development of the asset management systems and timely and accurate recording of data into the asset management systems.

Requirements

The asset management system shall:

- Identify and locate all network assets;
- Record the condition of the assets;
- Record the date of network asset assessments;
- Identify assets subject to approved replacement, modification or maintenance programs; and
- Generate action reports, showing the priority where maintenance or repair works are required.

The asset management system comprises several components, some of which include the Works Management System, the GIS and Field Data Capture capability.

Works Management System

The Works Management System (SAP) is utilised to manage the work program. The system manages the flow of work through the organisation from initiation, design, scheduling, construction, action and closure through to work status reporting and tracking. The jobs that are managed by the system include construction, planned maintenance and reactive work.

The integration of the financial, human resource logistics and purchasing modules provide benefits in the form of improved efficiencies. The use of an integrated capability ensures that all components of a project such as cost estimation, materials ordering, work scheduling and project management are automatically initiated and tracked.

This removes much of the manual paperwork and hand over from one work group to another, reducing the possibility of duplication of tasks, overlooking of tasks and transitional delays.

The integration with GIS provides the ability to 'cluster' jobs in a geographic area and attend to them in sequence or in parallel, reducing the impact to customers of planned outages. Field crews are able to complete a number of jobs in a geographic region during a single planned outage rather than having to subject customers to a planned outage for each job.

Reliability Centred Maintenance

The Reliability Centred Maintenance (**RCM**) methodology places the determination of asset and network maintenance requirements on a more scientific basis than simple time based scheduling. RCM uses a range of asset parameters to determine an optimum maintenance schedule for the asset. These include asset type, criticality, failure modes, location and environment, asset utilisation and loading, rating, age and condition.

An RCM program provides three key benefits. The first benefit that RCM provides is a more efficient method of determining maintenance requirements by matching maintenance schedules to actual asset requirements. Unnecessary maintenance is reduced or eliminated and the maintenance tasks are concentrated where they are needed and will provide most benefit.

The second benefit that RCM provides is an auditable approach to maintenance. Periodic performance of maintenance tasks is always subjective and will always leave an organisation open to question when incidents occur. RCM provides the ability to continually review and adjust the maintenance schedules based on the changing age, conditions, performance and utilisation of the assets.

Thirdly, RCM provides a clearly defined and documented process by which maintenance requirements are derived, based on up-to-date information. This process is one that will stand up to both internal and external audit and provides the opportunity for the business to satisfy regulatory organisations that it is meeting and exceeding its obligations for asset maintenance.

RCM is a living program, an ongoing, iterative process that uses the data from the asset management systems to fine-tune maintenance schedules. The complexity of the RCM living program means that an integrated Works Management System is required to provide the RCM 'engine'.

Geographic Information System

GIS records data about the assets and the geographic location of the network assets that are managed. The GIS provides the ability to display the assets on geographical cadastre and their spatial relationship with each other.

The GIS application provides a development environment in addition to the underlying asset and geographical database. The toolkits transform the GIS from an asset database into an operational tool.

The asset data, application functionality and interlinking underpin and support the capabilities of all other applications. The GIS is a fundamental requirement for the manager of network assets because geography is such a significant consideration in their management:

- The assets are organised and identified on a geographic basis;
- Geographic location plays a key role in the performance of the asset;
- Asset and network planning and augmentation centres around geographic areas and is an important factor in planning and design;
- Geographic areas of the network that are prone to particular types of fault or defect can be identified through thematic mapping; and
- The effect of geographic location on asset condition can be identified.

Field Data Capture

One of the keys to the accurate capture and recording of information is to devolve the responsibility for electronic data update to the field as far as practicable. This avoids data integrity, interpretation and timeliness issues that are introduced by the use of paper based capture mechanisms.

Pen-based computers have been deployed to asset inspectors. The computers provide facilities for capturing asset, inspection and maintenance information associated with their tasks. These computing devices are linked to the back end asset management systems to download asset updates, current inspection results, as well as initiating follow up work and to upload future job schedules and data.

Extensive documentation has been developed for the asset management systems which includes procedures for carrying out the various actions within the electricity system (how to do it) as well as business concepts (why it is done) such as RCM philosophy.

The combination of geographical location and continuing asset inspections is enabling the quality of information in GIS/SAP to be continually improved. The forthcoming inspection program will contribute to this process by including more detailed asset information.

Data audits provide an indication of the quality of data and how the asset management system is being used. If deficiencies and areas for improvement are identified, a corrective action process is applied. This provides the opportunity for immediate feedback in education for the users and suggestions for system improvements.

19.2 Asset Inspection and Assessment

Purpose

To assess and record the condition of network assets.

Objectives

- To assess by inspection and, where appropriate by testing, the condition of network assets; and
- To assess by inspection the clearances between vegetation and network assets.

Accountabilities

The Network Integrity and Performance Manager is responsible for the effectiveness of procedures for inspections, assessments and tests contained in the Asset Inspection Manual.

The Electricity Maintenance Manager is responsible for the asset inspection activity in accordance with the Asset Inspection Manual.

Requirements

Instructions covering the detailed description of items that need to be identified for approved replacement, modification or maintenance programs and features to be observed in assessing asset condition, are contained in the Asset Inspection Manual.

Further details are contained in:

- Network Assets Preventative Programs Procedure BFM18;
- Electric Line Clearance Management Procedure BFM19; and
- Inspection, Measurement and Testing Equipment Procedure BFM24.

19.3 Private Overhead Electric Lines

Purpose

To ensure the POELs are maintained in a safe and serviceable condition.

Objectives

- To manage the assessment of POELs; and
- To manage the rectification and replacement of defective POELs.

Accountabilities

The Network Integrity and Performance Manager is responsible for the effectiveness of procedures for inspections, assessments and tests contained in the Asset Inspection Manual.

The Electricity Maintenance Manager is responsible for the inspection and assessment of POELs, defect notification follow up actions on faulty POELs (including any ESV directives) and disconnection of POELs with defects on either TFB days or during the fire danger period if required.

The Customer Service Resolution Manager Vic., is responsible for the management of POEL customers who have been issued a formal Defect Notice.

Requirements

While POELs are primarily the responsibility of the property owner, JEN will inspect them on a cycle not exceeding 37 months and notify the owner of any defects found and monitor the process of fault rectification. The rectification of defects is the responsibility of the owner of the POEL. The POELs will also be inspected annually prior to the declared fire danger period for the appropriate clearance from vegetation.

JEN requires that POELs are made safe before the bushfire season, and will disconnect supply on total fire ban days or under direction from ESV if repairs are not completed.

Where a POEL is found to be defective and is to be replaced, the replacement service will be the most appropriate type, either an underground service or an HV line and substation. As required by Regulation 220 of the Electricity Safety (Installations) Regulations 2009, POELs in need of substantial reconstruction will be required to be replaced with underground consumers' mains.

Further details are contained in the Private Overhead Electric Lines Procedure BFM25.

20 Operational Programs and Emergency Response on Total Fire Ban Days

Purpose

To have plans prepared for actions to be taken on days of total fire ban or in the event of fires.

Objectives

To be prepared such that the appropriate actions will be implemented on days of total fire ban or in the event of fires.

Accountabilities

The Electricity Maintenance Manager requires the relevant Duty Officers, in collaboration with the Control and Dispatch Electricity Manager, to be jointly responsible for the implementation of these requirements.

Requirements

Operational Contingency Plans

JEN shall have in place an Operational Contingency Plan, which sets out actions that will be taken to secure the safety of network assets:

- Where preventative program works are incomplete; or
- Extraordinary environmental conditions exist.

Further details are contained in Operational Contingency Plans Procedure BFM26.

Private Overhead Electric Lines

The assessment of POELs and the rectification/replacement of POELs are contained in the Private Overhead Electric Lines Procedure BFM25.

Fault Energy Management

Currently the JEN supply networks in HBRA is supplied from zone substations with neutral earth resistors installed and operating. This factor reduces the fire start risk by minimising fault energy occurring in a fire prone environment. In future with JEN rolling out REFCL and ASC technology on its zone substations, it is expected that after commissioning of these assets the fault energy will be further minimised.

In addition, most of the JEN supply networks in HBRA is protected on days of total fire ban by suppression of the feeder circuit breaker auto reclose function within the zone substation and along the feeder via any Auto Circuit Recloser (ACR) to minimise the available fault energy.

Where the exposure is minimal on the supply networks in HBRA, the protection is via HV fuses.

Further details are contained in Operational Contingency Plans Procedure BFM26 and in the Fault Energy Management Procedure BFM27.

Permit Requirements

Each year total fire ban day permits are obtained from the relevant fire authorities, permitting limited field activities as described in the Coordination with Other Authorities – Procedure BFM8.

21 Legislation and Regulation

21.1 History

As a result of the serious fires in 1977, the State Government established an enquiry headed by Sir Esler Barber QC. The Barber Enquiry issued a report, making a number of recommendations relating to the SEC. The report was a benchmark in fire mitigation activities throughout Australia and identified relevant factors requiring attention.

Following the catastrophic fires in 1983, the SEC Act 1958 was amended by the State Electricity Commission (Clearance of Lines) Act 1983 which created that part of the State Electricity Commission Act 1958 entitled 'Part VI Provisions Relating to Tree Clearance', (sections 58 to 65 inclusive of the Principal Act). This was to clarify responsibilities for tree clearances and the maintenance of private lines. The amendments also provided for a Code of Practice for Tree Clearance, the establishment of a Consultative Committee and regulations for the enactment of the Code and notices.

A revised form of a voluntary code, developed by the SEC in consultation with local government, received legislative support in Part VI of the SEC Act 1958 in January 1984.

The 1996 remaking of the renamed Powerline Clearance Code introduced the principle of management plans to reduce the level of prescription contained in the Code. The Code was revised in 1999 and gazetted as the Code of Practice for Electric Line Clearance [Vegetation] 1999 before subsequently being incorporated into the Electricity Safety (Electric Line Clearance) Regulations 2005. These regulations have now sunset and have been replaced by the Electricity Safety (Electric Line Clearance) Regulations 2015.

Regulations made under Sections 110 and 111 of the SEC Act 1958 were introduced in 1997 [Electricity Safety (Network Assets) Regulations] which set out requirements relating to the ignition of fire and network assets.

Subsequently, the Electricity Safety Act 1998 has incorporated the relevant sections of the SEC Act 1958.

The Electricity Safety (Network Assets) Regulations 1997 were revoked in 1999 and replaced by the Electricity Safety (Network Assets) Regulations 1999. These regulations have now sunset and have been replaced by the Electricity Safety (Installations) Regulations 2009.

The Electricity Safety (Bushfire Mitigation) Regulations 2013 were introduced to make provision for the preparation of bushfire mitigation plans and the inspection of POELs by major electricity companies.

The latest amendments to the regulations commenced in May 2016, the amendments made provisions for requirements for major electricity companies to increase safety standards on specific components of their networks in order to reduce bushfire risk.

21.2 Current Legislation and Regulations

The following is provided as a summary and interprets parts of current legislation and regulations.

The legislation and regulations should be directly referred to for matters of decision and legal advice sought as necessary.

21.3 The Electricity Safety Act 1998

Part 8 – Bushfire Mitigation Requirements for Certain Operators and Electric Line Clearance

Division 1 – General

In summary, Division 1 supplies the definition and the regulatory framework around the description of:

- Section 79 – Urban Area;
- Section 80 – Fire Hazard Rating;
- Section 81 – Declared Area in Urban Area;
- Section 82 – Operation of Part; and
- Section 83 – Point of Supply.

Division 2 – Responsibility for Maintenance of Lines

Section 84 makes Distribution Companies, Transmission Companies and others, responsible for ‘keeping of the whole or any part of a tree clear of an electric line’.

In summary:

The occupiers of land are responsible for the maintenance of private electric lines both overhead and underground and for:

- Keeping vegetation growing on their land clear of any Private Electric Line on their land, pursuant to Section 84A(1) of the Act;
- Keeping vegetation growing on their land clear of any Service Line crossing the land with the purpose of providing electricity to an installation on their land, pursuant to Section 84A(2) of the Act; and
- Keeping vegetation growing from their land clear of any Private Electric Line on adjoining land, pursuant to Section 84(B)(1) of the Act.

Local government is responsible for keeping vegetation clear of electric lines (other than transmission lines) on public land in Declared Areas, pursuant to Section 84C of the Act.

The Electricity Safety Amendment (Bushfire Mitigation) Act 2014 came into operation on 1 April 2014.

This removed the requirement for a public land manager that was not a municipal council (such as VicRoads) to keep trees clear of electric lines and the responsibility was transferred to the relevant distribution company.

The relevant Distribution Company is responsible for keeping vegetation clear of electric lines in all circumstances other than those described above, pursuant to Section 84(7) of the Act. This includes:

- All public land in rural areas;
- All public land in urban areas which are not Declared Areas;
- Powerline easements; and
- All places where vegetation growing on private land may grow into the power lines on public land or powerline easements.

Section 85 gives Distribution Companies and Transmission Companies the power to:

- Enter onto land for the purpose of inspecting electric lines, pursuant to Section 85(a) of the Act;
- Require, with the agreement of ESV, that new or substantially reconstructed electric lines be placed underground, pursuant to Section 85(b) of the Act; and
- Enter onto land to fulfil their responsibilities under Section 84 and 84D (i.e. keeping trees clear of electric lines) subject to the production of an approved certificate, pursuant to Section 85(c) of the Act.

Section 86 gives Distribution Companies the power to serve notice in writing on other responsible persons which requires them to carry out their responsibilities under the Act to maintain clearance between vegetation and electric lines. Where they fail to do so, the Distribution Company may carry out the necessary works and recover costs, subject to conditions.

Section 86A ESV the power to give directions for restriction or prevention of tree growth.

Division 2A – Electric Lines and Municipal Fire Prevention Plans

Section 86B requires municipal fire prevention plans specify procedures for the identification of trees that are hazardous to electric lines.

Division 3 – Electric Line Clearance Consultative Committee

Section 87 requires that there be an Electric Line Clearance Consultative Committee.

Section 88 sets out the functions of the committee.

Section 88A requires the committee to have regard to the reliability and security of electricity supply.

Section 89 sets out procedures for amending or varying the Code of Practice for Electric Line Clearance.

Section 90 makes it an offence to contravene or fail to comply with a prescribed provision of the Code.

Division 4 – Compliance Audits in Relation to Compliance with the Code

Section 90B(5) applies to a responsible person who has prepared a management plan relating to compliance with the code that has been approved by ESV under the regulations.

Section 90B may require the responsible person to undertake independent audits of the plan.

Section 90A enables ESV to conduct or cause to be conducted an audit of the plan to satisfy compliance with management plans audits of the plan.

Part 10 – Electricity Safety Management**Division 2A – Ongoing Bushfire Mitigation Requirements for Major Electricity Companies.**

Section 113A requires major electricity companies to prepare and submit to Energy Safe Victoria, for acceptance under this Division, a plan for the company's proposals for mitigation of bushfire in relation to the company's supply network at the end of each period of five years.

Section 113F(1) makes major electricity company's responsible for inspecting private overhead lines, and requires them to provide notice to the occupier before such an inspection and to provide notice to the owner of any maintenance required. This section also gives the major electricity company the power to enter onto land to carry out the inspection.

Part 13 – Regulations

Section 149 establishes general regulation making powers.

Section 151 empowers the making of Electric Line Clearance regulations with respect to (in part) the Code of Practice for Electric Line Clearance.

Section 157 establishes further regulation making powers.

21.4 Electricity Safety (Management) Regulations 2009**Part 3 – Records and Reporting**

Section 28 (2) (b) requires network operators to report serious electrical incidents to ESV. This includes a fire originating from the operator's supply network. Section 28(2) is replicated below:

Specified Electrical Incident

An electrical incident (other than a serious electrical incident) that resulted in –

- (a) an electric shock from –
 - (i) the operator's supply network; or
 - (ii) an electrical installation supplied electricity by the operator's supply network; or
- (b) a fire originating from the operator's supply network; or
- (c) a part of the operator's supply network becoming dislodged from its supporting structure.

21.5 Electricity Safety (Electric Line Clearance) Regulations 2015

These regulations prescribe the Code of Practice for Electric Line Clearance (including penalty provisions), the provision of management plans and transitional arrangements.

Section 7 prescribes the Code of Practice.

Section 8 defines the prescribed penalty provisions.

Section 9 requires that management plans relating to compliance with the Code are prepared and submitted by 31 March each year to ESV for approval. This section also specifies the content of the management plans.

21.6 Electricity Safety (Bushfire Mitigation) Regulations 2013

According to Section 113A of the Act, a major electricity company must prepare a bushfire mitigation plan in relation to certain electric lines and electrical installations of the supplier, and certain private electric lines at the end of each five year period. According to Section 113F(1) of the Act, a major electricity company must cause an inspection to be carried out at such times as are prescribed, in accordance with the prescribed standards, of certain private electric lines.

The Regulations:

- (a) prescribe certain particulars that must be specified by a major electricity company in preparing a bushfire mitigation plan in accordance with Section 113A of the Act;
- (b) prescribe certain other matters for the purposes of Sections 113A and 113F(1) of the Act, such as times and standards of inspection;
- (c) regulate that the office of the ESV may exempt a major electricity company from the requirements prescribed by the Regulations; and
- (d) provide for a 'Notice of Inspection' form.

21.7 National Electricity (Victoria) Act 2005 - Section 16C Order in Council for Establishment of F-Factor Scheme

16C. Order in Council for establishment of f-factor Scheme

- (1) The Governor in Council, by Order published in the Government Gazette, for the purpose of reducing the risk of fire starts and reducing the risk of loss or damage caused by fire starts, may confer functions and powers, or impose duties, on the AER to make –
 - (a) a determination for the purpose of providing incentives for Distribution Network Service Providers to reduce the risk of fire starts and reduce the risk of loss or damage caused by fire starts;
 - (b) a determination for each year of the first distribution determination period specifying an amount that is to be treated as a positive pass through amount or a negative pass through amount for the purposes of Chapter 6 of the National Electricity Rules.

The Governor in Council published a revised F-Factor Scheme Order (the Order) on 22 December 2016. The scheme applies to fire ignitions from 1 July 2016 onwards assigning a financial value to fire starts originating from network assets.

21.8 Electricity Safety Amendment (Bushfire Mitigation) Act 2014

As per proclamation in the Victoria Government Gazette SG 94 25/03/2014 p.1, the Electricity Safety Amendment (Bushfire Mitigation) Act 2014 (with the exception of 12(2)) came into operation on 1 April 2014.

A summary of this Act is to:

- (1) Provide that the Councils which are managers of public land are responsible for keeping trees clear of electric lines in declared areas.
- (2) Remove the requirement for the Roads Corporation to keep trees clear of electric lines.

A Distribution Company will be responsible for tree clearing that was previously the responsibility of –

- A public land manager that was not a municipal council; and
- VicRoads.

- (3) Modernise the provisions relating to requirements to keep trees clear of electric lines.
- (4) Reduce the frequency with which major electricity companies are required to submit a bushfire mitigation plan.

Clause 12(1) substitutes section 113A(1) of the Electricity Safety Act 1998 to require a major electricity company to prepare and submit to Energy Safe Victoria a bushfire mitigation plan every five years, rather than annually.

This commenced on:

- (a) The date when the accepted bushfire mitigation plan is first accepted under this Division; or
 - (b) The date of the most recent acceptance of a revision of the accepted bushfire mitigation plan submitted under this Division.
- 5) Make other minor and related amendments, including to require an electricity company to make prescribed information about its accepted bushfire mitigation plan available for inspection on its website and at its office.

To see the full list of changes and the amendment, please refer to the Explanatory Memorandum, VIC Government Gazette and Electricity Safety Amendment (Bushfire Mitigation) Act 2014.

21.9 Electricity Safety (Bushfire Mitigation) Regulations 2013, Authorised Version No. 004 incorporating Amendments as at 1 May 2016

The regulations amended the Electricity Safety (Bushfire Mitigation) Regulations 2013 to prescribe the particulars for bushfire mitigation plans to detail the preventative strategies and programs for major electricity companies to increase safety standards on specific components of their networks in order to reduce bushfire risk.

21.10 Electricity Safety Amendment (Bushfire Mitigation Civil Penalties Scheme) Act 2017

The Electricity Safety Amendment (Bushfire Mitigation Civil Penalties Scheme) Act 2017, amended the *Electricity Safety Act 1998* with respect to the application of pecuniary penalties for contravention of or non-compliance with specified sections of the bushfire mitigation regulations.

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Procedures

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BFM1: Bushfire Mitigation Management System Procedure

Purpose

This procedure describes the Bushfire Mitigation Management System, in accordance with the requirements of the Electricity Safety (Bushfire Mitigation) Regulations 2013.

Scope

This procedure applies to all activities associated with bushfire mitigation.

References

Nil.

Definitions

Nil.

Procedure

The Bushfire Mitigation Management System provides the framework for management of the fire risk. Details of the system are contained in Attachment 1.

The Senior Asset Performance and Bushfire Mitigation Engineer shall review the effectiveness of the system prior to the preparation of the Bushfire Mitigation Plan.

Attachments

1. Bushfire Mitigation Management System.

Attachment 1: Bushfire Mitigation Management System

	Public and Field Reports of Unsafe Situations	Asset Monitoring	Vegetation Clearance	Preventative Programs	Materials Purchases
Risk Assessment	Assess risk Assign priority.	Assess risk Set standards Inspect assets Assign priority.	Inspect lines Assess risk Consider alternatives.	Assess risk Set standards.	Assess risk Prepare specification.
Remedial Actions	Take appropriate action to improve the plan and the plan's implementation when deficiencies are identified.			Arrange cyclic maintenance. Replace unserviceable assets.	Purchase equipment.
Records Management	<ul style="list-style-type: none"> Record in SAP/GIS; and Provide reports. 				
Monitoring, Audit and Review	<ul style="list-style-type: none"> Analyse reports; Monitor the implementation of the plan; Conduct regular audits on the effectiveness of inspections carried out under the plan; Review performance and identify any deficiencies in the plan; or in the implementation of the plan; and Amend requirements and procedures if necessary to improve the plans implementation. 				
Staff Training	<ul style="list-style-type: none"> Ensure the required knowledge, training and skills to perform functions under the plan is provided to all personnel, contractors and subcontractors; Conduct regular audits on the competence of the persons assigned to carry out the plan; Carry out initial and refresher training; and Record all training undertaken. 				

BFM2: Management Structure Procedure

Purpose

This procedure describes the management structure for the implementation and control of all bushfire mitigation related activities.

Scope

This procedure applies to all activities associated with bushfire mitigation.

References

Nil.

Definitions

Nil.

Procedure

Bushfire Mitigation Management Structure

The management structure for the implementation and control of all bushfire mitigation related activities is contained in Attachment 1.

Bushfire Mitigation Responsibilities

The letters M, P, R or V respectively after each responsibility indicates the inter-relationships between those that Manage, Perform, Record and Verify bushfire mitigation activities.

Senior Management

The General Manager Maintenance, General Manager Asset Strategy Electrical and the Network Integrity and Performance Manager are responsible for:

- Visibly and actively participating in the promulgation, communication and operation of the bushfire mitigation requirements and program (M);
- Carrying out periodic audits and reviews of the Bushfire Mitigation Management System (V); and
- Establishing key performance measures as senior management controls (M).

Line Managers

Line managers engaged in Bushfire Mitigation activities are responsible for:

- Ensuring adherence to the requirements and procedures contained in this BMP (M);
- Taking appropriate action to meet the performance requirements of the Bushfire Mitigation programs (P); and
- Reporting any divergences from the standards or requirements of the bushfire mitigation programs that are outside their control to the Senior Asset Performance and Bushfire Mitigation Engineer (M).

Employees and Contractors

Employees and contractors engaged in Bushfire Mitigation activities are responsible for:

- Adhering to the requirements and procedures contained in this BMP (P);
- Taking appropriate action to meet the performance requirements of the bushfire mitigation programs (P); and
- Reporting any divergences from the standards or requirements of the bushfire mitigation programs that are outside their control to the appropriate line manager (M).

Senior Asset Performance and Bushfire Mitigation Engineer

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for:

- Compiling and circulating the Bushfire Mitigation Reports (R);
- Preparing the Bushfire Mitigation Plan (M);
- Implementing new technologies to reduce fire risk (P);
- Liaising with other bodies regarding bushfire mitigation activities (P);
- Ensuring employees and contractors engaged in bushfire mitigation activities meet training requirements (V);
- Reporting, investigation and analysis of fire ignitions (R, P);
- Establishing and implementing preventative programs (M, P);
- Having in place an endorsed Electric Line Clearance Management Plan (M);
- Assessing and recording the condition of network assets and POELs and taking appropriate action (P, R);
- Preparing annual program of activities and monitoring progress (M, V);
- Develop and maintain annual inspection schedules and programs (M, V);
- Budgeting for bushfire mitigation capital projects (M);
- Evaluating community proposals for reducing pruning and clearing (M);
- Initiating the regular review of the Bushfire Mitigation System (V);
- Conducting a risk assessment (in conjunction with the Network Risk and Compliance Manager) (M);
- Collate and communicate changes to the Asset Inspection Manual with the asset inspectors (M, P, R, V);
- Review and update the Asset Inspection Manual (M, P, R, V); and
- Validate list of feeders and ACRs to be suppressed on TFB days (V).

Senior Contract Coordinator

The Senior Contract Coordinator is responsible for implementing the:

- Line Inspection Program (M);
- Electric Line Clearance Program (M);
- Thermographic Survey Program (M);
- Conductor Inspection Program (M);
- Testing Earthing Systems Program (M); and
- POELs Inspection Program (M).

Senior Distribution Standards Engineer

The Senior Distribution Standards Engineer is responsible for:

- Assessing new technologies (M); and
- Setting the standards for design, construction, operations and maintenance (M).

Control and Dispatch Electricity Manager

The Control and Dispatch Electricity Manager is responsible for:

- Emergency communications; (P)
- Plans for action on days of total fire ban and fire emergencies (M); and
- Management of fault energy levels, including suppression of auto-reclose (P).

Service Delivery Team Leaders

Team Leaders manage bushfire mitigation activities performed by employees and contractors.

Responsibilities include:

- Quantify bushfire mitigation workload and produce programs to meet timelines (P);
- Carry out audits of bushfire mitigation works to ensure compliance (V);
- Carry out audits of personnel, safety, work practices and quality (V);
- Investigate new techniques and systems of work for possible implementation (P, V); and
- Pole and asset maintenance and replacement (P).

Bushfire Mitigation Committee

In addition to the individual duties above there is also a specific Bushfire Mitigation Committee.

This committee includes representatives from AM and Service Delivery and involves the key personnel responsible for the delivery of the BMP. These meetings occur at least monthly in the lead up to fire season and less frequently outside this period depending on the status of the network and climatic conditions.

Responsibilities of the Committee include:

- Management of preventative and response programs (M, V);
- Ensuring that bushfire mitigation and associated activities are performed in accordance with the BMP (M, V);
- The implementation of actions where bushfire mitigation targets have potential to be exceeded (M, V);
- Endorsement of the BMP (M);
- Approval of new or altered programs (M);
- Carrying out senior management briefing (P);
- Monitoring performance against targets (V);
- Taking actions where performance is not meeting targets (M, P)
- Monitor and audit the implementation of the bushfire mitigation plan (M, V);
- Identify any deficiencies in the plan or the plan's implementation (M, V); and
- Improve the plan and the plan's implementation if any deficiencies are identified (M, V, P).

Normally, on an annual basis, Senior Management are invited to audit and observe bushfire mitigation activities. The meeting is usually in October or November and involves a review of the previous year's bushfire mitigation performance and the effectiveness of the BMP. Also included is a presentation of the status of the current plan period's bushfire mitigation programs and predictions for the upcoming season and a field audit of activities related to the BMP.

Attachments

1. Bushfire Mitigation Management Structure.

Attachment 1: Bushfire Mitigation Management Structure

The following management structure relates the Jemena Electricity Networks group which is responsible for the preparation, approvals and the submission of the BMP.

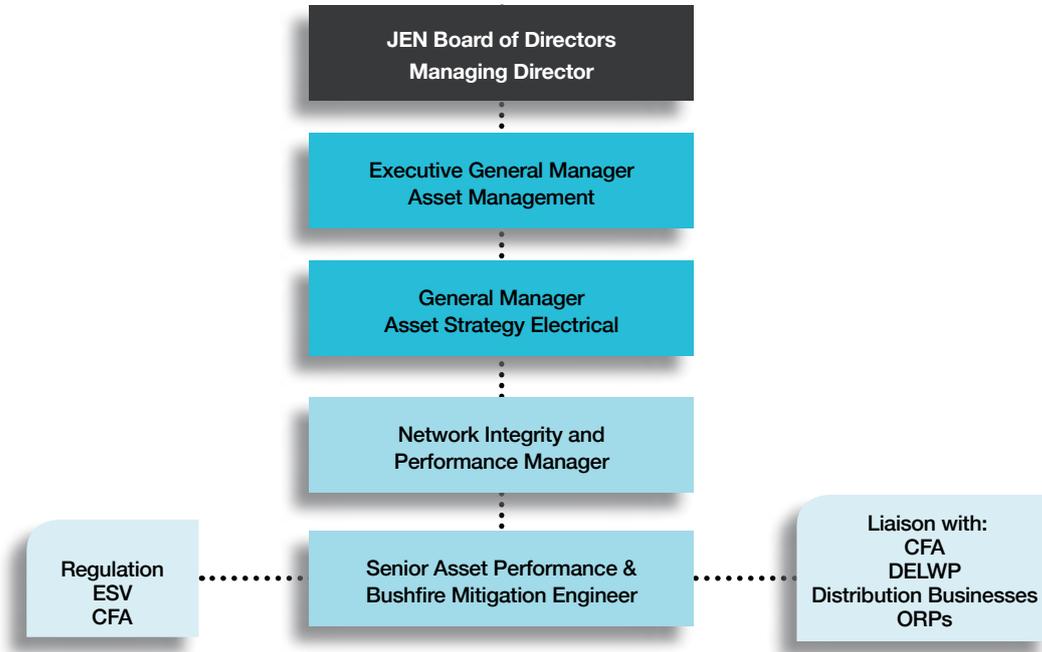


Figure 1.6 JEN Organisational Structure

Board of Directors and Managing Director: have the responsibility of ensuring JEN is meeting its management responsibilities for the activities outlined in the BMP.

Executive General Manager Asset Management: has overall accountability of the performance of the JEN assets.

General Manager Asset Strategy Electrical: has overall responsibility for all activities relating to electricity network development and performance.

Network Integrity and Performance Manager: has the specific responsibility for the performance of the electricity network including the production, submission, endorsement and compliance of the BMP and is also responsible for performance of JEN including production of the BMP and oversees compliance and performance with relevant legislation.

Senior Asset Performance & Bushfire Mitigation Engineer: is responsible for assisting the Network Integrity and Performance Manager with the production of the BMP and oversees compliance with the relevant legislation.

The following management structure relates to the Service Delivery (SD) group which is responsible for carrying out the JEN BMP.

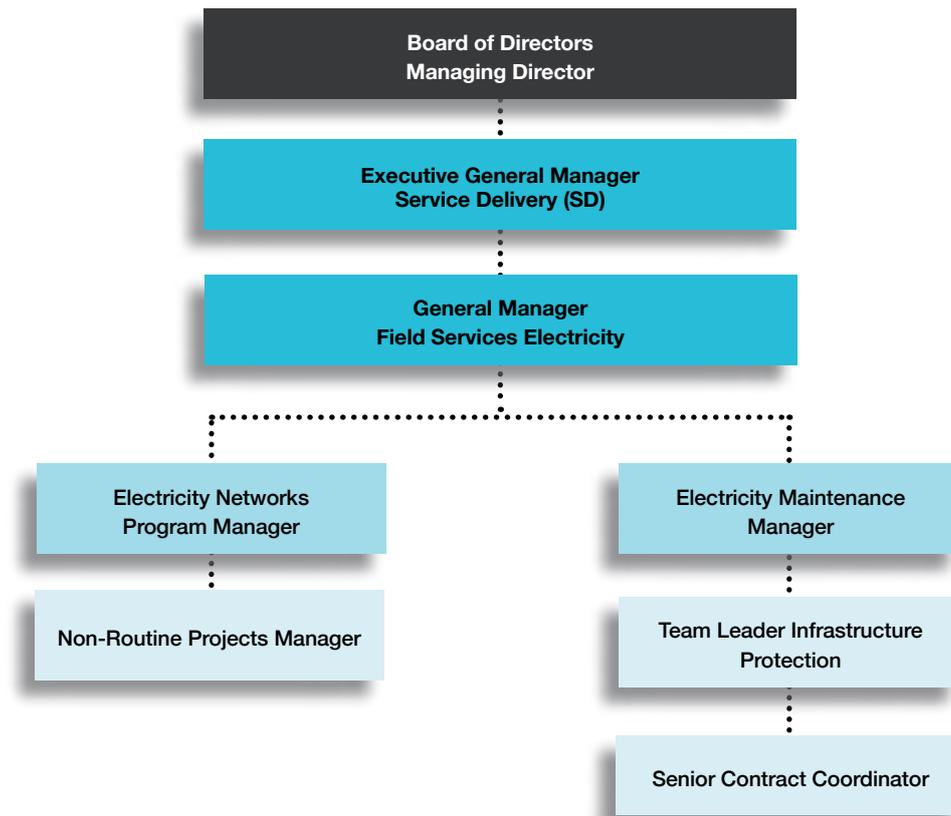


Figure 1.7 JEN – Service Delivery (SD) Organisational Structure.

Board of Directors and Managing Director: have the responsibility of ensuring JEN is meeting its management responsibilities for the activities outlined in the BMP.

Executive General Manager Service Delivery: has overall responsibility for all activities relating to electricity and gas network operational activities, including the carrying out of the BMP.

General Manager Field Services Electricity: has the specific responsibility for the operational performance of the electricity network including the carrying out of the BMP.

Electricity Maintenance Manager: is responsible for the provision of all resources and systems to support JEN maintenance and works programs including OH&S and Coordination Centre services.

Team Leader Infrastructure Protection: is responsible for performance of contractors engaged on JEN, including the responsible VMC and Asset Inspection Contractors (invasive and non-invasive) for the carrying out of the BMP.

Senior Contract Coordinator: is responsible for assisting the Team Leader Infrastructure Protection (SD) with the day to day carrying out of the BMP by the VMC and Asset Inspection Contractors (invasive and non-invasive).

External Vegetation Management/Asset Inspection: externally sourced specialised management and resource functions.

Electricity Networks Program Manager: is responsible for the delivery of the OPEX and CAPEX programs.

Non-Routine Projects Manager: is responsible for the construction of network initiated projects and asset replacement projects.

BFM3: Management Reporting Procedure

Purpose

This procedure describes the process for reporting the status of JEN's bushfire mitigation activities.

Scope

This procedure applies to all reports associated with bushfire mitigation.

References

Nil.

Definitions

Nil.

Procedure

The report produced by the Senior Asset Performance and Bushfire Mitigation Engineer is extracted from SAP (at the end of every calendar month) and other sources and contains the following:

- The current Bushfire Mitigation Index;
- Weather patterns and CFA forecast for the upcoming season including curing mapping;
- Contingency plans for any early declaration of fire restrictions;
- Status of fire preparedness;
- F-factor reporting for the JEN supply networks in HBRA and all areas and assets (refer to Reporting, Investigation and Analysis of Fire Ignitions Procedure BFM16);
- Audit results including ESV audits and recommendations and summer audit program; and
- Status of capital and operational works programs.

In exceptional circumstances, reports may be more frequent and contain additional information, depending on the situation.

Attachments

Nil.

BFM4: Reporting to ESV Procedure

Purpose

This procedure describes the process for providing bushfire mitigation information to ESV.

Scope

This procedure covers regular reporting to ESV, the provision of information to ESV on request, and the results of independent audits.

References

Electricity Safety (Bushfire Mitigation) Regulations 2013, regulation 7.
Electricity Safety Act 1998, section 113A.

Definitions

ESV Energy Safe Victoria.

Procedure

A Bushfire Mitigation Plan shall be prepared and provided to ESV in accordance with section 113A of the Act and before the end of each five year period. The BMP will include the items covered in the Bushfire Mitigation Plan Procedure BFM7, in accordance with the Electricity Safety (Bushfire Mitigation) Regulations 2013, regulation 7.

A Bushfire Mitigation Status Report shall be provided to ESV on a monthly basis in the lead up to and during the fire season and more frequently on request by ESV. The Status Report shall include the following:

- The current Bushfire Mitigation Index;
- Weather patterns and CFA forecast for the upcoming season including curing mapping;
- Contingency plans for any early declaration of fire restrictions;
- Status of fire preparedness;
- Fire Start Performance Indicator for the JEN supply networks in HBRA and all areas and assets (refer to Reporting, Investigation and Analysis of Fire Ignitions Procedure BFM16);
- Audit results including ESV audits and recommendations and summer audit program;
- Status of capital and operational works programs; and
- Status of REFCL and ASC technology rollout in a template and timeframe specified by ESV.

During the fire danger period, a weekly bushfire mitigation index report shall be provided to ESV covering the items specified in the ESV provided template.

ESV may request the provision of additional information. This will require reaching an agreement with ESV as to what information is to be reported and the frequency of reporting.

Should ESV require an independent audit of bushfire mitigation activities, this shall be arranged in conformance with the protocols established by ESV.

Arc Suppression Coil (ASC) Inspection and Testing Results

An ASC testing and inspection report shall be provided to ESV prior to the High Fire Danger Period declaration date. The reports will contain the test date, station name, parameters inspected/tested and the results (outlined in BFM18). The report will also state any relevant operation conditions e.g. period of operation (above or below an FDI), protection relay settings or relationship with NER.

Rapid Earth Fault Current Limiter (REFCL) Inspection and Testing Results

A REFCL testing and inspection report shall be provided to ESV prior to the High Fire Danger Period declaration date. The reports will contain the test date, station name, parameters inspected/tested and the results (outlined in BFM18). The report will also state any relevant operation conditions e.g. period of operation (above or below an FDI), protection relay settings or relationship with NER.

Attachments

Nil.

BFM5: Bushfire Mitigation Index Procedure

Purpose

This procedure describes the process for calculating the Bushfire Mitigation Index.

Scope

This procedure applies to the critical activities that occur in the HBRA which contribute to the Index.

References

Nil.

Definitions

Nil.

Procedure

Background

The Bushfire Mitigation Index is a weighted measure of the progress of the critical activities in the bushfire mitigation program. The Index provides an indication of the amount of outstanding work required to reach a state of bushfire mitigation preparedness. The target is for a zero Index to be achieved prior to the declaration of the fire danger period, and to maintain the Index at zero throughout the fire danger period.

Calculation of the Index

The critical activities that make up the components of the Index are those activities that have been regulated or that are considered to present a serious fire risk based on previous experience.

These critical activities are weighted as a percentage relative to the level of risk for that item. The total of all the weightings shall be 100%.

The Denominator is an annual unit of work estimated to be identified for that critical activity based on the volumes identified in previous years. This is determined from the following;

- SAP – Tracks the current maintenance and POEL items and holds the historical data;
- GIS – Used to calculate the spans on the network and is the network asset register; and
- Vegetation Management System (VMS) – Provides the vegetation statistics.

Index Table Definitions

- ACTUALS (A) – The units of work overdue for that activity.
- WEIGHTING (W) – The percentage assigned to that critical activity.
- DENOMINATOR (D) – The annual units of work estimated to be identified for that activity.
- INDEX VALUE (I) – The index value is calculated via the formula 'I = A/D* W'.

Within the calculation a variant has been inserted so the value of the index cannot exceed the weighting assigned to each critical activity and an example of the Bushfire Mitigation Index Table is shown in Attachment 1.

The Critical Activities, Denominators and Weightings are reviewed annually by the Bushfire Mitigation Committee, usually soon after the conclusion of fire danger period and this is documented as an action in the Annual Program of Activities Procedure (BFM6).

Responsibilities

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for calculating the Bushfire Mitigation Index.

The Bushfire Mitigation Committee shall review the Critical Activities, Denominators and Weightings on an annual basis, as part of the preparation of the Bushfire Mitigation Plan.

Current Plan Period

JEN have developed and are currently implementing a Capital Works Program. Refer to the Network Integrity and Performance Manager for a current list of projects.

Attachments

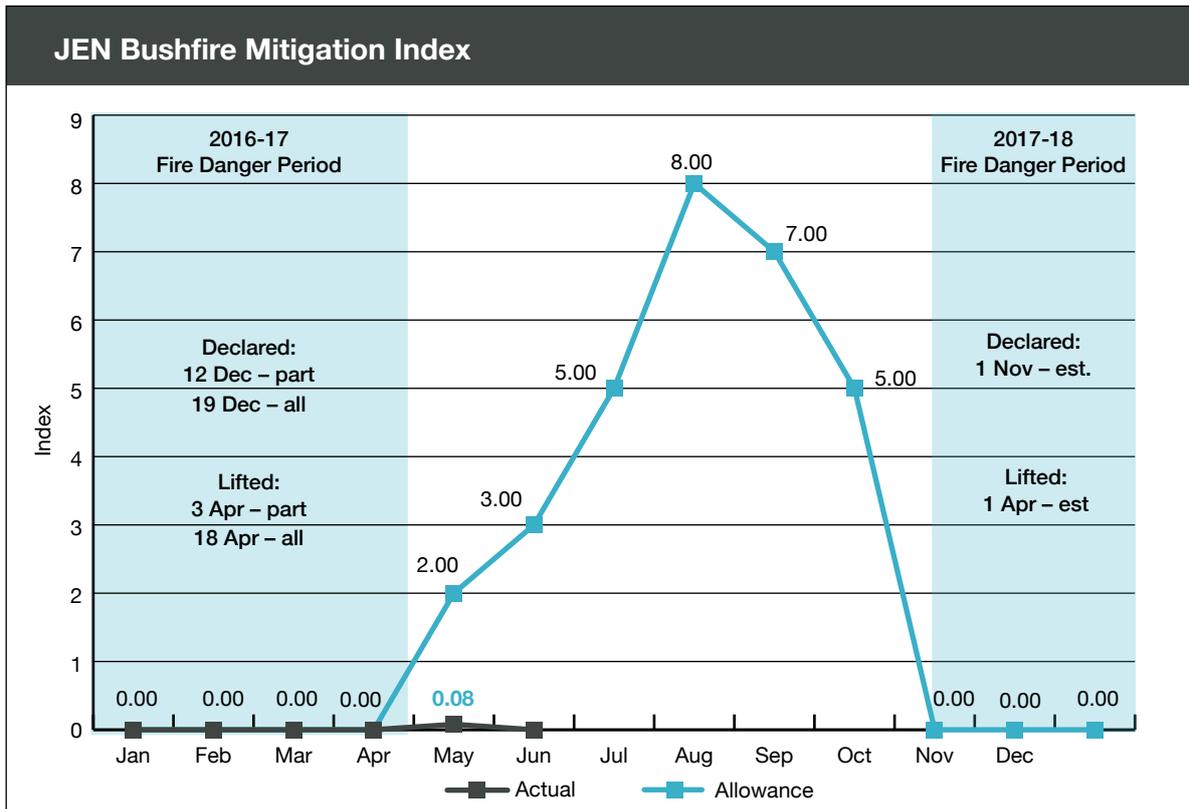
1. Bushfire Mitigation Index Table and Graph.

Attachment 1: Bushfire Mitigation Index Table and Graph

The Index can vary over the range from zero to 100, zero being if all work has been completed within the priority timeframe assigned and 100 if significant volumes of work, up to the maximum denominator, are outside the priority timeframe assigned.

Network Asset Inspection and Replacement, Vegetation and Private Overhead Electric Lines are the three items that contribute to the Bushfire Mitigation Index.

Sample Chart



JEN – BUSHFIRE MITIGATION INDEX TABLE - SAMPLE				
Critical Activities	Actual	Weighting	Denominator	Index Value
The critical activities that make up the components of the Index are those activities that have been regulated or that are considered to present a serious fire risk based on previous experience	The units of work overdue for that activity (A)	The percentage assigned to that critical activity (W)	The annual units of work expected to be identified for that activity (D)	The index value (I) is calculated via the formula 'I = A/D* W'
Network Asset Inspection and Maintenance				
Asset Inspection Outstanding > 37 months since last inspection. Maximum Index Value = 10%	10	10	2,004	0.05
Unserviceable Poles Not Made Fire Safe Outstanding > 12 weeks Maximum Index Value = 10%	1	10	30	0.33
Limited Life Poles Not Made Fire Safe Outstanding > 12 months Maximum Index Value = 10%	1	10	30	0.33
Network Attachments Overdue Maximum Index Value = 30%	34	30	1,164	0.88
Vegetation				
Pre-summer Inspection of Spans Overdue Maximum Index Value = 5%	1,200	5	5,364	1.12
Spans Not Declared Clear of Vegetation Overdue Maximum Index Value = 25%	50	25	1,609	0.78
Private Overhead Electric Lines				
Asset Inspection POEL Assets > 37 months since last inspection Maximum Index Value = 10%	3	10	128	0.23
POEL Defects not actioned by Customer – JEN Managing Maximum Index Value = 0%	2	0	5	0.00
POEL Defects – ESV Managing Maximum Index Value = 0%	1	0	1	0.00
Total	1,302	100		3.72

BFM6: Annual Program of Activities Procedure

Purpose

This procedure describes the process for establishing and implementing an annual program of bushfire mitigation activities.

Scope

This procedure covers the key bushfire mitigation milestones.

References

Nil.

Definitions

Nil.

Procedure

As part of the preparation of the Bushfire Mitigation Plan, the Senior Asset Performance and Bushfire Mitigation Engineer shall prepare an Annual Program of Activities. The program will list key milestones, the accountable position for completion of each milestone and the target date for completion of each milestone. Details of the items contained in the Program are shown in Attachment 1.

The Bushfire Mitigation Committee shall monitor progress against the BMP on a regular basis and progress against the program will be included in management reports.

Attachments

1. Annual Program of Activities.

Attachment 1: Annual Program of Activities

ITEM	KEY MILESTONES	ACCOUNTABLE POSITION	TARGET DATE
1	Submit signed and internally approved Electric Line Clearance Management Plan to ESV.	Senior Asset Performance and Bushfire Mitigation Engineer	End March.
2	Post signed and internally approved Electric Line Clearance Management Plan on the intranet and extranet.	Senior Asset Performance and Bushfire Mitigation Engineer	End of April or within one (1) week of internal approval.
3	Completion of asset inspection (including POELs) program in the JEN HBRA.	Senior Contract Coordinator	End of May
4	Confirmation that instruments used by Jemena field crews for asset inspection is suitable and calibrated where applicable.	Electricity Maintenance Manager	End of June
5	Confirmation that instruments used by Jemena contractors for asset inspection is suitable and calibrated where applicable.	Senior Contract Coordinator	End of June
6	Submit signed and internally approved Bushfire Mitigation Plan to ESV, if required.	Senior Asset Performance and Bushfire Mitigation Engineer	End of June
7	Post signed Bushfire Mitigation Plan on the intranet and extranet, if required.	Senior Asset Performance and Bushfire Mitigation Engineer	End of July or within one (1) week of internal approval.
8	<p>Initiate actions for new target dates to complete specific bushfire mitigation programs if required from the target dates below:</p> <ul style="list-style-type: none"> • Pre-Summer Inspection completion = 1 October annually; • Completion of all maintenance items = 1 November annually; • Completion of all vegetation pruning = 1 November annually. <p>Contingency plans are to be developed to ensure the resources are available to complete outstanding works before an early declaration of the fire danger period.</p> <p>Assess the requirement for a contingency plan by July; Reassess the requirement monthly thereafter.</p>	Bushfire Mitigation Committee	End of July
9	Apply for total fire ban day permits from CFA, MFB and DELWP.	Senior Asset Performance and Bushfire Mitigation Engineer	End of August
10	Ensure all overdue Asset defective POELs have been issued to ESV for the joint management of those customers.	Senior Contract Coordinator	End of August

ITEM	KEY MILESTONES	ACCOUNTABLE POSITION	TARGET DATE
11	Commence liaising with Councils about their Pre-Summer inspection and pruning programs in declared areas in the HBRA. Communicate to ESV those Councils who have not programed their Pre-Summer inspection and pruning programs in declared areas in the HBRA.	Senior Contract Coordinator	End of September
12	Ensure all at risk network assets located within AusNet Services terminal stations have been audited to ensure assets are in a serviceable condition – including tree clearances.	Senior Asset Performance and Bushfire Mitigation Engineer	End of September
13	Complete pre-summer vegetation inspection and cutting program (includes indexing spans).	Senior Contract Coordinator	End of October
14	Ensure that all operational ASC and REFCLs can operate at capacity for the coming fire danger period.	Network Technology and Measurement Manager	End of October
15	Issue fire authority permits to work on total fire ban days.	Senior Asset Performance and Bushfire Mitigation Engineer	End of October or within one (1) week of the receipt of the final permit.
16	Complete overdue maintenance.	Maintenance Planners	End of October
17	Confirmation that vehicles used during periods of fire risk contain the minimum required firefighting equipment and carry hot works permits.	Senior Contract Coordinator (for Zinfra). Electricity Maintenance Manager (for Service Delivery).	End of October or within three (3) weeks of the receipt of the final permit
18	Confirm with Network Operations & Control the available operating modes for REFCL/ASC which are currently in service.	Senior Asset Performance and Bushfire Mitigation Engineer	End of October
19	Complete Senior Management Audit.	Senior Asset Performance and Bushfire Mitigation Engineer	End of November
20	Ensure all overdue Vegetation defective POELs have been issued to ESV for the joint management of those customers.	Senior Contract Coordinator	End of November
21	Mail out POEL Bushfire Risk Prevention letters and brochures.	Customer Relations Manager / Senior Asset Performance and Bushfire Mitigation Engineer	End of November
22	Attend ESV/CFA season outlook session and adjust programs if required. Date arranged by ESV.	Senior Asset Performance and Bushfire Mitigation Engineer	When planned by ESV.
23	Complete the asset inspector audit program. The program monitors the competence of asset inspectors assigned to assess the condition of overhead electrical assets on the JEN network.	Senior Contract Coordinator	End of January

ITEM	KEY MILESTONES	ACCOUNTABLE POSITION	TARGET DATE
24	Complete summer auditing (Internal and Independent Bushfire Mitigation audits). Audits to commence in November and plan to be completed by end of March.	Senior Asset Performance and Bushfire Mitigation Engineer	End of March
25	Review effectiveness of bushfire mitigation systems including: <ul style="list-style-type: none"> Assess the implementation of the bushfire mitigation plan; Identify any deficiencies in the plan or the plan's implementation; and Improve the plan and the plan's implementation if any deficiencies are identified; Review training records for all Asset Inspectors and provide evidence of competence; and Review Bushfire Mitigation Risk Register in JCARS (Compliance and Risk Management System). 	Bushfire Mitigation Committee	End of May

The Annual Program of Activities is a guide (or checklist) for the management of the Bushfire Mitigation Program.

Individual items may be altered or added depending on the season outlook in each year.

The target dates are nominal and may be tightened or relaxed by the Network Integrity and Performance Manager based on the analysis of resource availability, workloads and season outlook in each year.

BFM7: Bushfire Mitigation Plan Procedure

Purpose

This procedure describes the process for preparing the Bushfire Mitigation Plan.

Scope

This procedure covers the development of the Bushfire Mitigation Plan.

References

Electricity Safety Act 1998, section 113A.

Electricity Safety (Bushfire Mitigation) Regulations 2013, section 7.

Definitions

ESV Energy Safe Victoria.

Procedure

A five-yearly Bushfire Mitigation Plan shall be prepared annually by the Senior Asset Performance and Bushfire Mitigation Engineer, endorsed by the Network Integrity and Performance Manager and approved by General Manager Asset Strategy Electrical. The BMP will be submitted to ESV in accordance with section 113A of the Act.

The Bushfire Mitigation Plan shall include the following:

- The name, address and telephone number of the major electricity company;
- The position, address and telephone number of the person who was responsible for the preparation of the plan;
- The position, address and telephone number of the persons who are responsible for carrying out the plan;
- The telephone number of the major electricity company's control room so that persons in the room can be contacted in an emergency that requires action by the major electricity company to mitigate the danger of bushfire;
- The bushfire mitigation policy (requirements) of the major electricity company to minimise the risk of fire ignition from its supply network;
- The objectives of the plan to achieve the mitigation of fire danger arising from the major electricity company's supply network;
- A description, map or plan of the land to which the bushfire mitigation plan applies;
- The preventative strategies and programs to be adopted by the major electricity company to minimise the risk of the major electricity company's supply networks starting fires;
- A plan for inspection that ensures that —
 - The parts of the major electricity company's supply network in hazardous bushfire risk areas are inspected at intervals not exceeding 37 months from the date of the previous inspection; and
 - The parts of the major electricity company's supply network in other areas are inspected at specified intervals not exceeding 61 months from the date of the previous inspection;
- Details of the processes and procedures for ensuring that each person who is assigned to carry out inspections referred to in paragraph (i) and of private electric lines has satisfactorily completed a training course approved by Energy Safe Victoria and is competent to carry out such inspections;
- Details of the processes and procedures for ensuring that persons (other than persons referred to in paragraph (j)) who carry out or will carry out functions under the plan are competent to do so;

- The operation and maintenance plans for the major electricity company's supply network –
 - In the event of a fire; and
 - During a total fire ban day; and
 - During a fire danger period;
- The investigations, analysis and methodology to be adopted by the major electricity company for the mitigation of the risk of fire ignition from its supply network;
- Details of the processes and procedures by which the major electricity company will—
 - Monitor the implementation of the bushfire mitigation plan; and
 - Audit the implementation of the plan; and
 - Identify any deficiencies in the plan or the plan's implementation; and
 - Change the plan and the plan's implementation to rectify any deficiencies identified under subparagraph (iii); and
 - Monitor the effectiveness of inspections carried out under the plan; and
 - Audit the effectiveness of inspections carried out under the plan;
- The policy (requirements) of the major electricity company in relation to the assistance to be provided to fire control authorities in the investigation of fires near the major electricity company's supply network;
- Details of processes and procedures for enhancing public awareness of—
 - The responsibilities of owners of private electric lines that are above the surface of the land in relation to maintenance and mitigation of bushfire danger; and
 - The obligation of the major electricity company to inspect private electric lines that are above the surface of the land within its distribution area;
- A description of the measures to be used to assess the performance of the major electricity company under the plan.

Attachments

Nil.

BFM8: Coordination with Other Authorities Procedure

Purpose

This procedure describes the process for coordinating with other organisations regarding bushfire mitigation activities and response to emergencies such as fires.

Scope

This procedure covers the liaison with other organisations to coordinate bushfire mitigation activities and respond to emergencies.

References

Operations Manual: Switching and Earthing – Emergency (SEL PR 0001, Section 3 and 4).
JEN Emergency Management Reference Manual.

Definitions

MFB	Metropolitan Fire & Emergency Services Board.
CFA	Country Fire Authority.
DELWP	Department of Environment, Land, Water and Planning.
ESV	Energy Safe Victoria.

Procedure

Fire Investigation

On request, JEN will provide assistance to MFB, CFA, DELWP or other statutory bodies regarding the investigation of fires near the JEN supply networks. The Resource Coordinator (Report Room) shall arrange such assistance.

Permits Required for Activities on Days of Total Fire Ban

Permits are to be applied for by the end of August and distributed to relevant line managers on receipt of the permit. The permits are valid for a period of 12 months.

The activities permitted under the permit conditions should be avoided or deferred if possible on days of total fire ban.

The General Manager Network Operations and Control may give written endorsement to work crews involved in the use of the items listed on the permits for the entire fire season, provided these crews adhere to the requirements of the permits as described in Attachment 1.

Work permits must be obtained annually from the following agencies for business activities on days of total fire ban:

- DELWP;
- CFA; and
- MFB.

The Senior Asset Performance and Bushfire Mitigation Engineer is responsible for obtaining the necessary permits which cover work crews and contract crews. Permits are granted by these agencies on request and copies will be forwarded to relevant internal staff to provide copies to work crews and contractors.

Permanent sub contractors (e.g. Zinfra) should apply for their own permits.

Coordination between Distribution Networks

Consistent with the procedures set out in section 7 of the Jemena Operations Manual, JEN has entered a cooperative agreement with the four other Distribution Businesses to deal with major incidents such as bushfires. JEN will meet its commitments under this agreement as the need arises.

Declaration of a Fire Disaster

If a disaster is declared by a Fire/Disaster Coordinator and roadblocks are erected, JEN operational personnel must not enter into the restricted area. All operations must be performed external to the restricted area.

Arrangements may be agreed between the Fire/Disaster Coordinator and the Control and Dispatch Electricity Manager to enable operations or activities within the restricted area.

Response to Fire Emergencies

Response to fire emergencies shall be in accordance with the Jemena Emergency Management Plan (EMP).

The EMP has been developed to ensure that JEN can respond effectively to emergency situations associated with the JEN assets.

The EMP contains details of the key processes of notification, escalation and mobilisation, the source and organisation of resources and the actions which should be considered and is part of an overall plan of the company framework for Emergency Response Management.

The Jemena Operations Manual is called up by the EMP and contains an operational plan for JEN assets in the event of a fire. JEN does not have a specific maintenance plan for their assets in the event of a fire. However, post a fire event, the necessary maintenance will be carried out in accordance with any fire authority permits that are in force. For convenience, a copy of the operational procedure relating to access to defined fire disaster zones is reproduced here:

3.4 Response During and After a Bushfire

No Authorised Electrical Operator or Field Resource shall proceed into a defined fire/disaster zone either through road blocks or other routes of access without management approval.

All necessary switching operations are to be carried out external to the defined zone.

The Fire/Disaster Emergency Controller may request the Operating Authority to assist in recovering electricity supplies for critical infrastructure within the defined zone.

The Operating Authority will consider the appropriate Network configuration and assess the risk/s to field personnel. Should the decision be made to enter the defined zone the Operating Authority shall advise the Emergency Manager.

If appropriate the Operating Authority will request an escort from the Fire/Disaster Emergency Controller to accompany the field personnel to provide protection and guidance whilst working in the defined zone.

At all times, the Authorised Electrical Operator shall reserve the right not to enter, and to withdraw from the defined zone, if they consider their safety at risk. Should an Authorised Electrical Operator find themselves in an area which has been defined a fire/disaster zone, they must exercise caution and move to a location outside the zone to continue switching.

Contact with Other Organisations

Contact with other organisations is vital in both emergency and normal situations throughout both the lead up to, and duration of, the declared fire season. Local government and fire authorities provide valuable information on the expected commencement, duration and severity of the declared fire season.

Mapping of Hazardous Bushfire Risk Areas (CFA/Local Government)

The concept of fire hazard mapping was commenced in 1981 by the CFA to enable local councils to better plan new development in rural areas and to plan their overall fire protection programs. These fire boundaries are updated on a needs basis at the request of JEN in consultation with the CFA and local government representatives. The latest fire boundary changes occurred in 2014.

From this assessment the CFA produce electronic mapping of the HBRA. These maps are captured in GIS and show the road network and electricity distribution lines. This enables all assets to be assigned a fire area rating dependent on each asset location.

Fire Season Monitoring

The Senior Asset Performance and Bushfire Mitigation Engineer will remain in close liaison with the CFA Officers in the approach to fire season to assess whether there is likely to be an early or delayed start to the fire season.

The fire season is usually declared on 1 November but can be delayed into January or not declared at all. The Senior Asset Performance and Bushfire Mitigation Engineer will provide regular updates on the status of fire season declaration.

Data can be accessed from the CFA's web site; www.cfa.vic.gov.au in relation to the status of fire restrictions in Victoria. This web site is not password protected and provides one image per week (usually Monday afternoons) of the status of fire restrictions in Victoria. The data is accessible under the menu path 'CFA Home > Warnings & Restrictions > Restrictions during the Fire Danger Period'.

Municipal Fire Prevention Committees (Local Government)

Each municipality outside the Metropolitan Fire District has a Municipal Fire Prevention Committee.

Where the municipality is adjacent to any part of a forest or crown land reserve a representative of the DELWP will also be a member.

The Network Integrity and Performance Manager, or nominated representatives, will attend meetings of the Municipal Fire Prevention Committee, when invited, and report to the Bushfire Mitigation Committee any matters affecting JEN operations or business position.

Procedure BFM26 contains the contact details of municipal fire prevention officers at municipalities controlling the fire risk areas.

Liaison with AusNet Services

The Senior Asset Performance and Bushfire Mitigation Engineer, when requested, will provide written confirmation to AusNet Services that all JEN assets in AusNet Services terminal stations have been inspected within the appropriate timeframes and the status of any outstanding actions (if any). AusNet Services will be advised in writing when all such work has been completed.

Liaison with Other Network Operators

JEN in accordance with its cyclic inspection program shall inspect JEN assets attached to poles/towers owned by another network operator. Assets owned by another network operator and attached to JEN pole/towers shall be inspected by JEN as part of its cyclic inspection program, and any defects reported to the asset owner.

Municipal Councils

The vegetation management contractor shall maintain ongoing liaison with municipal councils.

Attachments

1. Total Fire Ban Day Permits (Summary of Requirements).

Attachment 1: Total Fire Ban Day Permits (Summary of Requirements)

Authority	Permit Type	Worksite Preparation Requirements	Personnel Requirements	Fire Fighting Equipment Requirements	Contact Authority Prior to Work Commencement
CFA	Schedule 14 Permit to light a fire or fires for the purpose of blow lamp or gas torch use during the fire danger period.	The area above and ground around is cleared of all flammable material for a radius of three metres.	Minimum of two people in attendance at all times with one person who has the capacity and means to extinguish the fire.	<ul style="list-style-type: none"> • A length of hose adequate to reach the appliance connected to a reticulated water supply; or • A fully charged water (stored pressure) fire extinguisher (s) of at least 9 litres capacity or knapsack spray pump of at least 15 litres capacity 	CFA District 14 Headquarters Tel: 8746 1400
CFA	Section 40 Permit to light a fire, maintain a fire or suffer a fire to remain alight in the open air for the purposes of Welding, Gas Cutting or Grinding a day of Total Fire Ban.	The ground for 10 metres is cleared of all flammable material or maintained in a wetted-down condition for a distance of not less than 10 metres from the site of the fire and there is erected around the work area a shield or guard of fire resistant material.	Minimum of two people, with one such person shall be solely available for fire watching and fire-fighting purposes.	<ul style="list-style-type: none"> • Minimum of two knapsack spray pumps of at least 15 litres capacity, fully charged with water; or • A length of hose adequate to reach the appliance connected to a reticulated water supply. 	CFA District 14 Headquarters Tel: 8746 1400

Authority	Permit Type	Worksite Preparation Requirements	Personnel Requirements	Fire Fighting Equipment Requirements	Contact Authority Prior to Work Commencement
MFB	Permit for the use of welding, grinding, oxy cutting, blow torch operations for the purpose of essential maintenance activities on day of total fire ban.	Fire prevention measures must be in place appropriate to: <ol style="list-style-type: none"> the activities undertaken at the specified location; the nature, geography and topography of the specified location and the surrounding area; the prevailing weather conditions; and the fire danger ratings in operation during the term of this permit 	Minimum of two people, with one such person shall be solely available for fire watching and fire-fighting purposes.	Adequate firefighting equipment and personnel must be available at the specified location at all times during which a fire or open flame is lit, maintained or permitted to remain alight.	MFB Central District Office & Region Office Tel: 9665 4501
DELWP	Permit for the use of welding, gas cutting, grinding, blow lamp of gas torch equipment on day of total fire ban.	The whole area within three metres of the proposed site of operations shall be cleared of all flammable material.	Minimum of two people available for fire watching and fire-fighting purposes	<ul style="list-style-type: none"> Two effective knapsack spray pumps of at least 15 litres of capacity full of water; and One rake, hoe or shovel 	DELWP Agency Commander – State Control Centre Tel: 1300 13 4444

Validity of Permits

To ascertain which permit applies, the Melways is marked with the details of the CFA and MFB boundaries. DELWP permits only apply for work being performed in State Forests and National Parks

Contact Authorities before Work Commencement

Work crews are required under these permits to advise the CFA and MFB of the time, location and duration of any work to prior to commencement.

The JEN area is covered by the MFB and Central and North Central of the CFA.

BFM9: Technology Implementation and Development Procedure

Purpose

This procedure describes the process for the implementation of technology to minimise the risk of the JEN supply networks in the HBRA causing the ignition of fire.

Scope

This procedure covers situations where technology is implemented to remove or reduce the risk of fire ignition from the JEN supply networks in the HBRA.

References

Standards Development and Modification Procedure (JEN PR 0016).

Definitions

Nil.

Procedure

The technologies widely used for the minimisation of fire ignition are:

- Earth fault current limitation through the use of Neutral Earthing Resistor (NER) and Rapid Earth Fault Current Limiter (REFCL);
- Insulated Cable System;
- HV steel crossarms;
- Spreaders to reduce risk of conductor clashing;
- Vibration dampers and armour rods to reduce risk of conductor failures;
- Operation of HV system with open bus ties;
- Steel Conductor Assessment Program (SCAP);
- Bare LV Mains Removal Trial;
- Hazard Tree Assessment Program; and
- Application of a Pole Mounted Camera for asset inspection

For more detail refer to BFM18: Network Assets Preventative Programs Procedure.

Assessment of New Technologies

Any new technology shall be assessed and introduced in accordance with the Standards Development and Modification Procedure (JEN PR 0016).

Considerations include:

- Geographic location of any high fault level feeder sections in relation to fire area classification;
- Protection scheme suitability;
- System changes that will alter fault levels;
- Construction and maintenance standard of any high fault level feeder sections; and
- Identification of network exposure.

General

The Network Integrity and Performance Manager will request that appropriate bushfire mitigation capital projects be included in the annual budget.

Attachments

Nil.

BFM10: Step Change to Industry Practice Procedure

Purpose

This procedure describes the process for implementing a step change to industry practices.

Scope

This procedure covers the process for the implementation of significant changes to JEN's existing bushfire mitigation practices with respect to the JEN network.

References

Nil.

Definitions

Significant change: A strategic or major departure from established industry practice.

Procedure

A formal proposal shall be prepared, which must include the following:

- The expected benefits from the change;
- The predicted risk profile of the change;
- A sensitivity analysis;
- The monitoring, reporting and control systems to be implemented to measure and validate the effectiveness of the change; and
- An implementation plan to manage the transition.

Consideration shall be given to consult with ESV or insurers prior to the decision to proceed.

The proposal must be endorsed by the Bushfire Committee and approved by Senior Management.

A formal post-implementation review may be conducted at an appropriate time following the implementation of the change. ESV and insurers may be advised of the results of any post-implementation review.

Attachments

Nil.

Current Plan Period

The Bushfire Mitigation Plans are to be submitted to ESV annually covering a five-year period.

From 1 April 2014, there are only three (3) Responsible Persons as defined in the Act.

They are:

- Major Electricity Companies
- Municipal Councils
- Landowners, to clear trees from the electric service line to their property.

For example, VicRoads, VicTrack, MetroRail and all Melbourne Metro Water Authorities are no longer responsible for electric line clearance.

BFM11: Training and Competency Procedure

Purpose

This procedure describes the process for ensuring that employees and contractors engaged in bushfire mitigation activities are competent to carry out their work.

Scope

This procedure covers the training, retraining, review and recording of training of all personnel and contractors engaged in bushfire mitigation activities.

References

Jemena Electricity Technical Training Procedure (JEM PR 0101 WI 01).

Asset Inspection Manual (JEN MA 0500).

Electric Line Clearance Management Plan (JEN PL 0101).

JEN Field Services Agreement

Definitions

Nil.

Procedure

All employees and contractors engaged in asset inspection must have received initial training and undertake regular refresher training. JEN's current service provider, Zinfra currently carries out this work and the refresher training requirements are listed in the Asset Inspection Manual and Electric Line Clearance Management Plan. A general summary of the requirements are below:

- All personnel undertaking asset inspection must hold qualification in asset inspection (i.e. Certificate II in ESI – Asset Inspection - UET20612).
- All personnel responsible for assessing, cutting or removal of vegetation on JEN and holds the following qualifications:
 - UET20312 Certificate II in ESI – Powerline Vegetation Control;
 - UETTDRVC24A Assess Vegetation and Recommend Control Measures in an ESI environment; and
 - A current certificate specifying satisfactory completion of a training course in tree clearing, approved by Energy Safe Victoria as specified in the Electricity Safety (Installations) Regulations 2009.

Audits are conducted to review the competency of asset inspectors as detailed in BFM12 – Audit and Review procedure.

Attachments

Nil.

Current Plan Period

Nil.

BFM12: Audit and Review Procedure

Purpose

This procedure describes the process for audit and review of the effectiveness of the Bushfire Mitigation Management System.

Scope

This procedure covers audit and review of all of the elements of the Bushfire Mitigation Management System.

References

Electricity Safety (Bushfire Mitigation) Regulations 2013.

Definitions

Nil.

Procedure

Energy Safe Victoria Audit

ESV may choose to conduct a desktop and field audit of the JEN Bushfire Mitigation Plan and the ELCMP. Any field defects identified are actioned in accordance with the priority assigned and any recommendations, observations and suggestions from the desktop audit are reviewed and actioned immediately if required, or as part of the Bushfire Mitigation Management System review as described below.

A copy of the ESV Audit Report shall be sent to all relevant personnel upon receipt from ESV.

Bushfire Mitigation Management System Audit

The Bushfire Mitigation Management System is audited to ensure that it is operating effectively. Three elements are covered by the audits:

- Network assets (poles and wires) including POELs;
- Vegetation; and
- Systems supporting the bushfire mitigation program.

The physical items are audited in the field. These are the poles, wires and vegetation for which JEN is responsible. The systems are audited in the office.

To assist auditors to carry out their tasks, a bushfire mitigation audit kit has been prepared (refer to Attachment 2). The kit contains detailed audit checklists for network assets, Electric Line Clearance and systems. Each auditor, as required, is provided with a briefing by the Senior Asset Performance and Bushfire Mitigation Engineer to ensure that the auditor is clear on what to look for and how to conduct the audit.

Completed audit checklists are returned to the Senior Asset Performance and Bushfire Mitigation Engineer. The status of the field audits is reflected in the management system reports.

Items identified for maintenance are recorded in a SAP notification and given a priority from 1 to 9 (refer to Response to Reported Unsafe Situations Procedure BFM15).

Asset Inspector Audit Program

The competence of asset inspectors assigned to assess the condition of overhead electrical assets on the JEN network is monitored and audited using the following methods by the Contract Coordinator and Zinfra:

Quality Audit – these independent audits involve the reinspection of assets and retesting of poles that were inspected in the previous month. The results are compared with those obtained through the original inspection and testing. Audits consist of packages of 10 poles. Two asset inspectors are audited each month.

HSE and Works Practices Audit – this involves the audit of two asset inspectors per month.

The audit includes checking the inspectors Network Passport, Job Safety Assessments (JSA) and traffic management practices.

Training Records Audit – this involves the audit and registering of all training records for new inspectors to JEN and the registering of all refresher training records (refer to Attachment 4).

The results of the Quality and HSE and Work Practices audits are compiled on an ongoing basis and are analysed to identify any deficiencies in asset inspector's competence. The outcomes of the audits, results of the analysis and recommendations for corrective actions are communicated with Zinfra.

Summer Audit Program

Annually, JEN engages the expertise of independent field auditors to measure the performance of the pre-summer inspection and pruning programs as well as identifying any obvious asset and POEL defects and abnormal vegetation regrowth throughout the summer period. These audits are normally conducted from December through to the end of the declared fire danger period and involve a 100% audit of the JEN supply networks in the HBRA. A description of the code definitions for vegetation is included as Attachment 1.

Senior Management Briefing

A senior management briefing is conducted just prior to the commencement of the declared fire season to ensure that the business is fully prepared. Other managers may also conduct audits during the year, with particular emphasis in the lead-up to and during the fire season.

External Audit

From time to time JEN will engage external auditors to conduct audits of the JEN Bushfire Mitigation Plan. These will include field and office based audits to review plan compliance and the bushfire mitigation program implementation. These audits will also check the effectiveness of the program in identifying potential causes of fires and preventative programs and projects.

Bushfire Mitigation Management System Review

The Senior Asset Performance and Bushfire Mitigation Engineer initiates an annual review of the effectiveness of the Bushfire Mitigation System, for completion by the end of May. The review includes the following:

- The effectiveness of preventative programs;
- Recommendations, observations and suggestions from the ESV or internal desktop audits;
- The effectiveness of the processes for monitoring, recording and reporting;
- The timeliness of achievement of program items and response;
- The value of performance measures; and
- The frequency and type of audit and those responsible for carrying out these activities.

The results of the review are reported to the Network Integrity and Performance Manager and any improvements and/or changes can then be included in the following years plan.

ASCs and REFCL Inspection Audit

Before the declared fire danger period each year as part of the Annual Program of Activities, verify that the ASC and REFCL inspection programs are carried out in accordance with BFM18 and that all identified non-compliances are rectified within priority timeframes. (refer to BFM15).

Attachments

1. Vegetation Code Definitions.
2. Bushfire Mitigation Audit Kit.
3. Bushfire Mitigation Audit Schedule.
4. Asset Inspector Audit Schedule.

Attachment 1: 2018-2023 Vegetation Code Definitions

Code	Definition	Action Required
PT1	<p>For pre-summer auditing purposes means a span that has:</p> <ul style="list-style-type: none"> Vegetation is within the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2015 and is in contact with the conductors, or uninsulated assets with the potential to become live. <p>Or</p> <ul style="list-style-type: none"> Has been recently contacting the conductor due to sag or sway or environmental conditions, but is not physically in contact on the day of inspection. 	<p>All code PT1's identified from beginning of the audit to 10 October:</p> <ul style="list-style-type: none"> To be cleared by 15 October; All items identified after 10 October within five days of identification. <p>Or</p> <p>Before a day of total fire ban.</p>
PT30	<p>For pre-summer auditing purposes means a span where:</p> <ul style="list-style-type: none"> Vegetation is within the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2015 but is not in contact with open wire conductors or uninsulated assets. <p>Or</p> <ul style="list-style-type: none"> Is in solid contact with a (C/S) or LVABC spans. 	To be cleared prior to 31 October or declaration if earlier.
PT180	Vegetation is outside the clearance space, but is 'highly likely' to encroach upon the required distance as defined in the Electricity Safety (Electric Line Clearance) Regulations 2015, prior to the end of the bushfire declaration period.	To be cleared or re-inspected prior to 31 October or declaration if earlier.
PT365	For pre-summer auditing purposes means a span where Vegetation is outside the clearance space, but is 'highly likely' to encroach upon the required distance as defined in the Electricity Safety (Electric Line Clearance) Regulations 2015, prior to the end of the bushfire declaration period.	To be cleared or re-inspected prior to 31 October or declaration if earlier.
PT720	Vegetation is outside the clearance space and will not encroach upon it before the next annual assessment.	Non-Action Code, no action required.
RE	<p>For pre-summer auditing purposes means a span where:</p> <ul style="list-style-type: none"> Is outside the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2015; and Where that vegetation 'may', although there is some uncertainty, encroach upon the clearance space prior to the end of the bushfire declaration period. 	To be cleared or re-inspected prior to 18 February in the year after assessment.
Hazard Tree	<p>For pre-summer auditing purposes means any tree outside of the clearance space that demonstrates an immediate threat to the line as a result of:</p> <ul style="list-style-type: none"> Weak connection to root systems (suckers); Being dead or dying trees; and Major over-balance toward assets (ground lifting, poor root systems etc.). 	<p>To be cleared prior.</p> <p>Targets are set for each tree based on the severity of identified defects.</p>

Attachment 2: Bushfire Mitigation Audit Kit



BUSHFIRE MITIGATION AUDIT KIT

POLES AND WIRES ELECTRIC LINE CLEARANCE

Bushfire Mitigation Audit Kit

Audit Type: Poles and Wires

Audit Pro-forma

Audited by:

Audited at:

(list locations visited
in the course of the audit)

Audit report submitted to:

██████████, Senior Asset Performance and Bushfire Mitigation Engineer

On / / 20 .

Read the notes below before leaving the office and starting the audit:

This checklist is one of two you can choose (Pole & Wires and Electric Line Clearance). The intention of this checklist is to assist you in the carrying out of a Bushfire Mitigation Audit, focused on some of the known fire risk factors associated with poles and wires. The audit should not take more than 1-2 hours to complete including travelling time. In this time an audit party should visit 1-2 sections of line and inspect in detail 2 or 3 selected poles.

This checklist is not designed to be comprehensive or replace the need for skilled line inspection. It is designed to give an observer some guide on what to look for if carrying out an audit in fire areas. It is important to note which poles you have checked out. Please take care to note the road name and the pole 'A' number.

This checklist can be used to look at JEN assets as well as POELs.

A copy of this audit together with all comments and observations should be referred to the Senior Asset Performance and Bushfire Mitigation Engineer.

Recommended Kit

- Binoculars (preferably stabilised); and
- System Diagrams to identify where on the system you are.

On the Ground

- Vehicles that use unleaded fuel must not be driven off road or on to grassed verges.
- Be aware of traffic on road, if stopping make sure it is clear before leaving vehicle, wear high visibility vests and other safety apparel as required.
- Use care when walking into tall grass or on the road verge.
- Pole number? ('Axxxxx'.)
- Is the pole concrete or wood?
- When was the pole last tested?
- Is the pole staked?
- Is the pole serviceable, limited life or unserviceable? (Check records in GIS and SAP back at the office.)
- Has the pole been drilled (generally three holes at ground level or slightly above) and the holes re-plugged? (Generally all wood poles other than CCA treated, Red and Grey Ironbark [gl or RI] on the identification disk) should be drilled if older than 10 years and treated.)
- Does the pole look sound?

Bushfire Mitigation Audit Kit

Up In The Air

(good binoculars help.)

Crossarm

- Is the crossarm in good condition?
- Are the insulators in good condition?
- If the pole is concrete and has a steel crossarm then it must have either extended (nine shed) insulators or bird/animal covers.

Conductor

- Does the conductor show signs of fraying?
- Does the conductor look secure?
- Are spreaders fitted to the low voltage spans?
- Is there excessive sag in the line?

Fuses

- Is there a fuse or fuses on the pole? (identify type if possible.)
- Is the fuse appropriate?
- If fuses are present on the pole identify the type of fuse: Expulsion Drop Out (EDO), Powder Filled, Boric Acid or other.
- Refer to acceptable Fuses in JEN MA 0500 – Section 8.

ACCEPTABLE	INAPPROPRIATE
Grey porcelain with grey fuse mounts	Anything other than grey porcelain with grey fuse mounts, the pole No. should be noted on the sheet.
All Boric Acid type	Brown porcelain mounted EDOs.

Surge Diverters

- Is there a surge diverter on the pole? (identify type if possible).
- Is the surge diverter appropriate? (The most common problem is unsuitable types).
- Refer to acceptable Surge Diverters in JEN MA 0500 – Section 8.

ACCEPTABLE	INAPPROPRIATE
ABB Polymeric	All brown porcelain. Black polymer, all with no or one ring below the clamp.
Coopers, with insulated mounting bracket.	4 shallow rings below the clamp. ASEA and Bowthorpe without earth disconnect lead. Porcelain 2 or 4 rings below the clamp (generally Bowthorpe)

Check Sheet

Location:

Road: _____

ITEM		POLE 1	POLE 2	POLE 3	POLE 4	POLE 5
Pole Number 'A'						
(C)oncrete / (W)ood						
Date of Last Test						
(S)taked						
Limited Life (LL) or Unserviceable (U)						
Drilled and re-plugged?	- Y / N					
Look sound?	- Y / N					
Crossarm OK?	- Y / N					
Insulators OK?	- Y / N					
For concrete poles: Bird Cover or Extended Insulators Fitted?	- Y / N					
Conductor OK?	- Y / N					
Conductor secure?	- Y / N					
LV Spreaders installed and correct number of?	- Y / N					
Excessive conductor sag?	- Y / N					
Fuse?	- Y / N					
Fuse appropriate?	- Y / N					
Surge diverter?	- Y / N					
SD appropriate?	- Y / N					

Bushfire Mitigation Audit Kit

Audit Type: Electric Line Clearance

Audit Pro-Forma

Audited by:	
Audited at:	
(list locations visited in the course of the audit)	
Audit report submitted to:	[Redacted], Senior Asset Performance and Bushfire Mitigation Engineer On / /20 .

Read the notes below before leaving the office and starting the audit.

This checklist is one of three you can choose (the others look at Poles and Wires and Systems). The intention of this checklist is to assist in the carrying out of a Bushfire Mitigation Audit focused on some of the known fire risk factors associated with vegetation. The audit should not take more than 1-2 hours to complete including travelling time. In this time an audit party should visit 1-2 sections of line and inspect in detail 2 or 3 spans of line.

This list is not designed to be comprehensive or replace the need for skilled Arborists.

It is designed to give an observer some guide on what to look for if carrying out an audit in fire areas. It is important to note which area you are and spans you have looked at, so take care to note the road and pole 'A' number.

It is recommended that at least one member of the audit party have some knowledge in Electric Line Clearance management.

This checklist can be used to audit JEN assets and Private Electric Lines.

A copy of this audit together with all comments and observations should be referred to the Senior Asset Performance and Bushfire Mitigation Engineer.

Recommended Kit

- Binoculars;
- Copy of Electricity Safety (Electric Line Clearance) Regulations 2015;
- Copy of Electricity Safety (Bushfire Mitigation) Regulations 2013; and
- System Diagrams to identify where on the network you are.

On the Ground

- Road Name or easement;
- HV Feeder or Spur name;
- Pole number;
- Vehicles that use unleaded fuel must not be driven off road or on to grassed verges;
- Be aware of traffic on road; if stopping make sure it is clear before leaving vehicle; wear high visibility vests and other safety apparel as required; and
- Use care when walking into tall grass or on the road verge.

Clearances

Is there vegetation within the Clearance Space (refer to Electricity Safety (Electric Line Clearance) Regulations 2015)? **Look for:** overhanging branches, branches likely to be affected by wind, or branches that may fall onto the line. Note the tables represent minimum clearances.

For all voltages – the space vertically above the powerline must be kept clear of vegetation at all times.

Estimating the above clearances from the ground is a product of experience, however crude estimates can be gained by simply imagining the length of a crossarm between a conductor and the vegetation. If the clearance is less than the length of a crossarm, then the clearance is possibly less than 2m. This translates to approximately half the length of a crossarm for LV services.

Electric Line Clearance Management Practice

Is the tree trimming reasonable, or have trees been unnecessarily badly cut? This is very subjective, but this is the 'public face' of our Electric Line Clearance Management program.

Are the contractors aware of sensitive areas? There are certain areas within the HBRA where tree clearing may be constrained for environmental and social reasons.

Herbicides and Growth Retardants are not used in the JEN area.

Contractor Management

- Are NAPs employees in contact with the contractors satisfied with their performance?
- Are the contractors adequately monitored? (Inspections of work, site visits.)
- Have there been any complaints from customers or others about Electric Line Clearance management practices?
- Have these complaints been satisfactorily managed? (Promptness, look at correspondence.)

Scales

Y/N/U = Yes / No / Unable to Comment.

U,1-5 = Unable to Comment(U), Poor(1) to Excellent (5).

If you are unsure, err on the side of caution and raise a notification.

Location:

Road: _____

Item	Scale	Pole No	Pole No	Pole No	Pole No
Nearest Pole Number		A	A	A	A
Vegetation Touching Conductors?	Y / N / U				
Vegetation in Clearance Space?	Y / N / U				
Quality of Tree Trimming; Foliage left on site?	1-5				
Quality of Tree Trimming; Trees left in a pleasing condition?	1-5				
Quality of Hedging	1-5				

Contractors Information

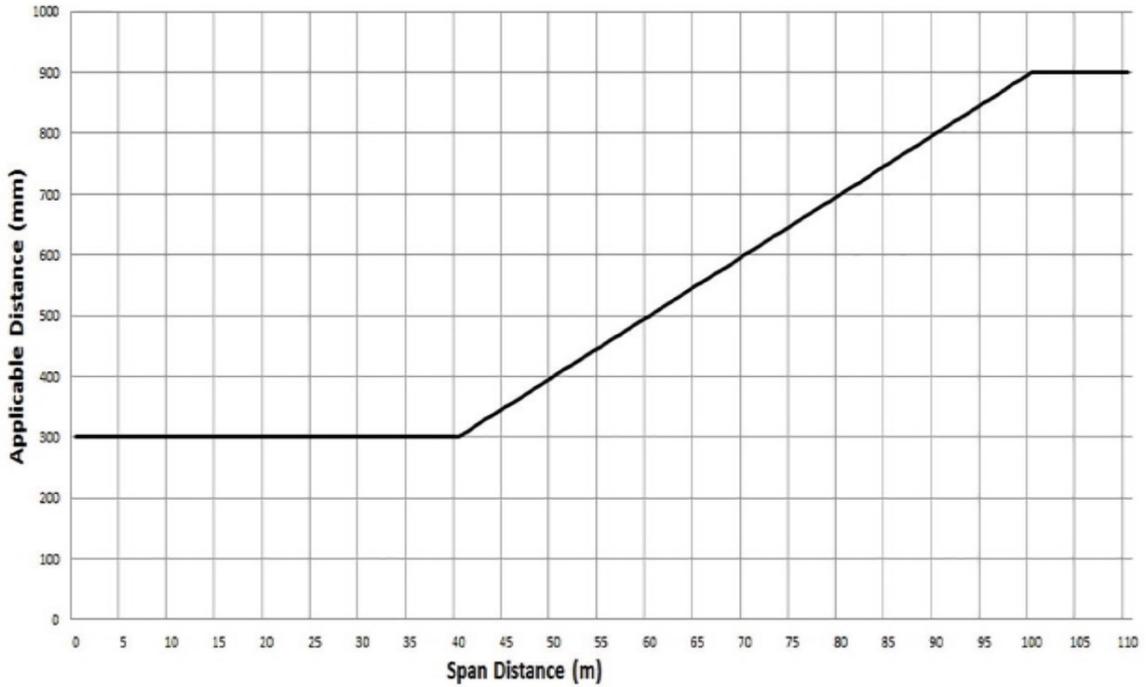
Item	Scale	Notes
Are the contractors aware of sensitive areas?	Y / N / U	
Contractor performance satisfactory?	Y / N / U	
Are contractors adequately monitored?	Y / N / U	
Have complaints been satisfactorily managed?	Y / N / U	
Are all people involved in vegetation clearing authorised to carry out this work?	Y / N / U	
Has all trimming been completed?	Y / N / U	

Function	Responsible Person
Tree Clearing	██████████
GIS - SAP Coordination	██████████
Maintenance Planner	██████████████████
Liaison with Councils, CFA, Fire Prevention Committees.	██████████

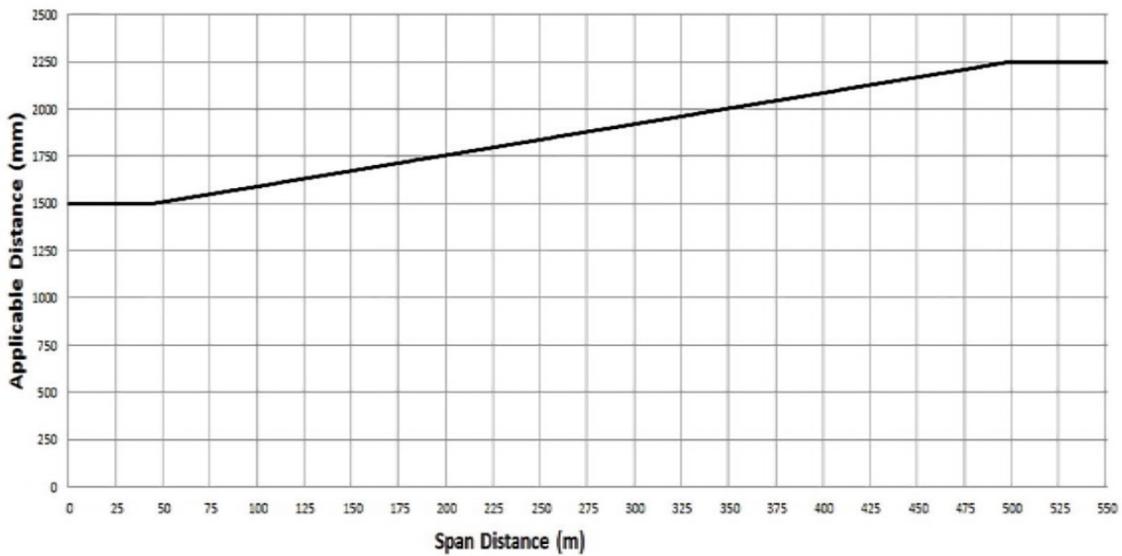
Notes:

Required Clearance - Electricity Safety (Electric Line Clearance) Regulations 2015

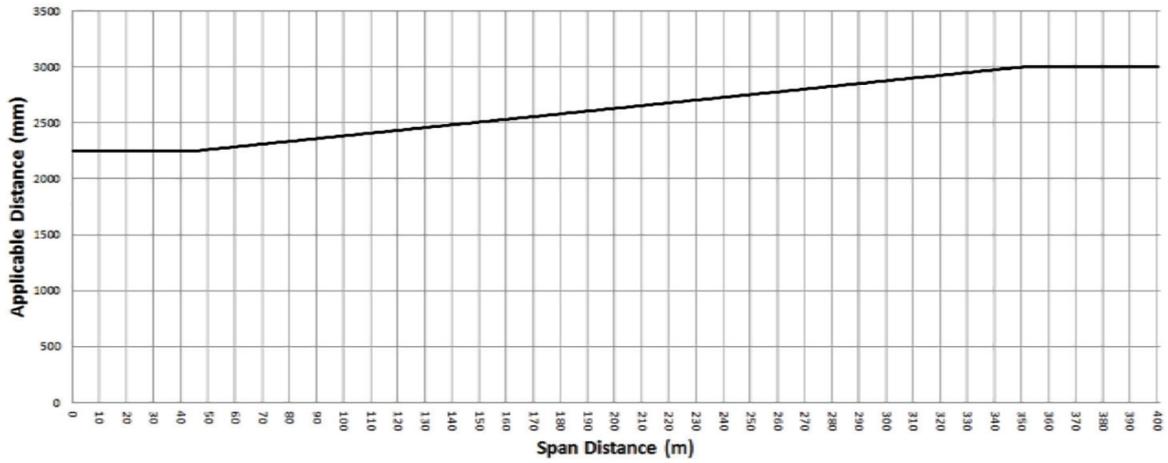
Graph 1– Insulated Electric Lines In All Areas



Graph 2 – Uninsulated Low Voltage And High Voltage Electric Line (Other than a 66 000 Volt Electric Line) in Hazardous Bushfire Risk Area



Graph 3 – Uninsulated 66 000 Volt Electric Line In Hazardous Bushfire Risk Area



Attachment 3: Bushfire Mitigation Audit Schedule (Sample)

BUSHFIRE MITIGATION AUDIT SCHEDULE																																											
Auditor	Jul	Aug	Sep				Oct				Nov				Dec				Jan				Feb				March				Apr				May				June				
Name			Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk5	Wk1	Wk2	Wk3	Wk4	Wk1	Wk2	Wk3	Wk4	Wk5	Wk1	Wk2	Wk3	Wk4	Wk5	Wk1	Wk2	Wk3	Wk4	Wk5	Wk1	Wk2	Wk3	Wk4	Wk5	Wk1	Wk2	Wk3	Wk4	Wk5			
[Redacted]											x																																
[Redacted]																																											
R&A Team																																											
[Redacted]																																											
[Redacted]																																											
[Redacted]																																											
[Redacted]																																											
Independent																																											
ESV																																											

[Redacted]	Network Integrity and Performance Manager
[Redacted]	Electricity Asset Investment Manager
R&A Team	Risk & Assurance Team
[Redacted]	Maintenance Planner
[Redacted]	Network Integrity and Performance Manager (Acting)
[Redacted]	Senior Bushfire Mitigation Asset Performance Engineer

[Redacted]	Asset Performance Engineer
[Redacted]	Asset Performance Engineer
Independent	Asset Performance Engineer (Contractor)
ESV	Representative from ESV

Key:	
S	= System Audit
P	= Poles and Wires
V	= Vegetation
H	= Health and Safety
W	= Work Quality
X	= Audit Schedule
X	= Audit Rescheduled

Attachment 4: Asset Inspector Audit Schedule (Sample)

Inspector	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
██████████		W									T	
██████████					W						T	
██████████			W								T	
██████████								W			T	
██████████							W				T	
██████████											T	W
██████████										W	T	
██████████				W							T	
██████████						W					T	

Key:	
T	= Training Register
W	= Work Quality

Note

1. Refer to Page 68 for a definition of this asset inspector audit program.
2. The schedule is updated when an inspector/s arrives or leaves the team.

BFM13: BFM Management System Control and Approval Procedure

Purpose

This procedure describes the process for control and approval of the Bushfire Mitigation Management System documentation.

Scope

This procedure covers the control and approval of the elements of the Bushfire Mitigation Plan, which provides the support for the Bushfire Mitigation Management System.

References

Bushfire Mitigation Management System Procedure (BFM1).
Jemena Content Management Policy (JEM PO 0700).

Definitions

Nil.

Procedure

Approval

The Bushfire Mitigation Plan shall be prepared by the Senior Asset Performance and Bushfire Mitigation Engineer, endorsed by the Network Integrity and Performance Manager and approved by the General Manager Asset Strategy Electrical.

Control

The Bushfire Mitigation Plan shall be controlled in accordance with Jemena Content Management Policy (JEM PO 0700). The BMP shall be controlled electronically and be available on the JEN Intranet. When printed, the BMP will become uncontrolled.

Attachments

Nil.

BFM14: Management of Critical Information Procedure

Purpose

This procedure describes the process for management of critical bushfire mitigation information.

Scope

This procedure covers the management of critical information contained in the records of the Bushfire Mitigation Management System.

References

JEN IT Security Requirements.
Content Archive, Retention and Disposal Procedure (JEM PR 0702).

Definitions

Nil.

Procedure

Data Collection and Responsibility

JEN has implemented sophisticated information technology systems to assist asset management methodologies.

JEN uses the maintenance methodologies to determine the optimum asset maintenance requirements. A range of asset parameters are used including asset type, criticality, failure modes, location and environment, asset age, number of operations performed and general condition.

The information technology systems that are used to manage the electricity network assets are the GIS and Works Management and Logistics System. The integration with complementary systems such as SCADA, Customer Information, Substation Utilisation and Profiling, Document Management, Distribution Management and Field Computing completes the suite of systems.

The systems provide key business tools for asset data management, works management, maintenance management and operations management.

The detailed information that is available regarding the assets, particularly their location and characteristics such as type, age and condition allow improved decision making and visibility of asset information.

JEN is continually looking for opportunities to improve the management of assets and will continue to do so.

Data Retention and Disposal

Network asset information (including POELs, inspection results, testing results and fault reports) is retained in electronic form within the GIS and SAP databases.

Bushfire Mitigation Index data is kept electronically on the Jemena computer network.

Security and Access Restrictions

In accordance with JEN's IT Security Requirements, access to electronic information is strictly controlled via passwords and User Ids. Each user is provided with the levels of access to specified parts of the systems appropriate to that user.

Attachments

Nil.

BFM15: Response to Reported Unsafe Situations Procedure

Purpose

This procedure describes the process for responding to reports of unsafe situations.

Scope

This procedure covers the response to reports of unsafe situations, by internal or external parties, that have the potential to cause fire ignition.

References

Jemena Incident Investigation Procedure (JEM HSE PR 0151).

Definitions

Nil.

Procedure

Unsafe situations that have the potential to cause fire ignition and that are reported either external to or internally within JEN, are assessed and are allocated a priority dependant on the level of risk presented. The assessment and investigation is carried out in accordance with the Incident Notification and Investigation Process.

Priority Rating

Items reported are recorded in a SAP notification and given a priority as defined in SAP, from 1 to 9. The asset inspection manual instructs asset inspectors to use the below priorities when raising notifications..

- Priority 1: Requires immediate assessment and/or rectification within 24 hours.
- Priority 3: Requires assessment by planner or rectified within 12 weeks.
- Priority 4: Requires assessment by planner or rectified within six months
- Priority 5: Requires assessment by planner or rectified with 12 months.
- Priority 9: Recorded for opportunistic maintenance purposes and may not be addressed before the next inspection cycle.

The below list of priorities are not to be used by Asset Inspectors and is provided for completeness only.

- Priority 2: Requires assessment and/or rectification within week.
- Priority 6: Requires assessment and/or rectification within two weeks.
- Priority 7: Requires assessment and/or rectification within four weeks.
- Priority 8: Requires assessment and/or rectification within eight weeks.

The Asset Inspection Manual assigns priority ratings to various types of defects or damage observed and, provides detailed advice to inspectors and maintenance planners. A priority rating may be reassessed following subsequent inspections.

During inspections any item found to be defective or deteriorated should be assigned a priority rating in accordance with the Asset Inspection Manual.

Attachments

Nil.

BFM16: Reporting, Investigation and Analysis of Fire Ignitions Procedure

Purpose

This procedure describes the process for reporting, investigating and analysing fire ignition incidents.

Scope

This procedure covers all known instances of fire ignition caused by the JEN supply networks in the HBRA and LBRA.

References

Electricity Safety Act 1998.

Electricity Safety (Bushfire Mitigation) Regulations 2013. Electrical Safety (Management) Regulations 2009.

JEN Electricity Safety Management Scheme (ESMS).

ESV Electrical Incident and Safety Performance Reporting Guidelines.

Jemena Asset Incident Investigation Procedure (JEM PR 0112).

JEN Osiris Reporting Guidelines (ELE-AM-PR-004).

Definitions

ESV Energy Safe Victoria.

MFB Metropolitan Fire & Emergency Services Board.

CFA Country Fire Authority.

VWA Victorian WorkCover Authority.

Legal Privilege

The protection from disclosure which may attach to documents and other forms of information.

Incident Command Centre (ICC)

A specific location where the management of the incident takes place (normally in the case of a fire, a CFA/MFB premises).

Fire

- A fire where the cause of ignition was, or involved, JEN assets, plant or equipment, or the plant or equipment of contractors engaged by JEN.
- The fire may be confined to JEN assets or involve adjacent vegetation or property.

Procedure

Under the Electrical Safety (Management) Regulations 2009, Part 3, Section 28 (2)(b) states in summary that a;

Relevant asset operator shall report 'Specified Electrical Incidents' that resulted in –

- (a) an electric shock from–
 - (i) the operator's supply network; or
 - (ii) an electrical installation supplied electricity by the operator's supply network; or
- (b) a fire originating from the operator's supply network; or
- (c) a part of the operator's supply network becoming dislodged from its supporting structure.

All incidents involving fires which are reported to be or are subsequently found to be caused by electrical assets shall be reported to and investigated by the Network Performance & Integrity team in accordance with the JEN Incident Notification and Investigation Process.

To satisfy the reporting requirements for section 28(2)(b) of the Electricity Safety (Management) regulations, all fires shall be recorded via the online reporting system Osiris, in compliance with ESV reporting guidelines.

The method of recording these incidents is detailed in the JEN Osiris Reporting Guidelines (ELE-AM-PR-004). A summary of the process is as follows:

1. Control & Dispatch will notify ESV and log the incident into Osiris;
2. An Asset Performance engineer shall then complete the details of incident in Osiris; and
3. Risk & Assurance – Electricity shall then review and submit the report, in compliance with ESV reporting guidelines.

The investigation and analysis will include:

- The mode of failure of the asset;
- The circumstances and environment associated with the mode of failure;
- The cost of damage and consequential loss;
- The need for remedial action at the site or at other similar situations; and
- Tracking against the fire start performance indicator.

The F-Factor Scheme – Annual Fire Start Reporting

The f-factor scheme is intended to provide financial incentive for Distribution Network Service Providers (DNSPs) to reduce the number of fire starts by the electricity distribution networks. The AER set the fire start targets for each Victorian DNSP under the Order in late December 2016.

Clause 5 of the Order provides that the AER may request from DNSPs an annual fire start report and to specify the relevant information that should be included in the report. The reports must be submitted by 30 September each year for the outcome of the previous reporting period. For JEN, the details required for this report are captured in the monthly Bushfire Mitigation Report.

Data Collection

The number of fire starts is recorded as the number of events which are suspected to have ignited from JEN assets based on the assessment from field based personnel. These personnel report the details of the alleged fire start to the resource co-ordinators based at the JEN Network Coordination Centre who generate an Osiris incident report as required by the Distribution Business Electrical Safety Performance Reporting Guideline.

Attachments

Nil.

BFM17: Risk Assessment Procedure

Purpose

This procedure describes the process for assessing the risk of potential causes of fire ignition.

Scope

This procedure covers the assessment of risk associated with the JEN supply networks in the HBRA and known incidents which occur elsewhere involving plant or equipment items similar to those owned by JEN.

References

Nil.

Definitions

Nil.

Procedure

JAA MA 0050 - Group Risk Management Manual.

Risk Assessment

The risk associated with potential causes of fire ignition will vary and depend upon the frequency of incidents and the environmental conditions likely to prevail at the time of the incident.

Known and potential causes of fire ignition from the JEN supply networks in the HBRA shall be subjected to a risk assessment that includes:

- The mode of failure or potential mode of failure of the asset;
- The circumstances and environment associated with the mode of failure;
- The frequency of the incidents;
- The quantity, location, age and condition of such assets; and
- An assessment of the consequential damage and losses.

In line with the approach used by Jemena, the risks shall be assessed based on the principals presented in the Australian Standard for Risk Management, taking into account the probability and the consequences. Based on this analysis, each risk shall be assigned a high, medium or low level of criticality, and appropriate actions developed and implemented by the Manager Primary Plant and Distribution Systems, in conjunction with the Network Integrity and Performance Manager.

In compliance with Jemena's corporate risk assessment procedure the fire ignition in the HBRA risk assessment will be conducted on an annual basis.

JEN analyse and trend all faults that have started a fire, refer to the F-factor scheme covered in BFM16.

Attachments

Nil.

BFM18: Network Assets Preventative Programs Procedure

Purpose

This procedure describes the process for bushfire preventative programs for network assets.

Scope

This procedure covers preventative programs for network assets. A list of the main components is provided below:

- Poles;
- Pole top attachments;
- Conductor;
- Bird/animal covers;
- Transformers;
- HV fuses;
- Spacers/spreaders;
- Vibration dampers;
- Armour rods;
- Surge diverters; and
- Low voltage spreaders.

References

Asset Inspection Manual (JEN MA 0500).

Surge Diverter Policy (IME 1030).

Standards Development and Modification Procedure (JEN PR 0016).

JEN Asset Class Strategies.

JEN Bird and Animal Protection Policy (JEN PR 0065).

JEN Electrical Safety Management Scheme (ESMS).

Conductor Clashing Mitigation Guidelines (JEN PR 0501).

JEN Planned and Opportunistic Maintenance and Workmanship Guideline (JEN GU 0010).

Definitions

Nil.

Procedure

Within the JEN supply networks in the HBRA, the Asset Inspection Program is designed to begin in the first quarter of each year. It is the responsibility of the Senior Contract Coordinator to ensure this program begins in a timely manner and all inspections on the JEN supply networks in the HBRA are completed by June.

Asset Inspection Program

- The inspection of the JEN supply networks in the HBRA is carried out on a routine three-year cycle (in accordance with regulation 7(1)(i)(i), no inspection interval will exceed 37 Months) and on a four-year cycle (in accordance with regulation 7(1)(i)(ii), no inspection interval will exceed 61 Months) in the LBRA. Each pole is tested for soundness and treated with pole saver rods, and the pole attachments and conductors are inspected visually from the ground, in accordance with the Asset Inspection Manual;
- Limited Life poles in the JEN supply networks in the HBRA which have not been replaced or staked are to be re-inspected within 12 months;
- The information gathered is loaded into the JEN Asset Management System (GIS/SAP);
- At the same time a visual inspection is made of the vegetation near the line. Any concerns are to be forwarded to the Senior Contract Coordinator and despatched to the vegetation management contractor for prompt detailed inspection and action as required; and

- Asset Inspectors will maintain the currency of information recorded in GIS/SAP. In addition, geographic information will be recorded on Field Data Capture Devices for recording and cross-referencing to GIS/ SAP. This information will be referred to as JEN asset information.

Accountability: Senior Contract Coordinator.

Maintenance Program

It is the responsibility of the Maintenance Planners to program the work generated from this program as soon as it appears in the Works Management System (SAP) to ensure all works are completed before the onset of the next fire danger period.

Maintenance from Scheduled Asset Inspection Program

As the scheduled asset inspection is completed, the Maintenance Planner will program, from SAP notifications the following items:

Poles and Pole Top Assets

- Defective poles to be replaced or reinstated (staked) before the fire danger period;
- Missing, deteriorated or damaged pole top assets;
- Unacceptable or damaged HV fuses and surge diverters;
- Missing or damaged LV spreaders;
- Missing, deteriorated or damaged conductor or conductor fittings; and
- Ensure the GIS/SAP database is to be updated as works are completed.

Installation of Insulated Cable Systems

Insulated cable systems provide additional protection to live electricity wires to prevent and minimise the impact of events such as line clashing in high winds, vandalism, wind blown debris and impacts from hazard trees. All of these impacts have the potential to start a fire and therefore the use of insulated cable systems has a beneficial impact in the prevention of bushfire starts from electricity assets, as well as minimising the likelihood of customer outages.

There are different options available in insulated cable systems:

- Aerial Bundled Cable (**ABC**) – refers to bundling of multiple low voltage lines into one single insulated cable. ABC is more resilient than bare conductor to the impacts of wind and contact from vegetation reducing the risk of fire starts from electrical lines;
- Covered conductor is a standard power line wire which incorporates an insulated plastic cover. The cover helps prevent localised faults that result from powerlines clashing in the wind or from debris, such as small tree branches, being blown or falling onto powerlines; and
- Medium Voltage Line Cover (**MVLC**) describes devices that provide a physical barrier to contact between bare electrical lines and debris and other materials such as trees and animals.

JEN will also consider all reasonable proposals from affected parties, community groups or other organisations to reduce the necessity of vegetation pruning or clearing. JEN will proactively install insulated cables where appropriate. The consideration will involve JEN in calculating indicative costs for substantial projects.

The process is as follows:

- All proposals will be forwarded in writing to the Network Integrity and Performance Manager for consideration;
- The Network Integrity and Performance Manager will contact the project proposer within five working days to explain the process for handling proposals. Where applicable, the project sponsor will be informed in general terms of possible financial arrangements and sources of funds, for example local councils; and
- Where the project sponsor wants to continue with the proposal, then the Network Integrity and Performance Manager will provide the project proposer within 30 days indicative costs of the proposal. These costs will take into account benefits that JEN may receive from the project, such as reduced Electric Line Clearance management costs.

Bird/Animal Mitigation

- The current requirements are to install longer insulators that do not require bird/animal covers, appropriate covers are installed on substations and HV switching structures;
- The Maintenance Planner will identify from SAP notifications pole tops, including, for example, substations and HV switching structures, requiring action to prevent bird/ animal-induced flashover. This work is normally done on an opportunistic basis when other work is to be carried out on the structure; and
- The GIS/SAP database is to be updated as works are completed.

Maintenance from the Summer Audit Program

The Maintenance Planner must continually monitor SAP to ensure any maintenance identified outside of the normal asset inspection program (e.g. from the summer audit program, management audits) are completed within the timeframes to ensure they do not impact the Bushfire Mitigation Index.

Accountability: Maintenance Planners.

Attachments

Nil.

Current Plan Period

All new low voltage construction within the HBRA is installed utilising underground or insulated overhead cable systems.

New designs of insulated covers have been introduced to protect network assets from interference by birds and possums. Covers are now a construction standard for new work and are being progressively fitted where justified, to existing structures.

Panasonic Toughbook field data acquisition devices utilised during asset inspection to capture relevant measurements and information have proved to be both durable and reliable so will continue to be used.

The following is a list of JEN's initiatives relating to bushfire mitigation for the next five-year period. They are to:

- Continue to deliver the existing well established and effective bushfire mitigation strategies;
- Monitor the potential lengthening of the gazetted fire season as a result of climate change and any impact that this may have on the ability to deliver works programs, particularly vegetation management and maintenance services;
- Review management practices to address, as a result of climate change, the increasing bushfire risk – this will include the introduction of new technologies to reduce fault currents and insulated conductor systems;
- In the LBRA the Pole Top Fire Mitigation (PTFM) project is targeting the high risk feeders containing the most deteriorated wooden crossarms (650 crossarms are planned to be replaced in each year of the 2016-2020 regulatory period). This is an ongoing program;
- Install Rapid Earth Fault Current Limiters and Arc Suppression Coils to further reduce fault current in high exposure bushfire substations as described below (see section on Rapid Earth Fault Current Limiters and Arc Suppression Coils);
- Continue the programmed replacement of conductor that has reached end of life;
- Enclosed Substation Inspection Notifications (ESIN) project – to mitigate against the risk of inadvertent failure of equipment it is essential that distribution substations (i.e. the above ground portion of underground assets) are inspected and identified maintenance carried out as required. Inspection cycles are the same as those described in the section above – Asset Inspection Program;
- A camera mounted on an insulated telescopic operating stick provides asset inspectors and maintenance planners with the ability to assess pole top hardware using high quality images taken from above. This is currently utilised and provides a perspective of the pole top assets such as crossarms, switches, insulators and conductor ties which has previously been unavailable. This is an ongoing initiative to gather and store accurate data on the condition of pole tops on the Jemena Electricity Network and is intended to reinforce our existing asset inspection program; and

- Hazard Tree Assessment program – part of an initiative to reduce the likelihood of hazard trees failing and falling onto Jemena assets. This is achieved by recording hazard trees in a register and appropriately managing them. Refer to BFM19 for a more detailed explanation of the Hazard Tree Assessment program.

Steel Conductor Assessment Program (SCAP)

- The SCAP is designed to identify conductor (and related equipment such as conductor ties) that are unserviceable. Conductor that is unserviceable will be programmed for replacement;
- This SCAP process will minimise risk of in service asset failure due to corroded steel conductor and fittings; and
- A recently completed inspection of the steel conductor in the HBRA has found a number of maintenance items requiring attention. These items are in the process of being addressed and will be completed as per their priority time frames.

Bare LV Mains Removal

The trial project commenced in 2015 and removed 1.5 kilometers of bare LV mains conductor in Sunbury, Bulla, Gisborne, Gisborne South and Meadow Heights. During the 2021-2025 regulatory period, there is 34km of LV open wire conductor to be considered for removal in the HBRA of the JEN Network. Ageing bare LV mains have a greater propensity to break and fall to the ground and have the potential to start fires. In the HBRA especially, replacing these assets with bushfire safe solutions such as LV ABC (Low Voltage Aerial Bundled Conductor), underground cable and additional small capacity substation transformers is expected to be a prudent investment towards enhanced bushfire safety. As such, JEN is considering to remove all such conductor in the HBRA over the next two regulatory periods.

Hazard Tree Assessment Program

The purpose of the hazard tree assessment is to assess the likelihood of a tree or limb failure causing vegetation contact with electrical assets so that appropriate measures can be taken before failure occurs. This program will allow for the systematic identification of hazard trees on a two-year cycle. The identification phase includes a comprehensive assessment of hazard trees in the HBRA by an experienced arborist. The assessment registers these trees and allow for targeted implementation of measures to mitigate the likelihood of tree related fire starts in the HBRA.

Application of a Pole Mounted Camera

Implementation of a camera mounted on an insulated telescopic operating stick provides asset inspectors and maintenance planners with the ability to assess pole top hardware using high quality images taken from above.

This provides a perspective of the pole top assets such as crossarms, switches, insulators and conductor ties which has previously been unavailable. This is an ongoing initiative to gather and store accurate data on the condition of pole tops on JEN and is designed to reinforce the existing asset inspection program.

REFCL (Rapid Earth Fault Current Limiters)

Following the 2009 Black Saturday bushfires, the State Government of Victoria established the 2009 Victorian Bushfires Royal Commission (the Royal Commission) to investigate the causes and responses to the bushfires. In its July 2010 Final Report, the Royal Commission concluded that five of the major fires that it investigated were started by power lines. The Royal Commission made 67 recommendations, of which eight (Recommendations 27 to 34) related to reducing the likelihood of power lines starting catastrophic bushfires.

The Powerline Bushfire Safety Taskforce (PBST) was established in August 2010 to recommend to the Victorian Government how to maximise the value to Victorians from the Royal Commission recommendations. The PBST presented its final report to the Victorian Government on 30 September 2011. The Victorian Government accepted PBST's recommendations and in December 2011 announced a package of initiatives. Among these initiatives was a rollout of REFCLs in selected zone substations prone to bushfire start risk, subject to further trials on a real network to confirm their effectiveness in reducing fire risk.

REFCLs have the capability to reduce the risk of bushfire starts from lines which experience a phase to earth fault. They reduce the current in any one phase which experiences an earth fault. As the devices act in milliseconds, without the need for human intervention, they are designed to reduce customer supply interruptions and reduce the risk of starting a fire.

The REFCL fire ignition test project initiated by the Department of State Development Business and Innovation (DSDBI) and conducted in 2014, confirmed that the REFCL technology reduces the fire ignition risk associated with bare-wire overhead power lines. Current regulations have mandated the installation of REFCL technology with prescribed earth fault protection sensitivity described as the 'required capacity' (we can add a footnote to this as: REFCL protection sensitivity required to minimise the risk of fire ignition due to a phase to ground fault), at selected zone substations supplying into areas with extreme fire risk consequence. The regulations came into operation in May 2016.

The 'required capacity' parameters as prescribed in the Bushfire Mitigation regulations can only be achieved with the most advanced REFCL technology (refer to the next section below for definitions). This technology is only available from one supplier in the world. Another supplier is at the R&D phase and is unlikely to have a product available for any of the mandated tranche deadlines.

REFCL (Rapid Earth Fault Current Limiter) Technologies

Current REFCL technologies can be divided into two broad categories:

1. **Base Level REFCL Technology:** This is the most common REFCL type around the globe. It consist of an Arc Suppression Coil (ASC), an automatic ASC controller/tuning device and very sensitive earth fault detection devices.
2. **High Performance REFCL Technology:** This is currently the most advanced REFCL technology and can be made to meet the performance requirements as prescribed in the Electricity Safety (Bushfire Mitigation) Regulations. In addition to base level REFCL components, it has an advanced power electronic component called Residual Current Compensator (RCC). The RCC helps to reduce the earth fault current to a very low value and is also used for diagnostic tests, as prescribed in the Electricity Safety (Bushfire Mitigation) Regulations.

Base Level REFCL Deployment (Jemena Initiative – not mandated in Regulation)

Fire ignition tests carried out on a real REFCL network in 2014¹ confirmed that a REFCL without an active RCC will provide substantial fire ignition risk reduction benefits. For this reason, Jemena decided to install a base level REFCL at the Sydenham (SHM) zone substation, as a pilot project. The objective of the pilot project was to prove the technical performance of the base level REFCL technology, and to confirm the cost of the installation from both a capex and opex perspective. The REFCL at SHM was commissioned in December 2016. However, except for a short duration during the REFCL commissioning tests, the REFCL at SHM has not been put into operation as hardening works by a HV customer are yet to be completed. Negotiations with the HV customer on this issue are continuing. Jemena anticipates the REFCL at SHM will be operational in time for the 2019/20 fire danger period.

Until the affected HV customer is REFCL-ready, Jemena will operate with the base level REFCL in service at SHM on an ad hoc basis to prove its technical performance and gain knowledge/experience of the technology in preparation for the installation of the mandated REFCL at COO and KLO.

Once the HV customer is REFCL-ready, Jemena will operate with the base level REFCL in service at SHM in accordance with the operating modes described below.

SHM REFCL Inspection and Testing

Since REFCL deployment at SHM is not mandatory, Jemena will undertake no pre fire-season compliance tests, as prescribed in the Electricity Safety (Bushfire Mitigation) Regulations. However, Jemena will inspect and if necessary carry out tests in accordance with manufacturer's recommendations prior to fire seasons.

SHM REFCL Operating Modes

The REFCL technology is a form of earthing reference for a high voltage distribution system. This form of earthing is described as resonant earthing and is available in two (2) main variants. The most advanced form of resonant earthing is the REFCL which comprises an ASC (incorporating the Petersen Coil and a controller) and a sophisticated compensator called the Residual Current Compensator (RCC). An ASC is designed to reduce earth fault current from approximately 1600 amperes to less than 10 amperes. With the addition of the RCC a REFCL is designed to further reduce earth fault current to approximately 0.5 amperes; this sensitivity is required for mandated REFCL installations only.

1 Marxsen Consulting, REFCL Trial – Ignition Tests, 4 August 2014 (page 67).

The sensitivity of the SHM REFCL (i.e. without the RCC) is approximately 10 amperes. Depending on many factors, the primary being growth of the network, i.e. increase in capacitive current, the sensitivity value (10 amperes) will increase as the network grows.

Two REFCL operating modes are available for selection at SHM:

1. Bushfire Mitigation Enabled Mode:

If an earth fault does not self-clear after an adjustable time delay (currently set at 1.5s), the relevant protection will trip the circuit breaker of the affected feeder.

a. When will this operating mode be implemented?

This mode will be enabled on total fire ban days when immediate isolation of the faulty feeder is required. Hence, on such days, a greater number of customers may experience supply interruption because conventional earth fault protection downstream of the feeder circuit breaker (such as ACRs and fuses) will not be sensitive enough to detect and isolate the faulty section.

b. What is the purpose of this operating mode?

The purpose of this mode is defined as, immediate isolation of the faulty feeder is required, for example, code red days, total fire ban days, etc.

2. Bushfire Mitigation Disabled Mode:

If an earth fault does not self-clear after an adjustable time delay (currently set at 1.5s), the NER will automatically bypass the ASC of the REFCL.

3. When will this operating mode be implemented?

This mode is enabled on all days except on total fire ban days.

4. What is the purpose of this operating mode?

This mode is desirable when a sustained earth fault is detected and it is preferable to increase the fault current by bypassing the ASC in order to allow conventional earth fault protection downstream of the feeder circuit breaker (such as ACRs and fuses) to operate and isolate the faulty section only, rather than isolating the whole feeder needlessly.

High Performance REFCL Deployment (mandated by Regulation)

Electricity Safety (Bushfire Mitigation) Regulations (the Regulations) require that each polyphase electric line that emanate from Coolaroo (COO) and Kalkallo (KLO) zone substations must be REFCL protected and meet the performance requirements described as 'required capacity' in the Regulations. While the main REFCL equipment will be installed inside the zone substations, extensive works are required on high voltage feeders emanating from each zone substation to ensure compliance with the Regulations is achieved. This includes works on three (3) KLO feeders (owned by JEN) which emanate from the KLO zone substation (owned by Ausnet Services).

Mandatory REFCL Requirements – Installation at Coolaroo Zone Substation

The Electricity Safety (Bushfire Mitigation) Regulations 2013 mandate that JEN's Coolaroo zone substation must have a REFCL installed by 2023. The REFCL chosen for installation at COO will reflect the most up-to-date technology available with the aim to meet the requirements of the performance prescribed in the Regulations.

Mandatory REFCL Requirements – Installation at Kalkallo Zone Substation

The area presently supplied by three (3) feeders out of the Kalkallo zone substation were supplied by COO feeders at the time the Regulations were prepared. As such, ESV have required, the HV supply into this area to be protected by a REFCL with 'the required capacity'. In this area the REFCL technology must be installed and operational by 30 April 2023. This area is experiencing high population growth and there are two points that need to be considered as part of REFCL technology installation plans:

- In collaboration with ESV, CFA and local councils the area bound by these three feeders from KLO is urban and due for reclassification from HBRA to LBRA in 2019.
- As with all new developments the utilities (including electricity) in this area have been constructed entirely underground.

These changes in the KLO area dramatically reduce the need for implementation of expensive REFCL technology. It is therefore Jemena's plan to install REFCL technology with 'the required capacity' for all overhead HV lines supplying the traditional COO area and, to apply for an exemption from these requirements, in areas exclusively supplied underground. Underground areas are inherently safe from igniting fires and protecting them with very expensive REFCL technology is arguably not a prudent or efficient investment as mandated by the financial regulator AER and, contemporaneously does not support bushfire mitigation regulatory objectives. Jemena is working closely with AusNet Services to establish parameters that will ensure the 'required capacity' is achieved for the COO area supplied by KLO feeders by no later than 30 April 2023.

Jemena understands that applying for exemptions from regulations there is a particularly lengthy process that needs to be followed which involves an exemption from ESV and an Order in Council from the Governor in Council. Therefore Jemena will be engaging with ESV soon to ensure compliance with the REFCL installation timing prescribed in regulation.

Inspection and Testing of Mandated REFCLs

Prior to the commencement of each fire season, Jemena will inspect and undertake compliance tests on COO and KLO feeders to ensure earth fault protection will operate at the 'required capacity' as prescribed in the Electricity Safety (Bushfire Mitigation) Regulations. Tests will be carried out in the presence of an ESV representative and will include:

- High impedance (25.4 kilo-ohm) and low impedance (400 ohm) primary earth fault tests on every phase of every feeder supplied from a prescribed substation;
- Tests will be repeated a minimum of 3 times to provide confidence in repeatability of results, e.g. if there are 6 feeders – 6 feeders x 3 phases x 2 tests x 3 repeats = 108 tests (min.) and demonstrate that all performance criteria of the 'required capacity' are achieved;
- Tests will be performed at a range of feeder locations representing electrically near, mid and far from the zone substation; and
- Tests will be repeated each year prior to the declaration of bushfire risk period

Jemena will prepare a test report and submit the report to ESV for acceptance

COO REFCL Operating Modes

At this stage it is believed that the REFCL at COO will have at least two operating modes available for selection:

1. **Bushfire Mitigation Enabled Mode:**

If an earth fault does not self-clear after an adjustable time delay (yet to be determined), the relevant protection will trip the whole feeder.

- a. When will this operating mode be implemented? – This mode will be enabled on total fire ban days.
- b. What is the purpose of this operating mode? – The purpose of this mode is defined when immediate isolation of the faulty feeder is required, for example, code red days, total fire ban days, etc.

2. **Bushfire Mitigation Disabled Mode:**

If an earth fault does not self-clear after an adjustable time delay (yet to be determined), the NER will automatically bypass the ASC of the REFCL.

- a. **When will this operating mode be implemented?**
This mode is enabled on all days except on total fire ban days.
- b. **What is the purpose of this operating mode?**
This mode is desirable when a sustained earth fault is detected and it is preferable to increase the fault current by bypassing the ASC in order to allow conventional earth fault protection, including ACRs and fuses, to operate and isolate the faulty section only, rather than isolating the whole feeder needlessly.

REFCL Rollout Program

The table below details the project milestones for the installation of REFCL technology at the specified zone substations, the nominated timeframes may be updated closer to the project planning date, with each review of the BMP.

Zone Substation	Protection Technology	Feeders Protected	Feeders Unprotected	Project Milestones				
				Detailed design	Orders placed	Delivery	Installation	Commissioning
Coolaroo	REFCL	COO11 COO12 COO13 COO14 COO21 COO22		Q3 2020	Q1 2021	Q2 2021	Q4 2021	Q4 2022
Kalkallo	REFCL	KLO13 KLO21 KLO22		Q3 2020	Q1 2021	Q2 2021	Q4 2021	Q4 2022

* This table presents a very high level overview of the mandated REFCL installation program. ESV have established a reporting template which tracks progress in significantly more detail. Reporting of the template will be as require by ESV and typically ranges from quarterly and increasing to monthly when the design stages start.

Electric Line Construction Area

In accordance with regulation 7(1)(hc) the table below details the project milestones for the construction and replacement of electric line in the specified electric line construction areas (as defined by the current Electricity Safety (Bushfire Mitigation) Regulations)².

Zone Substation	Protection Technology	Feeders Protected	Feeders Unprotected	Project Milestones				
				Detailed design	Orders placed	Delivery	Installation	Commissioning
JEN does not have any zone substations supplying to the specified electric line construction areas.								

2 The areas declared as electric line construction areas specified in 7(1)(hc) are listed in the DELWP website accessible via: <https://www.energy.vic.gov.au/safety-and-emergencies/powerline-bushfire-safety-program/electrical-safety-bushfire-mitigation-further-amendment-regulations-2016/electric-line-declared-energy-maps>

BFM19: Electric Line Clearance Management Procedure

Purpose

This procedure describes the process for ensuring that adequate clearances are maintained between vegetation and network assets.

Scope

This procedure covers:

- The maintenance of programs for achieving statutory clearances between vegetation and network assets; and
- The development and implementation of an Electric Line Clearance Management Plan.

References

Electricity Safety (Bushfire Mitigation) Regulations 2013.
Electricity Safety (Electric Line Clearance) Regulations 2015.
Jemena Customer Charter.
Electric Line Clearance Management Plan (ELCMP) (JEN PL 0101).

Definitions

Nil.

Procedure

The vegetation management contractor is responsible for implementing the Electric Line Clearance management plan as directed by the Senior Asset Performance and Bushfire Mitigation Engineer. For the current procedures and processes refer to the Electric Line Clearance Management Plan.

Pre-summer Inspection

A pre-summer inspection will be conducted annually on the JEN supply networks in the HBRA. This involves approximately 7,000 spans within the JEN network. For further detail of the JEN vegetation management programs (including LBRA) refer to section 8.2.3 of the JEN Electric Line Clearance Management Plan.

The Vegetation Management Contractor (VMC) in consultation with the Senior Contract Coordinator will arrange for the inspection to be carried out during July/August to best enable power line clearance to be established prior to the declared fire danger period. Typically this takes three to four weeks to complete. The pre-summer cutting and removal program will normally be completed by the end of October to allow for possible advice of an early start to the declared fire danger period, usually 1 November for the JEN supply area.

Periodic audits will be carried out in the months before, and during, the fire danger period. These audits are carried out by the vegetation management contractor and by JEN – refer BFM12, Attachment 3 Audit Schedule.

A pre-summer inspection program within the LBRA is not undertaken. Vegetation in these areas is managed under the cyclic program contained within the JEN Electric Line Clearance Management Plan which includes audits on the VMC to ensure compliance with JEN's obligations. The LBRA program is audited throughout the year.

Hazard Tree Management Program

Jemena manages hazard trees both in the cyclic programs (HBRA and LBRA) and a dedicated hazard tree management program in the HBRA. Hazard tree management during cyclic programs was implemented in 2012. The dedicated hazard tree management program was implemented in 2013 with the second cycle of inspections commenced in the first quarter of 2016. The two-yearly inspection cycle for the dedicated program has been designed to evaluate any potential tree hazards within the vicinity of JEN assets and action accordingly.

Attachments

Nil.

BFM20: Technical Standards for Design, Construction, Operation and Maintenance Procedure

Purpose

This procedure describes the system of standards for the design, construction, operation and maintenance of the network.

Scope

This procedure covers the standards, plans and instructions which are used for the design, construction, operation and maintenance of the network in preparation for, and during, the declared fire danger period.

References

JEN Network Construction and Design Requirements (JEN PO 0620).

Standards Development and Modification Procedure (JEN PR 0016).

Risk Assessment for Design and Specification of Structures and Components.

JEN Distribution Construction Manuals.

JEN Bird and Animal Protection Requirements (JEN PR 0065).

AS/NZS 7000: Overhead Line Design – Detailed Procedures.

Asset Inspection Manual (JEN MA 0500).

Operations Manual: Switching and Earthing – Emergency (SEL PR 0001, Section 7).

Definitions

Nil.

Procedure

The design, construction, operation and maintenance of the electrical distribution assets shall conform to the JEN Network Construction and Design Requirements (JEN PO 0620), the Standards Development and Modification Procedure (JEN PR 0016) and the Distribution Standardisation Committee Requirements.

The fire ignition risk shall be identified and controlled at the design and specification phase of standard distribution pole structures and components, through use of the Risk Assessment for Design and Specification of Structures and Components form.

Attachments

Nil.

BFM21: Use of Vehicles in Periods of Fire Risk Procedure

Purpose

This procedure describes the process for operating vehicles and plant in off-road situations in HBRA during the fire danger period.

Scope

This procedure applies to all employees and contractors operating vehicles and plant with combustion engines in off-road situations in the JEN supply networks in the HBRA during the fire danger period.

References

Country Fire Authority Act 1958.

Definitions

Nil.

Procedure

Vehicle Use Guidelines

- Vehicles and generators must be free from defects that are likely to start a fire;
- Vehicles and generators must be equipped with an efficient exhaust system;
- Drivers of large diesel vehicles required to travel off road must ensure that the vehicle does not initiate a fire by complying with the following: knowledge of the condition of the vehicle, attention to the route taken and ensuring the vehicle is not left running unattended;
- Operators of vehicle mounted ancillary generators must ensure that the unit does not initiate a fire by complying with the following: knowledge of the condition of the generator, attention to positioning, ensuring the unit is not left running unattended and preparation of fire fighting kit; and
- Drivers of unleaded petrol passenger vehicles will be advised that off road travel is to be avoided because the exhaust system of these vehicles may start a fire. Exhaust systems on unleaded vehicles can operate at temperatures sufficient to start fires particularly if the engine is not tuned correctly. Unleaded petrol vehicles must not be parked off road with the engine running.

Pre-summer Vehicle inspection

- Regular tool and equipment audits are carried out on all line vehicles. During October, or one month prior to the start of the declared fire danger period, an audit will be carried out by Line Managers for all line vehicles to qualify them for use in the HBRA during the fire season;
- All service providers must comply with these requirements; and
- Any equipment or work required for the vehicle prior to the start of the declared fire danger period is to be completed in October, or prior to the start of the fire season.

Equipment to be Carried

From the declaration of the fire danger period, or from 1 November annually, through to the cessation of the fire danger period, all JEN line vehicles that may operate under the conditions set out by the hot works permits on/or in the vicinity of the JEN supply networks in the HBRA will be fitted with the following minimum fire fighting equipment:

- Fire fighting knapsack (16 litre) or foam fire extinguisher (9 litre, blue);
- Fire rake or hoe; and
- Means of communication.

Personnel and contractors must ensure that the requirements of the legislation are met.

Advice to Drivers

All drivers who may drive in the HBRA are to be advised of the above precautions in October, or prior to the start of the fire danger period.

Accountability: Senior Asset Performance and Bushfire Mitigation Engineer, (Advice of Procedure)
Electricity Maintenance Manager (Implementation of Procedure).

Attachments

1. Excerpt from Country Fire Authority Act 1958.

Attachment 1: Excerpt from Country Fire Authority Act 1958

50. Required safety features of motor vehicles driven during fire danger period near crops.
- (1) In the country area of Victoria a person shall not drive or operate a vehicle propelled by internal combustion (other than a vehicle referred to in sub-section (2)) so that the vehicle is in contact with any crop, grass, stubble, weeds, undergrowth or other vegetation unless the vehicle is fitted with an efficient silencing device so constructed that all the exhaust from the engine of the vehicle passes through the silencing device.
 - (2) In the country area of Victoria a person must not drive or operate a tractor or a self-propelled farm machine or a traction engine or an earth-moving, excavating or road-making machine propelled by or incorporating a heat engine within nine metres of or in contact with any crop, grass, stubble, weeds, undergrowth or vegetation unless the tractor, traction engine or machine –
 - (a) is free from faults and mechanical defects which would tend to cause an outbreak of fire; and
 - (b) is fitted with a spark arrester; and
 - (c) carries the prescribed fire suppression equipment during a fire danger period.
 - (3) A person operating a tractor, traction engine or machine referred to in sub-section (2) must maintain the spark arrester in proper working order so as to prevent the discharge of exhaust particles which may tend to cause an outbreak of fire.
 - (4) A person must not fit a spark arrester to a tractor, traction engine or machine referred to in sub-section (2) unless the spark arrester complies with the standard prescribed under sub-section (5).
 - (5) A person must not sell a tractor, traction engine or machine unless it is fitted with a spark arrester which complies with the relevant Standards Association of Australia standard prescribed for the purposes of this sub-section.
 - (6) The Chief Officer may exempt a person from compliance with sub-section (2)(c) where in the opinion of the Chief Officer the circumstances surrounding the operation of the tractor, traction engine or machine warrants it.
 - (7) Nothing in this section requires a tractor, engine or machine referred to in sub-section (2) which is fitted with a turbocharger or an exhaust aspirated air-cleaner to be fitted with a spark arrester.

BFM22: Evaluation of Materials, Plant and Equipment Procedure

Purpose

This procedure describes the process for ensuring that equipment purchased for use on the JEN supply networks in the HBRA has been assessed in relation to the risk of fire ignition.

Scope

This procedure covers the purchase of all materials, plant and equipment used on the JEN supply networks and which represent a high risk of fire ignition.

References

Standards Development and Modification Procedure (JEN PR 0016).

Definitions

Nil.

Procedure

Specification and Tender Evaluation

In preparing the specifications for the procurement of material, plant and equipment used on the JEN supply networks, consideration shall be given to the 'fire safety' of the material, plant and equipment. Existing specifications shall be reviewed in this light when the contracts are due for re-tendering or renewal. Where appropriate, specific fire performance standards shall be included in the specification, as well as references to Australian Standards.

Attachments

Nil.

BFM23: Use of Contractors Procedure

Purpose

This procedure describes the process for ensuring that contractors providing services on the JEN supply networks are aware of, and comply, with JEN's requirements in relation to bushfire mitigation programs.

Scope

This procedure covers provision of all services that are relevant to bushfire mitigation activities.

References

Nil.

Definitions

Nil.

Procedure

All new service contracts and those coming up for renewal for work on the JEN supply networks or in the HBRA shall be reviewed by the Electricity Maintenance Manager to ensure that no aspects will compromise JEN's bushfire mitigation programs.

All contractors tendering for the provision of services relevant to bushfire mitigation activities shall be given access a copy of JEN's Bushfire Mitigation Plan and other information relevant to the particular service.

Contractors shall be contractually bound to:

- Comply with the JEN Bushfire Mitigation Plan;
- The provision of staff with approved training and competency requirements;
- The provision of approved plant and equipment;
- Safe working standards;
- Audit and review procedures;
- The recording of information and the keeping of records; and
- Reporting to JEN.

Such contracts shall be subject to regular audit and review in accordance with the JEN preferred contractor accreditation process.

Attachments

1. Clauses for Inclusion in Contracts.

Attachment 1: Clauses for Inclusion in Contracts

Mitigating Bushfire Risk

Due to the risks associated with the types of equipment used and the sites where the work is carried out, all vehicles working in the HBRA will be required to carry at least one 16-litre knapsack at all times. During the fire danger period driving of vehicles in grassed areas must be avoided.

The contractor and its personnel will be required, at the contractor's cost, to participate in any JEN bushfire mitigation program during the period of this contract by participating in, among other things:

- Senior Management Briefings;
- Bushfire update sessions; and
- Bushfire preparedness and response training.

From the declaration of the fire danger period or 1 November annually, through to cessation of the fire danger period all contractor vehicles that may operate in the HBRA's will be fitted with the following minimum fire fighting equipment:

- Fire fighting knapsack (16-litre) or foam fire extinguisher (nine litre, blue);
- Fire hoe or rake; and
- Means of communication.

In accordance with the JEN Bushfire Mitigation Plan, this shall be supplied to the contractor electronically via the intranet by the Electricity Maintenance Manager.

The contractor acknowledges and agrees that all work under this contract must be performed in accordance with the JEN Bushfire Mitigation Plan.

Days of Total Fire Ban

The contractor is required to comply with the appropriate permits from the CFA, MFB and DELWP when required to operate welding, cutting, grinding, blow torch or other equipment on days of total fire ban.

The contractor and their personnel shall adhere to conditions specified in those permits in absolute terms at all times. Whenever a permit is required, permission must also be sought from, and approved by, the Electricity Maintenance Manager.

Due to the risks associated with the types of equipment used and the sites where the services are carried out, no services which are deemed by the Electricity Maintenance Manager or the contractor to be a risk to the environment or public, shall be carried on the JEN supply networks in the HBRA on days of total fire ban or days identified by the Electricity Maintenance Manager as placing excessive demand on the system by the removal of JEN assets from the system for service or otherwise.

Where appropriate the Electricity Maintenance Manager may allow the contractor to perform services in LBRA on days of total fire ban. There shall be no payments made by JEN to the contractor and the contractor assumes all risk in relation to time lost under these circumstances.

Hazardous Bushfire Risk Areas

In providing the Services, the contractor must ensure it complies, and that its personnel comply, with all applicable laws, legislation, regulations, orders and the like concerned with bush fire protection.

BFM24: Inspection, Measurement and Testing Equipment Procedure

Purpose

This procedure describes the process for ensuring that equipment used for inspection, measurement and testing is suitable, calibrated correctly and used appropriately.

Scope

This procedure covers all equipment used for inspection, measurement and testing on the JEN supply networks.

References

Plant and Equipment Procedure (JEM HSE PR 0037).

Plant and Equipment Inspection testing and Maintenance (JEM HSE PR 0037 WI 02).

Plant and Equipment Hazards and Controls (JEM HSE PR 0037 WI 01).

Operations Manual: Switching and Earthing – General (SEL PR 0001, Section 10).

Definitions

Nil.

Procedure

JEN

To ensure that it is suitable, calibrated correctly and used appropriately, equipment used for inspection, measurement or testing shall be used in accordance with the Procedures and Work Instructions as per the references above.

Contractors

Contractors using equipment for inspection, measurement or testing on the JEN supply networks will be audited on an annual basis to ensure that they have in place appropriate procedures such that the equipment used for inspection, measurement and testing is suitable, calibrated correctly and used appropriately.

Attachments

Nil.

BFM25: Private Overhead Electric Lines Procedure

Purpose

This procedure describes the process for assessing the condition of Private Overhead Electric Lines (**POELs**), including vegetation clearance and rectifying or replacing defective POELs. The intended outcome of these assessments is to identify and ensure rectification of any obvious defects that could result in fire ignition or risk to electrical safety.

Scope

This procedure covers the inspection and rectification/replacement of defective POELs, in relation to mitigation of fire ignition, as well as action to be taken on days of total fire ban. It also sets out how the responsibilities of customers in relation to how their POELs will be managed.

References

Electricity Safety (Bushfire Mitigation) Regulations 2013.

JEN Asset Inspection Manual – Inspection of POELs.

POEL Safety and Responsibility Brochure.

Definitions

POELS

Any overhead, low voltage electric line (normally on private property) used to take electricity from the point of supply, whether or not that line is vested in a major electricity company.

Procedure

Inspection

- POELs are inspected in accordance with the Asset Inspection Manual, Section 9 Private Overhead Electric Lines;
- There is no requirement to carry out a programmed inspection of private electric lines beyond the first connection point to a building or structure (not a pole);
- Vegetation associated with all POELs in the fire area is inspected by the vegetation management contractor as part of an annual pre-summer inspection. In addition, the inspectors will report any urgent line defects observed;
- All POELs in the HBRA are inspected on a three-year cycle and not more than 37 months;
- POELs identified as defective are issued defect notices;
- For defects considered urgent or hazardous, a maintenance planner is contacted immediately for appropriate action which may include immediate disconnection of the POEL;
- Inspection data is recorded in the GIS/SAP database and works management system; and
- Details of defective POELs are recorded in SAP including follow-up actions. In situations where the property owner fails or otherwise declines to comply with requests to remedy identified POEL defects, relevant details will be forwarded to ESV for processing, management and advice as per Attachment 7.

Accountability: Senior Contract Coordinator.

Maintenance and Fault Rectification

The Senior Contract Coordinator will create a file holding the Private Line Inspection Report (**PLIR**) for each defective line. Each property is visited and a PLIR (Attachment 3) is prepared and sent to the property owner.

The Senior Contract Coordinator will issue each customer a letter, as per Attachment 2, together with a copy of the PLIR. Regular telephone communication and site visits are conducted with each customer offering assistance by way of advice.

A reminder letter, Attachment 4, is sent out thirty days after the initial letter, reinforcing the fact that the private line may be disconnected on days of total fire ban if not repaired. Again, regular telephone communication and site visits are conducted.

In the event of no response from the customer, a third letter, Attachment 5, is sent advising that the matter is to be referred to ESV for direction.

During the three letter process, any repaired lines are updated on the GIS/SAP database.

If customers do not rectify any defects, or make a firm commitment to do so, the Senior Contract Coordinator will forward relevant customer details to ESV for processing, management and advice.

Work crews, as instructed, will disconnect and reconnect supply to defective POELs on days of total fire ban in accordance with BFM26.

Dispute Resolution

JEN will endeavour to resolve any disputes arising from the execution of their duties in a fair and reasonable manner. If the customer is not satisfied with the response received from their first point of contact they have the right to have the dispute reviewed at a higher level in JEN.

If no agreement is reached the dispute may be referred to ESV for a mechanism for resolution. If the non-resolution of the dispute presents a fire or safety risk then JEN may be obliged to disconnect supply or in the case of vegetation clearing to enter the property and complete the work at the customers expense.

Accountability: Senior Contract Coordinator.

Auditing

- Pre-summer and summer audit programs; and
- The Senior Contract Coordinator will arrange regular reviews of outstanding works including visits to the properties concerned.

Accountability: Senior Contract Coordinator.

Community and Customer Relations

- A database is maintained which contains names and addresses of customers that own a POEL in the JEN HBRA. Each year around September, these customers are mailed a personalised letter, as per Attachment 6, which describes how public awareness might be enhanced of the responsibilities of owners of POELs and JEN responsibilities with respect to private overhead lines. Included with this letter is a comprehensive brochure (POEL Safety and Responsibility);
- Private Overhead Electric Lines (POEL) customers have a responsibility to ensure that their lines are maintained and Jemena has an obligation to inspect those lines. These responsibilities and obligations are detailed on the Jemena internet site at www.jemena.com.au.
- For the requirement of regulation 12 of the Electricity Safety (Bushfire Mitigation) Regulations 2013, the notice as shown in Attachment 6 is given to occupiers of land with POELs in compliance to regulation 9 prior to the inspection being carried out by the asset inspector;
- With reference to the notice in Attachment 6 (and as prescribed in regulation 11 of the Electricity Safety (Bushfire Mitigation) Regulations 2013) the period specified must not be 'more than 45 days before the inspection and not less than 21 days before the inspection'. The inspector will write the date, in the space provided at the bottom of the notice, on which the notice was given to the customer;
- JEN will encourage the undergrounding of private electric lines wherever possible. The level of guidance and support will be evaluated on a case-by-case basis at the discretion of the Senior Asset Performance and Bushfire Mitigation Engineer;
- For all existing POEL customers wishing to underground their electricity supply a free pit is offered to all JEN customers in the HBRA and LBRA;
- All enquiries should be directed to the Senior Asset Performance and Bushfire Mitigation Engineer; and
- All complaints will be managed as outlined in the JEN Customer Charter.

Accountability: Senior Asset Performance and Bushfire Mitigation Engineer.

Disconnection of Defective Private Electric Lines on Days of Total Fire Ban

- If the POEL defect cannot be made safe, work crews will disconnect and reconnect supply on days of total fire ban in accordance with BFM26; and
- The disconnection process will be reviewed annually and a list of potential disconnections will be available and maintained from 1 October until the end of the fire season by the Senior Asset Performance and Bushfire Mitigation Engineer.

Attachments

1. Notice of Inspection of POEL.
2. Initial Defect Notification Letter 1.
3. Private Line Inspection Report (**PLIR**).
4. Disconnection Warning – Letter 2.
5. Final Notice – Letter 3.
6. Bushfire Safety For Private Overhead Electric Lines (**POEL**) Customers.
7. Letter from ESV Dated 21 April 2011 In Relation To POEL Line Defects – Customer Referral.
8. ESV letter dated 3 May 2012 - Private Poles Prescribed Standards of Inspection Exemption.

Current Plan Period

Inspection of POELs will be initiated in January with planned completion by the end of June.

Property owners with private overhead electric lines identified with defects will be advised in writing immediately after inspection.

Subsequent follow-up will be in accordance with established procedures.

Attachment 1: Notice of Inspection of POEL

For all enquiries please contact our service partner Zinfra
T: (03) 9173 6519
M: 0419 402 749
E: JENPOEL@zinfra.com.au



Jemena Electricity Networks (Vic) Ltd
PO Box 16182, Melbourne, VIC 3000
T: 1300 536 362
W: www.jemena.com.au

Date:

To the Occupier
Address
Address

Dear Customer,

In accordance with section 113F of the Electricity Safety Act 1998, please be advised that between **xx/xx/xxxx** and **xx/xx/xxxx**, our asset inspector will inspect all private electric lines above the surface of land on the property you occupy, except for those parts of the lines that are installed after the point at which they are connected to a building or other structure (not including a pole).

The inspection may reveal that defects exist and maintenance is required on a private electric line on the property that you occupy.

If this is the case, we will give the owner written notice of the maintenance work that is required to be carried out. Please contact our Asset Inspection Co-Ordinator, Joanne Burleigh at Zinfra on (03) 9173 6519, mobile 0419 402 749 or email JENPOEL@zinfra.com.au if you have any queries with respect to this notice.

Regards,

[Redacted Signature]

Network Integrity and Performance Manager



Attachment 2: Initial Defect Notification Letter '1'

For all enquiries please contact our service partner Zinfra
T: (03) 9173 6519
M: 0419 402 749
E: JENPOEL@zinfra.com.au



Jemena Electricity Networks (Vic) Ltd
PO Box 16182, Melbourne, VIC 3000
T: 1300 536 362
www.jemena.com.au

Date:

To the Occupier
Address
Address

Dear Customer,

Reference No. XXXXXX

Attention: Your Private Overhead Electric Line (POEL) at XXXXXXXXXXXXXXX, is Defective

Jemena Electricity Networks (Vic) Ltd (Jemena) is the electricity distribution company that manages, operates and maintains the electricity network for 330,000 properties across Melbourne's north-western suburbs. Zinfra who inspect the electricity network assets is our services partner.

We own and maintain the poles, wires, meters and the technology that supplies electricity to your home.

If you are a tenant, please forward this notice to the landowner or managing agent immediately.

Sparks from poorly maintained POELs can easily start a fire destroying your property and the properties around you. Our records indicate that electricity is supplied to your property through a POEL. You are legally responsible for the maintenance of your POEL.

Private Power Lines begin at your point of supply. However, power lines on public roadways, and high voltage lines going through your property (if any), are the responsibility of Jemena.

A recent inspection of the Private Overhead Electric Lines (POEL) on your property has revealed that it requires immediate maintenance. The necessary work that urgently needs to be completed is detailed in the Private Line Inspection Report enclosed with this letter. The report includes a drawing showing the location of the defects and lists the necessary repairs which must be completed by you.

We suggest that you contact your preferred Registered Electrical Contractor as soon as possible and arrange the necessary repairs to your power lines. This will reduce the risk of costly damage to you and the community.

If these repairs are not completed prior to or during the declared fire danger period, Jemena, in the interests of the community will disconnect electricity to these power lines on those days declared a Total Fire Ban by the local Fire Control Authority i.e. CFA.

To discuss this matter in more detail or advise us of your progress, please contact our Asset Inspection Co-Ordinator, Joanne Burleigh at Zinfra on:

Office: (03) 9173 6519;

Mobile: 0419 402 749;

Email: JENPOEL@zinfra.com.au

Regards,

██████████

Network Integrity and Performance Manager



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language
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Attachment 3: Private Line Inspection Report (PLIR)

PRIVATE LINE INSPECTION REPORT

Document No.: JEN MA 0500 RF 02

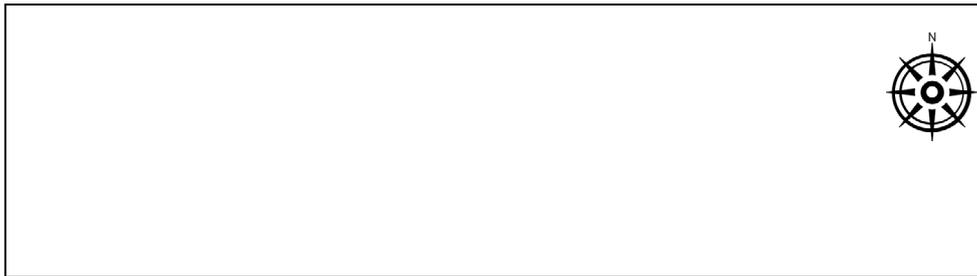


Order: _____
 Title: _____
 Functional Location: _____ Start Date: ____/____/____
 Issued to: _____ Maintenance Plan Group: _____
 Order Created By: _____ Order Created on: ____/____/____

Pole No: P _____ SAP / GIS No. _____
 Outside House No.: _____ Isolating Device Name/Number: _____
 Opposite House No.: _____ Side of Street: N S E W
 Street / Spur: _____ Suburb / Town: _____
 Melways/VicRoads Ref: _____

(Tick boxes as required)

CONDITION OF ITEMS INSPECTED			
Poles	Conductors	Crossarms	Trees
<input type="checkbox"/> Deteriorated and Unservicable	<input type="checkbox"/> Damaged	<input type="checkbox"/> Deteriorated	<input type="checkbox"/> Overhanging
<input type="checkbox"/> Leaning	<input type="checkbox"/> Out of Sag	<input type="checkbox"/> Undersize	<input type="checkbox"/> In contact
<input type="checkbox"/> Stay(s) missing or damaged	<input type="checkbox"/> Termination Damage	<input type="checkbox"/> Brace(s) missing or not straight	<input type="checkbox"/> In Clearance Space
<input type="checkbox"/> Cap(s) Missing	<input type="checkbox"/> Spreader(s) missing or damaged	<input type="checkbox"/> Insulators damaged	Defects Urgent
<input type="checkbox"/> Loose Hardware	Clearances	<input type="checkbox"/> Other:	<input type="checkbox"/> Yes
<input type="checkbox"/> Raiser deteriorated	<input type="checkbox"/> Between Conductors		<input type="checkbox"/> No
<input type="checkbox"/> Other:	<input type="checkbox"/> From structures		
	<input type="checkbox"/> From ground		
	<input type="checkbox"/> Other:		



DETAILS OF CUSTOMER'S CONDUCTORS <i>(Tick as many as required)</i>		
Low Voltage	High Voltage	Number of Private Poles to be inspected
<input type="checkbox"/> Insulated overhead cable	<input type="checkbox"/> Private	
<input type="checkbox"/> Bare/open overhead conductor		
<input type="checkbox"/> Underground		

Document No.:	JEN MA 0500 RF 02	Page 1 of 1
Revision:	2.0	Warning: uncontrolled document when printed.
Revision Date	January 2012	At Jemena we value Safety, Passion, Teamwork, Commitment & Integrity.

Attachment 4: Disconnection Warning Letter '2'



For all enquiries please contact our service partner Zinfra
T: (03) 9173 6519
M: 0419 402 749
E: JENPOEL@zinfra.com.au



Jemena Electricity Networks (Vic) Ltd
PO Box 16182, Melbourne, VIC 3000
T: 1300 536 362
www.jemena.com.au

Date:

To the Occupier
Address
Address

Dear Customer,

Reference No. XXXXXX

Attention: Your Private Overhead Electric Line (POEL) at XXXXXXXXXXXXXXX, is Defective

Jemena Electricity Networks (Vic) Ltd (Jemena) is the electricity distribution company that manages, operates and maintains the electricity network for 330,000 properties across Melbourne's north-western suburbs. Zinfra who inspect the electricity network assets is our services partner.

We own and maintain the poles, wires, meters and the technology that supplies electricity to your home/property.

If you are a tenant, please forward this notice to the landowner or managing agent immediately.

Sparks from poorly maintained Private Overhead Electric Lines (POEL) can easily start a fire potentially destroying your property and the properties around you.

A recent inspection of the POEL on your property revealed that you have not yet repaired the defects as detailed in our correspondence to you dated **xx/xx/xxxx**.

We suggest that you contact your preferred Registered Electrical Contractor as soon as possible and request that the necessary repairs be completed to your POEL. This will reduce the risk of costly damage to you and the community.

If these repairs are not completed prior to or during the declared fire danger period, Jemena will disconnect the power running through these private lines on those days declared as Total Fire Ban by the local Fire Control Authority i.e. CFA.

To discuss this matter in more detail or advise us of your progress, please contact our Asset Inspection Co-Ordinator, Joanne Burleigh at Zinfra on:

Office: (03) 9173 6519;

Mobile: 0419 402 749;

Email: JENPOEL@zinfra.com.au

If you do not contact our Asset Inspection Coordinator within 30 days from the date of this letter, this matter may be referred to the government authority, Energy Safe Victoria (ESV) for further direction.

Regards,

[Redacted Signature]

Network Integrity and Performance Manager



We speak your
language
Call 13 14 50

Attachment 5: Final Notice Letter '3'



For all enquiries please contact our service partner Zinfra
T: (03) 9173 6519
M: 0419 402 749
E: JENPOEL@zinfra.com.au



Jemena Electricity Networks (Vic) Ltd
PO Box 16182, Melbourne, VIC 3000
T: 1300 536 362
www.jemena.com.au

Date:

To the Occupier
Address
Address

Dear Customer,

Reference No. XXXXXX

Final Reminder: Your Private Overhead Electric Line (POEL) at XXXXXXXXXXXXXXX, is Defective

Jemena Electricity Networks (Vic) Ltd (Jemena) is the electricity distribution company that manages, operates and maintains the electricity network for 330,000 properties across Melbourne's north-western suburbs. Zinfra who inspect the electricity network assets is our services partner.

We own and maintain the poles, wires, meters and the technology that supplies electricity to your home.

If you are a tenant, please forward this notice to the landowner or managing agent immediately.

You were initially sent a letter advising you of your Private Overhead Electric Lines (POEL) defects on **xx/xx/xxxx**.

A reminder letter was sent on **xx/xx/xxxx**, restating the need for you to rectify the defects to your POEL.

As this is your Final reminder the defective POEL has been referred to our Installation Compliance department for management.

We must remind you that if the repairs to your POEL are not completed during Country Fire Authority declared Total Fire Ban days, Jemena must disconnect the supply of electricity to your defective Private Overhead Electric Line.

To discuss this matter in more detail or advise us of your progress, please contact our Asset Inspection Co-Ordinator, Joanne Burleigh at Zinfra on:

Office: (03) 9173 6519;

Mobile: 0419 402 749;

Email: JENPOEL@zinfra.com.au

The status of your POEL may be referred to the government authority, Energy Safe Victoria (ESV) for further direction.

Regards,

[Redacted Signature]

Network Integrity and Performance Manager



We speak your
language
Call 13 14 50

Attachment 6: Bushfire Safety for Private Overhead Electric Lines (POEL) Customers



Jemena Electricity Networks (Vic) Ltd
ABN 82 064 651 083
567 Collins Street
Melbourne VIC 3000
PO Box 16182
Melbourne VIC 3000
T 1300 536 362
www.jemena.com.au

Date

To the Owner/Occupier

Customer Address,

City, State, Post Code

BUSHFIRE SAFETY Is Everyone's Responsibility

Dear Customer,

As you would be aware, you have a private powerline on your property. Although Jemena Electricity Networks (Jemena) owns and maintains the network of powerlines in your area, the private powerline on your property is your responsibility

This responsibility involves ensuring important safety standards are met and helping to reduce the risk of bushfires around your home and in your local community.

As an essential part of your preparation for this year's bushfire season, please find enclosed two important safety brochures, Private Overhead Electric Lines – Safety and Responsibility and Trees, Powerlines and Your Property. We strongly encourage you to read these brochures as they outline your rights and responsibilities regarding all Private Overhead Electric Lines (POEL) located on your property.

Failure to ensure your private powerline is safe and meets regulatory standards could result in your power being disconnected on total fire ban days.

If you no longer have a private powerline, please contact us at customerrelations@jemena.com.au or on 1300 536 362. This will ensure our records are updated and that you no longer receive unnecessary information material.

Jemena is committed to a safety first approach and we utilise a range of bushfire mitigation strategies to improve the safety and security of rural communities. These include; ongoing maintenance programs to ensure network safety and reliability; extensive overhead powerline inspections and POEL awareness activities; notification to POEL customers required to rectify defects; annual inspections, pruning and removal of vegetation from powerlines; and close liaison with the Country Fire Authority.

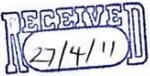
If you have any Bushfire Safety queries or wish to discuss specific details about your POEL please call our Senior Asset Performance and Bushfire Mitigation Engineer, [REDACTED].

Fire safety is everyone's responsibility and Jemena thanks you for your support in better protecting our community from the threat of bushfires this summer.

Yours sincerely,

[REDACTED]
General Manager Asset Strategy Electrical
Jemena Electricity Networks

Attachment 7: Letter Form ESV dated 21 April 2011 in relation to POEL Line Defects – Customer Referral




21 April 2011

Dr [REDACTED]
 Executive General manager Assets and Investments
 Jemena Electricity Networks
 Locked Bag 7000
 MOUNT WAVERLY VIC 3149

Dear [REDACTED]

PRIVATE OVERHEAD ELECTRIC LINE DEFECTS - CUSTOMER REFERRAL

As part of complying with the Electricity Safety Act 1998 Section 83B, Inspection of private overhead lines and the Electricity Safety (Bushfire Mitigation) Regulations 2003, Jemena Electricity Networks notify their customers of defects associated with their private overhead electric line (POEL) after an inspection has taken place.

Currently Jemena Electricity Networks refers these customers to Energy Safe Victoria (ESV) for follow up action when the notified defects are not resolved with the customer, within the timeframes allowed by Jemena Electricity Networks.

To streamline this process, please do not refer customers to ESV if they fall into the categories listed below.

- the customer has engaged a registered electrical contractor (REC);
- there has been a customer application for an electrical pit installation;
- the customer is waiting for an electrical pit installation;
- the customer and/or REC is waiting for SWER and/or sub isolations;
- the customer and/or REC is waiting for a truck appointment;
- truck appointments have been cancelled by the electricity company and the REC has made an application for a new date;
- abolishment request by the customer or their representative, has been made to the retailer or the electricity distributor;
- the property is identified as 'the occupier';
- the property is identified as 'site vacant';
- the property is identified as 'no responsibility';
- where continuous services exist;
- where minor defects exist, including height requirements as per attached and customer has been notified; and/or
- spreaders were not fitted previously.

Further clarification of situations, as mentioned in the above points:

Customer has engaged a REC
 The REC engaged should be progressing the work to rectify the defects at a reasonable rate, taking into consideration the factors that may influence progress such as weather, remote location, availability of licensed electrical inspectors, etc.

Energy Safe Victoria
 ABN 27 462 247 657

Level 3 Building 2
 4 Riverside Quay
 Southbank Victoria 3006

PO Box 262
 Collins Street West
 Victoria 8007

Phone (03) 9203 9700
Fax (03) 9686 2197
Web www.esv.vic.gov.au



Where continuous services exist

A situation where the service line enters the property and there is no physical break in the line on the first private pole or on the property. The line continues until it is connected to an electrical connection device, such as a fused mains connection box or mains junction box. If the electricity company is deemed to have installed the line and if there are no breaks, the line is the asset of the electricity company and therefore the line is a service line.

Minor defects exist and customer has been notified

Where defects have been identified by the electricity company inspector and are classified as minor and would not create an unsafe condition before the next inspection cycle (as determined by the inspector), the customer is to be notified of the defects and disconnection if repairs are not completed.

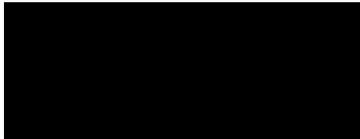
Spreaders

Where an existing line is identified as 'missing spreaders' this can be referred to ESV. Where a spreader has been fitted previously and is broken or dislodged from the line or if there are no spreaders and no evidence of clashing conductors, then the line is considered to be constructed in accordance with the requirements at that time. Current regulations require spreaders to be fitted at time of construction for a new private overhead electric line or when alteration, maintenance or repair is carried out on the line.

Please implement the necessary changes to your customer referral process to reflect this requirement. It is expected that any other defects will continue to be notified to ESV under the same conditions as previously.

If you require further information, please contact 

Yours sincerely





RECOMMENDATION FOR SAFE HEIGHTS OF PRIVATE OVERHEAD ELECTRIC LINE

This guide is to be used by Energy Safe Victoria (ESV) staff and power company staff and contractors in determining whether a private overhead electric line (POEL) is deemed to be unsafe, when that line has been inspected under the requirements of the Electricity Safety Act and the Electricity Safety (Bushfire Mitigation) Regulations for ground clearance and then referred to ESV by the electricity distribution company (DB).

Table is for insulated and unsheathed live conductors/neutral screened cables:

Area use	Areas not used by vehicles		Areas used by vehicles		
	Pedestrian use	No pedestrian use	Residential driveways	Rural driveways. cars and small trucks*	Rural driveways and land used by large trucks** and agricultural machinery
Recommended min safe height	2.6 metres	2.4 metres	3.6 metres	3.6 metres	4.6 metres
Height required by AS/NZS 3000-2007	3.0 metres	3.0 metres	4.6 metres	4.6 metres	4.6 metres

*Small Trucks- those that do not require an endorsed licence for their use.

**Large Trucks- those that require the driver to hold, the appropriate VicRoads endorsements for that vehicle.

Rational for recommendation of height

Heights for areas, not used by vehicles, is based on an average person using the areas for pedestrian use, who will from time to time carry objects above their heads or objects in long lengths and the likely-hood of the line being contacted is high. Where there is no pedestrian use it is far less likely that the line will be struck.

For areas used by vehicles, the statutory heights of service lines were considered. The kerb height of a moving van, that did not require the driver to hold endorsements to operate, were considered.

In areas where large trucks and agricultural machinery can be used, then minimum safe line heights should be in accordance with the rules.

Statutory Service Heights (for reference):

Year	Service Cable Height
Pre 1960's	9 Feet (2.7m)
1960's	10 feet (3.0m)
1972	3.0 metres
Approx. 1975	3.6 metres
1980	3.9 metres
1999	4.6 metres

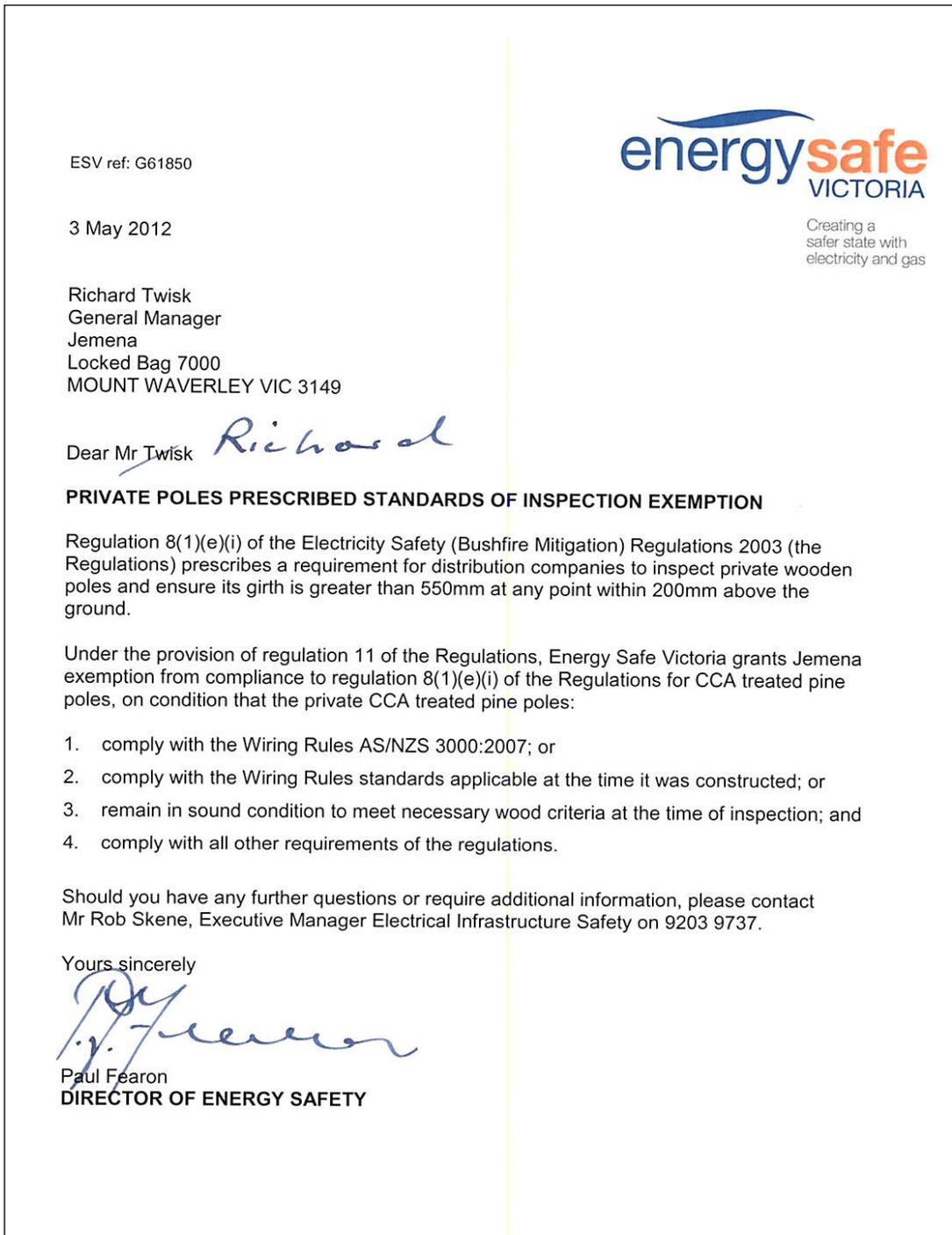
Energy Safe Victoria
ABN 27 462 247 657

Level 3 Building 2
4 Riverside Quay
Southbank Victoria 3006

PO Box 262
Collins Street West
Victoria 8007

Phone (03) 9203 9700
Fax (03) 9686 2197
Web www.esv.vic.gov.au



Attachment 8: ESV Letter dated 3 May 2012 – Private Poles Prescribed Standards of Inspection Exemption

BFM26: Operational Contingency Plans Procedure

Purpose

This procedure describes the process for actions that will be taken to secure the safety of network assets during declared fire danger periods and on days of total fire ban.

Scope

This procedure covers the operational and maintenance plans that will take effect during a fire danger period, immediately preceding and on days of total fire ban to secure the safety of network assets.

References

Operations Manual: Switching and Earthing – Emergency (SEL PR 0001, Section 03).

Definitions

TFB Total Fire Ban.

Procedure

Disconnection of Feeders

- Operational Contingency Plans for the disconnection of feeders will come into effect where requested by emergency services or where the safe operation of the feeder can no longer be assured.
- The Control and Dispatch Electricity Manager will implement contingency plans for disconnection of feeders where required.
- Disconnection of supply to an area has serious implications and can only be considered as a last resort.
- Consideration must be given to retaining supply to essential services such as:
 - Hospitals;
 - Water supply;
 - Communication facilities, radio transmitters; and
 - Life support systems

Staffing During Days of High Fire Risk

- Call Centre and System Control functions are always operational. Additional personnel can be called in if more are required;
- An Emergency Management Team may be established at the (Melbourne) Coordination Centre and its formation communicated throughout JEN; and
- Remote depots may be manned under the following conditions:
 - If the situation is critical due to weather conditions;
 - If requested by the Coordination Centre;
 - While a bushfire or other disaster is in progress; and
 - If in the opinion of the Control and Dispatch Electricity Manager or Duty Officer, the depot needs to be staffed.

Operational Bushfire Preparedness

JEN has extensive detailed procedures for the operational behaviour and maintenance strategies that are expected during emergencies and specifically fire events. These procedures are detailed in the Operations Manual (SEL PR 0001).

Operation of REFCL/ASC during the fire danger period

The REFCL/ASC may be operated in one of two modes, that is, enabled and disabled. Refer to attachment 5 for the appropriate mode at each zone substation.

During the fire danger period the Bushfire Mode will be enabled where Fault Current Limiter technology is available and in service to minimise the risk of fire ignition due to earth faults on feeders where the technology is available. The system will be tested to ensure that the required capacity is available during the fire danger period.

The REFCL/ASC will be enabled during the declared fire danger period and disabled for the remainder of the year.

Accountability: Senior Asset Performance and Bushfire Mitigation Engineer.

Total Fire Ban Day Permits

In some cases field staff or contractors will be required to perform work in the open using a naked flame on TFB days. This work could include supply connection, fault works, emergency cable jointing, welding, gas flame cutting, grinding, and shrink sleeve heating. It should be noted that it is preferable to defer this work on TFB days where possible.

Permits are provided to all JEN work crews to allow this work to proceed where necessary. Work crews should have copies of the relevant permits that outline the requirements and the contact requirements prior to performing the work.

The electricity contractors working for JEN will obtain their own permits for work in the open using a naked flame on TFB days in the JEN area. More details are included in BFM8 – Coordination with Other Authorities Procedure and these permits are located on the intranet.

Accountability: Senior Asset Performance and Bushfire Mitigation Engineer.

Where Preventative Program Works are Incomplete

In the event that preventative program works are incomplete, the following actions shall be taken on days of total fire ban:

- An assessment will be made by the Senior Asset Performance and Bushfire Mitigation Engineer as to the nature of the risk presented by the incomplete works.
- Consideration will be given to the following:
 - Disconnection of the feeder or portion of the feeder;
 - Placing observers at the site or sites of the incomplete works; or
 - No specific action required.

The latter could be appropriate in situations such as where a pole requiring replacement is situated in a location that is too wet for access

Accountability: Senior Asset Performance and Bushfire Mitigation Engineer.

Days of TFB

Operational Procedures to follow a TFB Declaration

Declaration during Office Hours

The following actions are to be taken in the event of a TFB being declared within the JEN area during office hours.

The Electricity Maintenance Team Leaders, in conjunction with the relevant Contract Coordinators, Maintenance Planners and Coordination Centre shall determine whether any prearranged interruptions to supply (HV or LV) should proceed.

In general, shutdowns should not proceed on the JEN supply networks in the HBRA unless the risk of not proceeding (i.e. making an asset fire safe) is greater than the potential risk of proceeding with the works.

In the event of prearranged interruptions proceeding, consideration should be given to restricting the duration of the interruption to allow customers to access supply at the earliest opportunity.

The Duty Officer (DO) in conjunction with the Control and Dispatch Electricity Manager will:

- Attempt to notify all customers connected to a non-fire safe POEL of their pending disconnection as soon as possible following declaration of the day of TFB, preferably the night before;
- Arrange for the disconnection of all non-fire safe POEL by 10:00 hours on the day of TFB. Efforts should be made to coordinate this through the Resource Coordinators;
- Arrange for suppression or enabling of the required feeder protection (as listed in Appendix C for each site) with Coordination Centre before 10:00 hours; and
- Confirm with the Senior Contract Coordinator that no code PT1 vegetation (vegetation in contact with bare assets) is outstanding.

The DO will confirm with Team Leaders to ensure all actions have been initiated.

Declaration after Office Hours

The following actions are to be taken in the event of a TFB being declared within the JEN area after office hours.

If necessary, the DO in conjunction with Electricity Maintenance Team Leaders, Contract Coordinators, Maintenance Planners and the Coordination Centre shall determine whether any prearranged interruption to supply (HV or LV) should proceed.

In general, shutdowns should not proceed in HBRA unless the risk of not proceeding (i.e. making an asset fire safe) is greater than the potential risk of proceeding with the works. In the event of prearranged interruptions proceeding, consideration should be given to restricting the duration of the interruption to allow customers to access supply at the earliest opportunity.

The DO will –

- Attempt to notify all customers connected to a non-fire safe POEL of their pending disconnection as soon as possible following declaration of the day of TFB, preferably the night before;
- Advise the Resource Coordinators at Melbourne of all non-fire safe POEL which are to be disconnected by 10:00 hours on the day of TFB;
- Arrange with the Network Controllers for the suppression or enabling of the required feeder protection.
- All suppressions are to be completed by 10:00 hours. The Network Controller is to advise the DO of any prearranged interruptions to supply; and
- Confirm with the Vegetation Contract Coordinator, or via the Network Management Drive, that no code PT1 vegetation (vegetation in contact with bare assets) is outstanding.

A record of all outstanding POELs that need to be disconnected or are 'in contact' with vegetation is maintained on the Network Coordination Centre intranet page by the Senior Asset Performance and Bushfire Mitigation Engineer.

Status Report of Actions Taken

The checklist in Attachment 4 has been prepared to set out matters that must be recorded and communicated on days of TFB. When completing the checklist identify the fire district, by checking the appropriate box/s at the top of the form. The North Central fire district only contains 39 poles and therefore if a TFB is declared in this district only, auto reclose suppression must be applied to one (1) ACR on the COO11 feeder only; that is ACR 18323 opposite 1925 Mickleham Road, north of Mt Ridley Road. This ACR must be suppressed if either (or both) of the fire districts (Central and North Central) is declared with a TFB. The other devices listed in Tables 1 and 2 of Attachment 3 must be suppressed when a TFB day is declared in the Central fire district only.

The North Central fire district starts at pole A018437 outside 410 Old Sydney Road Mickleham, which is 6 poles north of Carawa Drive. Comprising of 23 Ausnet poles supporting JEN assets, one (1) private pole and 15 JEN distribution poles.

The following key personnel are involved in either the implementation of the 'Status Report/Contingency Plans' (Attachment 4) and/or the decision making process to reinstate the network/POEL/vegetation management back to 'normal' operation.

- Duty Officer (**DO**);
- Duty Manager (**DM**);
- Control and Dispatch Electricity Manager;
- Electricity Maintenance Team Leaders (**EMTL**);
- System Controller (**SC**); and
- Management Team (**MT**) consisting of:
 - Electricity Maintenance Manager;
 - Network Integrity and Performance Manager; and
 - Senior Asset Performance and Bushfire Mitigation Engineer.

Once precautionary measures are in place the following management personnel must be advised by either the EMTL or the DO:

DURING BUSINESS HOURS (normally by CCOM via email)	AFTER HOURS (normally DO via Telephone* Immediately or email** the next working day)
MT	DM*
DM	MT**
DO	CCOM**

The notification should occur before 12:00 hours on the day of TFB and include the following:

- Confirmation that feeder reclose suppressions have been completed;
- The times and location of any proceeding prearranged construction work;
- The times and location of any proceeding maintenance or replacement work;
- The location of any POEL disconnected; and
- The locations and actions for any outstanding code PT1 (in contact) vegetation.

In the case of TFB days on weekends and public holidays the report should be produced on the next working day.

The Deployment and Cessation of TFB Day Protection Schemes

Generally, the deployment and restoration of full auto re-close protection will apply from 10:00 hours of the TFB day and will not be rescinded until after the official cessation of TFB day restrictions (midnight).

In cases where the period of extreme fire danger weather has not yet arrived or has passed, due to an early or late cool change, a decision may be considered to delay the deployment, or early cessation of TFB day protection schemes. Such a decision will only be made following consultation with the Emergency Response Manager or Control & Dispatch Electricity Manager and the Duty Area Coordinator Manager, referencing the Bureau of Meteorology data available.

The CFA uses a Fire Danger Index (**FDI**) of 35 as the trigger for declaring a TFB. The recommendation for the control room to consider restoring protection schemes when the FDI is at '30' and trending downwards.

To track the FDI, JEN utilises an internet page set up by Weatherzone (<http://clients3.theweather.com.au>), where the most relevant weather observation site has been determined to be Melbourne Airport.

The BOM website can provide additional information regarding the fire danger index – <http://www.bom.gov.au/vic/forecasts/fire-map.shtml>

The FDI can then be 'quoted' on the 'Operational Contingency Plan Checklist' as part of the justification to restore the network to 'normal'.

However, this is to be used as a guide only and the final decision in relation to the deployment/restoration of full protection schemes on designated feeders and reconnection of POEL will be at the discretion of the MT during business hours or the DO/DM after hours as other factors may influence any decision.

In the event of continuous days of TFB, the DO, in conjunction with DM and SC and/or the MT, should determine the appropriate time for reconnection of POEL and deployment/restoration of protection schemes.

Restoration of Supply after a Protection Operation

If protection operates during a TFB day causing an HV outage (or LV on the JEN supply networks in the HBRA) the whole of the affected feeder/circuit must be patrolled as per Operational Procedure OP-G6-2.

Operational Contingency Planning

General

On every TFB day, an Operational Contingency Plan shall be completed whether there be action required or not.

In cases where the following items exist on the network on a day of TFB, the actions taken to mitigate any fire risk must be documented in the Operational Contingency Plan:

- Outstanding code PT1 vegetation;
- Outstanding defective non-fire safe POEL that requires disconnection; and
- Overdue maintenance items that cannot be re-inspected.

The Operational Contingency Plan may include, but is not limited to, the following actions:

- The reasons/discussions involved in any decisions resulting in any delay or early cessation of TFB day protection schemes;
- Disconnection, re-inspection or 'make safe' of overdue maintenance items or POELs;
- Emergency cutting of any code PT1 (in contact) vegetation;
- On-site monitoring of vegetation and assets, if required; or
- A risk assessment of the potential for fire ignition weighed up against the impact of disconnection of supply

The DO will initiate a risk assessment of the line affected and prepare the Operational Contingency Plan in conjunction with the MT/DM.

The disconnection of distribution lines on days of TFB may have serious implications and this will be considered as a last resort, and will be referred to the MT for approval. Where it is likely that a distribution line will need to be disconnected on a day of TFB efforts will be made to contact affected customers where possible.

Essential and emergency services will also be advised of any impending disconnection. Defective non-fire safe POELs shall be disconnected or re-inspected as per the information provided on the Network Management drive.

Document Review

Attachments 1-5 shall be reviewed annually before the commencement of the fire danger period.

Attachments

1. List of Key Personnel.
2. Contact Details of Other Organisations.
3. Protection Settings for TFB Days.
4. Status Report/Contingency Plans – (Example).
- 5: Rapid Earth Fault Current Limiter settings for Fire Danger Period

Attachment 1: List of Key Personnel

POSITION	CONTACT NAME
Managing Director	██████████
General Counsel/Company Secretary	██████████
General Manager Asset Management – Electricity Distribution	██████████
General Manager Field Services Electricity	██████████
Network Integrity and Performance Manager	██████████
General Manager Customer Service	██████████
Control and Dispatch Electricity Manager	██████████
Senior Asset Performance and Bushfire Mitigation Engineer	██████████
Operations Manager – Services South	██████████
Senior Contract Coordinator	██████████
Resource Coordination	Coordinator on Duty – 24 Hours
System Control	Controller on Duty – 24 Hours
Duty Officer	Office on Duty – 24 Hours
Duty Manager	Manager on Duty – 24 Hours

Note – After hours contact numbers for all personnel via Coordination Centre.

Attachment 2: Contacts Details of Other Organisations**Emergencies**

EMERGENCIES	TELEPHONE
Country Fire Authority	000
Department of Environment and Primary Industries	000
Metropolitan Fire Brigade	000
Vic Fire (Media Issues and Information)	A/H or B/H 9887 7766

Normal Situations

AUTHORITY	TELEPHONE
Country Fire Authority – Headquarters	A/H or B/H 9262 8444
Victorian Bushfire Information Line (VBIL)	1800 226 226
Metropolitan Fire Brigade – Duty Commander	9665 4501
Department of Environment, Land, Water and Planning	13 61 86

Attachment 3: Protection Settings for TFB Days

Changes to feeder arrangements before and during TFB and Code Red days may require an adjustment to feeders settings. Feeders that must have auto re-close suppressed on days of Total Fire Ban and Code Red.

Table 1. Feeder – Reclose Suppression

CFA Region / District	Zone Substation	NER Installed	Feeder Name	Device Name	Suburb of Feeder Section in HBRA	Protection Setting – Normal	Protection Setting – TFB days and Code Red days
Central	Airport West	Yes	AW4	AW4 – Feeder CB	Tullamarine and Melbourne Airport	Inverse time over-current	Suppress Auto Reclose
Central and North Central	Coolaroo	Yes	COO11	COO11 – Feeder CB	Oaklands Junction, Yuroke, Mickleham	Inverse time over-current	Suppress Auto Reclose
Central and North Central	Coolaroo	Yes	COO21	COO21 - Feeder CB	Oaklands Junction, Yuroke, Mickleham	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY11	SBY11 – Feeder CB	Sunbury, Riddells Creek	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY14	SBY14 – Feeder CB	Sunbury, Clarkefield, Wildwood	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY31	SBY31 – Feeder CB	Sunbury	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY32	SBY32 – Feeder CB	Sunbury, Gisborne South	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY33	SBY33 – Feeder CB	Sunbury	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST11	ST11 – Feeder CB	Craigieburn, Wollert	Inverse time over-current	Suppress Auto Reclose
Central	Kalkallo	Yes	KLO13	KLO13 – Feeder CB	Craigieburn, Mickleham, Wollert	Inverse time over-current	Suppress Auto Reclose
Central	Kalkallo	Yes	KLO21	KLO21 – Feeder CB	Craigieburn, Mickleham, Wollert	Inverse time over-current	Suppress Auto Reclose
Central	Kalkallo	Yes	KLO22	KLO22 – Feeder CB	Craigieburn, Mickleham, Wollert	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST32	ST32 – Feeder CB	Craigieburn, Mickleham	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST34	ST34 – Feeder CB	Somerton	Inverse time over-current	Suppress Auto Reclose
Central	Sydenham	Yes	SHM11	SHM11 – Feeder CB	Sydenham, Diggers Rest	Inverse time over-current	Suppress Auto Reclose
Central	Sydenham	Yes	SHM12	SHM12 – Feeder CB	Sydenham, Calder Park	Inverse time over-current	Suppress Auto Reclose
Central	Sydenham	Yes	SHM14	SHM14 – Feeder CB	Sydenham, Hillside, Plumpton	Inverse time over-current	Suppress Auto Reclose
Central	Sydenham	Yes	SHM21	SHM21 – Feeder CB	Sydenham	Inverse time over-current	Suppress Auto Reclose
Central	Tullamarine	Yes	TMA14	TMA14 – Feeder CB	Melbourne Airport	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST22	ST22 – Feeder CB	Somerton	Inverse time over-current	Suppress Auto Reclose

ACRs that must have auto-reclose suppressed on days of Total Fire Ban and Code Red days.

Table 2. ACR – Reclose Suppression

CFA Region / District	Zone Substation	NER Installed	Feeder Name	Device Name	ACR Address	Suburb of Feeder Section in HBRA	Protection Setting – Normal	Protection Setting – TFB days and Code Red days
Central	Airport West	Yes	AW9	11377	Mickleham Road, north of Hillcrest, 5 K7	Attwood	Inverse time over-current	Suppress Auto Reclose
Central	Airport West	Yes	AW12	10050	Sharps Rd 1W Dawson Street, 15 G3	Tullamarine	Inverse time over-current	Suppress Auto Reclose
Central	Airport West	Yes	AW14	10059	Springbank Street, 5 G9	Tullamarine and Westmeadows	Inverse time over-current	Suppress Auto Reclose
Central	Broadmeadows	Yes	BD1	14432	Barry Road, 2W Pascoe Vale Rd	Meadow Heights	Inverse time over-current	Suppress Auto Reclose
Central	Broadmeadows	Yes	BD8	18795	112 Barry Road	Campbellfield	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO11	10002	Mickleham Road P085, 178 J6	Greenvale, Yuroke	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO11	10003	Oaklands Road P34B, 177 J5	Oaklands Junction	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO11	16283	Mickleham Road south Somerton Road, 178 J7	Greenvale	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO11	16722	Somerton Road west of Mickleham Road, 178 J7	Greenvale, Oaklands Junction	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO11	18077	Somerton Road west of Oakland Road, 177 J6	Bulla	Inverse time over-current	Suppress Auto Reclose
Central and North Central	Coolaroo	Yes	COO11	18323	Mickleham Road, north Mt Ridley, Key Map Page 8	Mickleham	Inverse time over-current	Suppress Auto Reclose
MFB	North Heidelberg	Yes	NH8	10225	Warren Road, 20 E11	Viewbank	Inverse time over-current	Suppress Auto Reclose

CFA Region / District	Zone Substation	NER Installed	Feeder Name	Device Name	ACR Address	Suburb of Feeder Section in HBRA	Protection Setting – Normal	Protection Setting – TFB days and Code Red days
Central	Sunbury	Yes	SBY11	55612	Riddell Road north west of Riddell Road P59, 361 G8	Riddells Creek	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY11	56604	Spavin Drive, 362 B11	Sunbury	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY14	56266	Sunbury Road, 382 J6	Clarkefield, Wildwood	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY32	51070	Gap Road, 381 E3	Gisborne South	Inverse time over-current	Suppress Auto Reclose
Central	Sydenham	Yes	SHM11	51635	Old Calder Freeway, 351 K2	Diggers Rest	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST22	14657	Hume Highway south of Kingswood Drive, 387 C9	Mickleham	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST22	16150	Hume Highway south of Homemaker-Hume SS, 387 B4	Wollert	Inverse time over-current	Suppress Auto Reclose
Central	Somerton	Yes	ST32	12417	Craigieburn Road west of Clovelly Drive, 386 J9	Mickleham	Inverse time over-current	Suppress Auto Reclose
Central	St Albans	N/A	SA6	33273	Keilor-Melton Road, east of Sunshine Road.	Keilor Noth	Inverse time over-current	Suppress Auto Reclose
Central	Sunbury	Yes	SBY33	53059	Vineyard Road, south of McDougal Rd.	Sunbury	Inverse time over-current	Suppress Auto Reclose
Central	Coolaroo	Yes	COO21	15519	Elphinstone Boulevard, west of Glencairn Drive.	Greenvale	Inverse time over-current	Suppress Auto Reclose

LBRA feeders with sections in the HBRA that are protected by a fuse.

Table 3. Feeder Spur – Fuse Protection

CFA Region / District	Zone Substation	NER Installed	Feeder Name	Device Name	Address	Protection Setting – Normal	Protection Setting – TFB days and Code Red days
MFB	Airport West	Yes	AW4	21629, 15901	Tullamarine and Melbourne Airport	Fuse – Full Range	Fuse – Full Range
MFB	St Albans	Yes	SA2	21517, 21061, 23459	151 – Spans Keilor, Melbourne Airport	Fuse – Full Range	Fuse – Full Range
MFB	St Albans	Yes	SA6	50091, 50092, 50093	33 – Spans Keilor North	Fuse – Full Range	Fuse – Full Range

Attachment 4: Status Report/Contingency Plans – (Example)

Memorandum
Total Fire Ban Day Checklist and Implementation of JEN's Contingency Plan



Security:	Internal	Date:	Click here to enter a date.
To:	"JEN TFB List" email distribution list in Outlook		
From:			
Dept./Group:			
Subject:	Total Fire Ban Day Checklist and Implementation of JEN's Contingency Plan		

This TFB checklist applies to the Fire District/s (please check all that apply):

Central
 North Central

CONFIRMATIONS AND ACTION	RESP. PERSON	Done Y/N	CONTINGENCY PLAN FOR ANY UNCOMPLETED ACTIONS - JEN
Auto Reclose Suppression: Confirm with Network Coordination all feeders and ACR 's, applicable to the fire district/s identified above and listed in Attachment 3 of BFM26 in the Bushfire Mitigation Plan, have been suppressed by 10am or before FDI reaches 30, whichever occurs first.		YES	
Prearranged Construction Work: Confirm all prearranged work cancelled (if deemed necessary) after Consultation with Team Leaders Field Services		YES	
Maintenance or Replacement Works: Confirm with TFB Maintenance Spreadsheet that no defective (priority 6mths or less) assets or replacement works are overdue or have been inspected or mitigated by 10am		YES	
Defective POEL: Confirm with TFB POEL Disconnect Spreadsheet that no defective POELs are outstanding or POELs have been disconnect by 10am.		YES	
Vegetation: Confirm with TFB Vegetation Spreadsheet that no outstanding vegetation is in contact (code PT1, previously code 55's) with assets or mitigated action by 10am.		YES	

The Duty Officer must confirm all actions and advise MT/DM that all contingency plan actions (if required) have been implemented by 10:00 hours on the day of the TFB; and immediately circulate the complete Status Report.

Attachment 5: Rapid Earth Fault Current Limiter Settings for Fire Danger Period

The below table lists the supply areas within JEN that have either REFCL/ASC technology available and in service to limit fault current when enabled.

Supply Area	Protection Technology	Protection Settings – During Fire Danger Period	Protection Settings – Outside Fire Danger Period
Sydenham	ASC	ASC Enabled Mode	ASC Disabled Mode

BFM27: Fault Energy Management Procedure

Purpose

This procedure describes the process for managing fault energy on days of total fire ban.

Scope

This procedure covers the actions to be taken to manage fault energy on days of total fire ban.

References

Nil.

Definitions

Nil.

Procedure

Fault Energy Management

Sub – Transmission Feeders

Single shot auto re-close is applied on all 66kV subtransmission lines in the JEN network. It is a JEN requirement not to suppress auto re-close on these 66kV subtransmission lines on days of total fire ban. This requirement has been made on the basis that the lines are protected by high-speed protection schemes such as pilot wire, current differential and distance protection, all of which will detect and quickly isolate fire risk faults.

Management of Fault Energy Levels

We propose to amend the section below to cover the 'Normal' REFCL operating mode in addition to 'Bushfire Mode':

Jemena is employing the following methods to limit the amount of fault energy and thus reduce the risk of fire ignition:

- Fitting of neutral earth resistors at zone substations;
- Fitting of Rapid Earth Fault Current Limiters (**REFCL**) and Arc Suppression Coils (**ASC**) at zone substations;
- During the fire danger period the Bushfire Mode will be enabled on Rapid Earth Fault Current Limiter technology to ensure the 'required capacity' for feeders is achieved where the technology is available and in service. For all other times the Normal Mode will be employed (refer to BFM18 for details);
- Operation of HV system with open bus ties;
- Suppression of auto-reclose operations of HV feeder circuit breakers and ACRs;
- Applying current limiting fuses e.g. full range powder filled type; and
- Operation of high-speed protection systems.

The status of the relevant protection arrangements at zone substations supplying feeders on the JEN supply networks in the HBRA is contained in this section.

The Coordination Centre will limit fault energy by applying the suppression of auto reclose on feeders and ACRs listed in Attachment 3 of BFM26.

When the Auto Reclose function is enabled, under Normal (not on total TFB or Code Red days) protection operation, the Auto Reclose scheme is designed to operate as follows:

- A single auto reclose attempt for all CB operations (fast trip setting); and
- Up to three auto reclose attempts for ACR operations (combination of fast and slow trip settings dependent on each feeder protection co-ordination).

The Auto Reclose of an Automatic Circuit Recloser (**ACR**) or a Circuit Breaker (**CB**) is a function that can automatically close an ACR or a CB after it has opened due to a fault. The 'Suppression of Auto Reclose' is when this function is disabled and an ACR or a CB cannot automatically close after it has opened due to a fault, that is, no attempts to reclose are made.

No other protection setting changes are required when auto re-close suppression is applied.

Procedures for the implementation of these measures for Normal, TFB and Code Red days are included in BFM26.

Accountability: Secondary Plant Manager.
Control and Dispatch Electricity Manager.

Attachments

Nil.



Jemena Electricity Networks (Vic) Pty Ltd