

## **Jemena 2017-2018 Systems Audit – Bushfire Mitigation (CM-7181) Audit Report**

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## Document information

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## Approval

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## SUMMARY

This report is based on the findings from the Jemena 2017-18 Systems Audit – Bushfire Mitigation, carried out during the period 11 – 12 September 2017 and the desktop assessment carried out prior to the audit. The audit was conducted at the Jemena Broadmeadows office and the audit findings were presented at the exit meeting held on 12 September 2017, together with an overview of the findings requiring further action.

The audit was completed in accordance with ESV's Policies and Procedures and the "BFM System Audit Plan" which was sent to Jemena prior to the audit.

A list of the documents and records obtained during the audit is attached to this report. These will be retained by ESV in a safe, secure manner to substantiate the audit findings. Additional information was provided by Jemena during this audit which is not necessarily reproduced nor captured by the documentation listed in this report.

The audit assessed Jemena system for managing their Bushfire Mitigation Index (BMI) including the prioritisation of maintenance items, the management and control of risk based programs and how they manage changes to the regulations such as codified areas and Rapid Earth Fault Current Limiters (REFCLs).

The audit found that Jemena has comprehensive processes and procedures to manage their BMI, asset replacement and delivery of bushfire programs.

The audit found 8 Opportunities for Improvement (OFIs) and 1 minor noncompliance (MNC). The OFIs relate to improvements to definitions to ensure procedures are clear and understood by a reader. Improvements also relate to creation and improvement of procedures for undertaking appropriate risk analysis of asset failures and risk assessments. The MNC found related to steps that may be required to prevent further asset failures by re-inspecting past inspections.

The audit team was impressed with all of the personnel interviewed who were well prepared for the audit with appropriate documentation.

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## Contents

Summary	7
<b>1 Introduction</b>	<b>11</b>
1.1 Purpose	11
1.2 Background	11
1.3 Scope	11
1.3.1 Exclusions	11
1.3.2 Audit Team	11
1.4 Description	11
<b>2 Method</b>	<b>11</b>
2.1.1 Audit grading	12
<b>3 Results and Discussion</b>	<b>12</b>
3.1 Referenced Documentation	12
3.2 Audit Description	12
3.3 Desktop Review	12
3.4 Audit Findings - Summary	13
<b>4 Conclusion</b>	<b>15</b>
<b>5 Recommendation</b>	<b>15</b>
<b>Appendix A: Document Register</b>	<b>16</b>

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## 1 INTRODUCTION

### 1.1 Purpose

The purpose of the audit was to confirm that Jemena has appropriate processes and procedures in place to allow it to manage its Bushfire Mitigation Index (BMI) including the prioritisation of maintenance items, the management and control of risk based programs and how they manage changes to the regulations such as codified areas and Rapid Earth Fault Current Limiters (REFCLs).

### 1.2 Background

ESV is the independent technical regulator responsible for electricity, gas and pipeline safety in Victoria. ESV was created under the Energy Safe Victoria Act 2005, and has objectives, functions and responsibilities conferred on it under this Act and the Electricity Safety Act 1998, Gas Safety Act 1997 and Pipelines Act 2005 (the Acts). The role of ESV is broad and includes regulating the design, construction and maintenance of electricity, gas and pipeline networks across the State. ESV has a team of officers who audit electrical and gas safety in businesses across Victoria.

ESV is responsible for reviewing Major Electricity Company (MEC) and Specified Operator performance in meeting the requirements of the Electricity Safety (Bushfire Mitigation) Regulations 2013. The audits ESV conducts against these regulations provides an insight into the performance in mitigating bushfire risk.

### 1.3 Scope

The audit scope involved assessing Jemena system for managing its BMI. This included reviewing its internal processes and procedures, assessing how the system manages the BMI and what governance and assurance is in place.

#### 1.3.1 Exclusions

The audit did not include any field visits.

#### 1.3.2 Audit Team

The audit was conducted by the lead auditor [REDACTED] and audit team member [REDACTED]. In attendance from Jemena were [REDACTED] and [REDACTED].

### 1.4 Description

The audit took place at the Jemena office in Broadmeadows.

The Jemena network covers an area of about 950 km<sup>2</sup> of the western and north western suburbs of Melbourne with about 104,000 poles and 4,500 km of power line (37% rural). It serves about 320,600 customers (89% residential).

## 2 METHOD

This was an office based audit planned for two days. It involved reviewing internal processes, procedures and other documents to determine their effectiveness in managing the BMI.

ESV's Team Leader, Safety Systems Assurance [REDACTED] and Distribution Engineer [REDACTED] conducted an office based audit at Jemena's Broadmeadows office on 11 & 12 September 2017. Present were a number of people responsible for various aspects of the bushfire mitigation plan.

Jemena provided the requested documents prior to the audit and all information requested during the audit. They also provided ready access to their head office and a suitable meeting room for the duration of the audit.

### 2.1.1 *Audit grading*

Audit findings were graded as follows:

**Compliant:** The audit found evidence of compliance with the applicable process or procedure and, the process or procedure meets statutory and business requirements.

**OFI = Opportunity for Improvement:** These findings do not indicate noncompliance and so do not require corrective action. They are offered as constructive feedback and an opportunity to improve performance.

**MNC = Minor Noncompliance:** A minor noncompliance is an action (or lack thereof) that could indirectly lead to an adverse impact relating to the reliability of electrical infrastructure or safety. Such actions are generally isolated occurrences.

**NC = Noncompliance:** A noncompliance is an action (or lack thereof) that could directly lead to an adverse impact relating to the reliability of electrical infrastructure or safety.

## 3 RESULTS AND DISCUSSION

### 3.1 Referenced Documentation

The audit reviewed the following main documents:

- ▶ Bushfire Mitigation Plan
- ▶ Bushfire Mitigation Monthly Report
- ▶ Asset Inspection Manual (AIM)

A list of all documents reviewed and provided during this audit is contained in Appendix A.

### 3.2 Audit Description

This audit is the systems component of the bushfire mitigation audit.

The focus of the audit was on the BMI, management of priorities, and management and control of 'programs' such as HV ABC replacement, armour rods & vibration dampers, REFCL deployments, etc.

### 3.3 Desktop Review

The audit reviewed the following elements:

- ▶ Bushfire Mitigation Index
- ▶ Priorities
- ▶ Risk based asset replacement programs
- ▶ Delivery of Bushfire Mitigation Programs

The emphasis was on Jemena systems for meeting their Bushfire Mitigation requirements.

### 3.4 Audit Findings - Summary

The audit found the following:

- ▶ Incorrect Inspection procedure – follow up actions

The investigation report *Asset Incident Investigation, Pole Failures, Incident Date and Time: September/ October/November 2016* into a number of pole failures concluded that “pole failures could have been prevented if asset inspectors correctly assessed the pole condition”. The recommendations listed in the report include ensuring future inspections are performed correctly but do not include re-inspection of previously inspected poles. In accordance with the Electricity Safety Act (s.98 General Duties) it is required that risks be minimised as far as practicable. A reasonable outcome of the review of this incident where it was concluded that inspections were not carried out correctly would include the assumption (unless proven otherwise) that all previous inspections may be erroneous and that there should be an audit or check of these previous inspections. The audit of previous inspections (by re-inspection by others) and acting on these re-inspections may result in prevention of further failures. The investigation into pole failures does not appear to prevent further potential failures and Jemena have failed to analyse potential risks so that risk of pole failure is minimised as far as practicable. **(MNC)**

- ▶ Definition - BMI

The *Jemena Bushfire Mitigation Plan 2017-2022* defines the BMI in section BFM5. During the audit it was stated that the index is calculated for assets and vegetation spans in the HBRA, not those in the LBRA. Section BFM5 has no clarification that the Jemena BMI is calculated for those assets and vegetation only in the HBRA. The Bushfire Mitigation plan should be updated to make it clear that the BMI is for the HBRA only. **(OFI)**

- ▶ Maintenance trend analysis

During the audit it was explained that the Maintenance Planners role involves review of the maintenance items requiring action. The review involved looking at photos or on-site at the asset inspection findings and ensuring that the action proposed is appropriate. It was stated that the Maintenance Planner can determine if the inspection outcomes are not in accordance with the AIM and any trends of the same issues can also be determined. No process or procedure was presented on determination of change of inspection outcomes and trend analysis of inspection ‘errors’. Jemena should review the process/procedure and produce a document that describes the maintenance review process including trend analysis of asset inspection results. **(OFI)**

- ▶ Maintenance reviews – date changes

The Maintenance Planners review of asset inspection results can result in a change in the priority rating which changes the target delivery date of the repair work. It was stated that this process is not documented. It was also noted that the report of late priority asset maintenance items would report the old date as the maintenance planner does not change the report or SAP database. Jemena should consider creating a process or procedure that details re-assessment process of maintenance items and outcomes from this assessment. This review should consider changes needed in reporting systems such as SAP. **(OFI)**

- ▶ Risk assessment

The *Jemena Bushfire Mitigation Plan 2017-2022*, section BFM26, *Operational Contingency Planning* (page 127) states that on TFB days the actions taken to mitigate any fire risk must be documented in the Operational Contingency Plan (OCP) for Outstanding code PT1 vegetation; Outstanding defective

non-fire safe POEL that requires disconnection; and Overdue maintenance items that cannot be re-inspected. A sample of the OCP is then provided in attachment 4. It was noted that the OCP does not consider or document the risk of outstanding items causing fire starts. It is suggested that the Bushfire Mitigation Plan, BFM26 OCP be reviewed to ensure that risks are considered in a formal risk assessment process and documented in an OCP relating to actions (or lack thereof) for outstanding items that exist on TFB days. **(OFI)**

▶ Priorities - definitions

The definition of priorities in Jemena *Bushfire Mitigation Plan 2017-2022*, section BFM15 (page 82) defines priority ratings P1 to P2. The *Asset Inspection Manual* (table 3.1, page 7-8) also defines priority ratings P1 to P9. The *Asset Inspection Manual* (AIM) has a 'watermark' that explains that priorities P2, P6, P7 and P8 are not to be used by the asset inspector. The BFM plan does not provide any similar explanation of the usage of these priorities. The AIM describes the response time for a P1 as 'immediate or 24hrs whereas the BFM plan describes response time for a P1 as 'Item has failed – corrected within 24 hours'. The BFM plan and the Asset Inspection manual have different definitions for the priorities. **(OFI)**

▶ Priorities – trend analysis

Jemena's *Risk and Data Integrity Scoreboard* reports the number of outstanding reported items (i.e. not repaired) for P1 and a single number for the combination of P2, 6, 7 & 8. This report compares the number from the previous week, previous report and a target level. This report does not provide a breakdown of what asset items still require repair (i.e. outstanding item detail) and any long term trends. It is suggested that the understanding of risk would be improved if Jemena reported the assets that were outstanding and trends over the long term. The reviewed *Risk and Data Integrity Scoreboard* could be improved with a summary of the assets that are still outstanding for repair with longer term trends to understand the risks in terms of potential consequences of failure of assets. **(OFI)**

▶ Priorities - reporting

The review of report *Notifications\_JEN* of outstanding priorities found that 10 items are still outstanding since 2009. All items are a P9 rating with the majority being 'loose insulator nuts'. Further checking found that some were noted in 2005. The company representatives explained that the P9 items were not 'closed' in the database and generally related to faults that have been reported. The data of outstanding priorities may misrepresent the real asset risk and should be reviewed. The database of outstanding priorities is inaccurate and should have the data 'cleansed' of inaccurate records. **(OFI)**

▶ Asset class strategy review – risk assessment

The asset class strategies (such as JEN PL 0025 Pole Top Structures Asset Class Strategy) have a qualitative risk assessment (shown on page 42 of PL 0025). Failure rates are provided (page 21 of PL 0025) that provide information on the number of failures per annum. However, the failures are not related to what caused the failure and risk. The creation of asset class strategies should be reviewed to include the relationship of failures and the risk using analysis of historical failures. This analysis needs to have sufficient detail to establish if a particular asset and/or mode of failure have an unacceptable level of risk. Actions to rectify can then be focussed on highest risk thus demonstrating that the asset management system considers risk on a factual basis with detailed failure and risk analysis. **(OFI)**

## **4 CONCLUSION**

Jemena has comprehensive processes and procedures to manage their BMI, asset replacement and delivery of bushfire programs.

The audit found 8 OFIs and 1 MNC. The OFIs relate to improvements to definitions to ensure procedures are clear and understood by a reader. Improvements also relate to creation and improvement of procedures for undertaking appropriate risk analysis of asset failures and risk assessments. The MNC found related to steps that may be required to prevent further asset failures by re-inspecting past inspections.

## **5 RECOMMENDATION**

All findings of the audit should be reviewed by Jemena and a response provided to address the issues found in a timely manner.

## APPENDIX A: DOCUMENT REGISTER

The following documents were provided by Jemena.

Number	Name, Document No, Version and Date of Document
1	Jemena Electricity Networks Bushfire Mitigation Plan 2017-2022, Document No. JEN PL 0100, Issue No. 1.0, June 2017
2	Select Solutions monthly vegetation management report (July)
3	Position Description – Maintenance Planner
4	JEN MA 0500 Jemena Electricity Network Asset Inspection Manual
5	JEN Bushfire Mitigation Report - 31 July 2017
6	BFM Committee Meeting Minutes - 12 July 2017
7	Energy Network Service Agreement (ENSA) Monthly Report for Asset Inspection (July)
8	JEN Zone Tracker for Asset Inspection
9	JEN POEL Defect Register
10	JEN Corporate KPIs
11	JEN Network Integrity & Performance Risk Register
12	Firestarts Reporting Spreadsheet (July)
13	JEM PR 0112 Jemena Asset Incident Investigation Procedure
14	ELE AM PR 004 OSIRIS Electrical Incident Reporting Procedure
15	160819 Incident Investigation Report - Pole Failure 42 Errol St Footscray
16	161009 - Incident Investigation - Pole Failure Jones Rd Brooklyn
17	161107_Incident_Investigation_Report_-_Pole_Failures_-_Sep-Nov_2016
18	JCARS Action Items (2016)
19	Notifications_JEN
20	ESMS MRC Minutes 2017-08
21	JEN ESMS KPIs
22	ELE GU 0902 Risk Management Guidelines for JEN
23	JEN PL 0025 Pole Top Structures Asset Class Strategy
24	JEN PL 0027 Overhead Line Switchgear Asset Class Strategy
25	JEN Risk and Data Integrity Scoreboard
26	Monthly Asset Inspection Report to Select (July)
27	Notification Prioritisation Model - Service Delivery
28	JEM-AM-MA-0001 Asset Management System Manual
29	JEM PR 0031 Business Case Approval Procedure
30	JEM AM TP 0003 Business Case Asset Management - Guidance Template
31	BAA-RXH-800017_BC_Pole_Top_Fire_Mitigation_2017

32	BAA-ROL-800015_Gate_2_LV_Mains_Removal_in_HBRA_signed
33	BAA-RXH-800015_BC_Pole_Top_Fire_Mitigation
34	BAA-ROL-000013_BC_LV_Mains_Removal
35	Response_BAA-RXH-800017_PTFM_2017
36	Response BAA-ROL-800015_Gate_2_LV_Mains_Removal_in_HBRA_signed
37	Overhead Maintenance Work Quality Field Inspection - PTFM Airport West
38	Overhead Maintenance Work Quality Field Inspection - PTFM Coburg South