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CitiPower/Powercor 2017-18 Bushfire Mitigation System Audit

Final Report

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PREFACE

This report has been prepared by the Electrical Safety and Technical Regulation Division of Energy Safe Victoria.

Energy Safe Victoria (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*).

Our role is broad and includes regulating the design, construction and maintenance of electricity, gas and pipeline networks across the State. ESV develops and conducts an annual risk-based audit program to monitor and improve compliance with the requirements of the Electricity Safety Act (*the Act*) and subordinate regulations in businesses across Victoria.

Audits are an integral ESV activity in order to provide assurance to the Government and community that businesses are meeting their obligations, and to promote opportunities for continuous improvement.

ESV's process-based regulatory approach is consistently applied to its audit methodology, whereby broadly speaking ESV conducts:

- 'systems' office based audits to test and challenge the effectiveness of the businesses system controls (policies, procedures and practices), and
- 'field' audits and inspections to confirm those listed controls (policies, procedures and practices)are being applied as stated.

This approach is more suited to the control of network risks where they are complex, geographically diverse, and have significant consequences (regardless of whether or not the risk may occur rarely).

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SUMMARY

This report outlines the findings from an audit conducted on 1 February 2018 that specifically focused on pole inspection. Pole inspection has been the subject of the Victorian Bushfire Royal Commission (VBRC) deliberations and is often raised by stakeholders concerned about the adequacy of maintenance and asset management.

The audit was conducted against the procedures and criteria as set out in the CitiPower/Powercor Bushfire Mitigation (BFM) Plan and procedures. This was preceded by a desktop assessment of CitiPower/Powercor policies and procedures carried out at the ESV Southbank office.

This audit follows an annual BFM Systems and Field audit of CitiPower/Powercor in August 2017. The key focus areas for the August 2017 audit were:

- maintenance priority decision making
- management of the Bushfire Mitigation Index (BMI)
- field assessment of asset inspection practices against policy and procedures
- assessment of condition of key BFM related assets.

The August audit found one minor noncompliance relating to the absence of risk analysis considerations of CitiPower/Powercor's Asset Management Plan. CitiPower/Powercor has advised ESV that they have an improvement project proposed to address this noncompliance in 2018.

This second round of Systems audit was conducted in accordance with ESV's standard Procedures[1] and the "BFM System Audit Plan" presented to CitiPower/Powercor ten business days prior to the audit.

The key focus of the February 2018 audit was to assess the CitiPower/Powercor system effectiveness for managing its Bushfire Mitigation responsibilities with emphasis on its asset assessment and re-assessment practices and criteria.

The objective of the audit was to confirm that CitiPower/Powercor has appropriate engineering analysis, risk assessment, procedures and processes, and that it follows these procedures/processes in relation to:

- asset condition assessment process
- asset condition re-assessment process
- engineering analysis behind the asset inspection criteria.

The systems audit on 1 February 2018 found that CitiPower/Powercor has a documented system in place to manage its pole population including maintenance.

The system includes an overarching asset management strategy for poles as submitted to the Australian Energy Regulator (AER) during a price determination which contains asset lifecycle management and analysis of unassisted pole failures. This analysis concludes that unassisted pole failures have been managed effectively with the rate of failure well below 0.01% of the pole population per annum. This system also includes criteria and processes for the classification of maintenance items.

The systems audit found no instances where a pole had been reclassified as serviceable after being classified as unserviceable, unless the pole was "staked", or the WoodScan testing process (trial of P2 poles) was used to improve pole sound wood accuracy. The audit found no recorded failures of poles that have been re-inspected and re-assessed.

In short, the CitiPower/Powercor Asset Management Strategy and Practice is consistent in approach with past SECV practice and ESV expectations.

1 DOC/15/17279 V7 - ESTR Operations manual, Section 6.5 - Audit and assessment practice

No noncompliance was found during this audit; however ESV identified three (3) Opportunities for Improvement (OFI).They are offered as feedback and an opportunity to conduct further research and apply risk management that may further improve performance.

The three opportunities for improvement relate to CitiPower/Powercor:

- reinforcing the Minor Noncompliance finding from the last audit that risk is not adequately considered in the preparation of the Asset Inspection Manual
- documenting the procedure for its re-assessment of poles, including stating specifically that once a pole has been classified as unserviceable, it cannot be reclassified as serviceable unless there was an error in the original classification, the pole was “staked”, or the pole has been assessed using WoodScan
- documenting the use and theory of the excel and Personal Digital Assistant (PDA) based pole strength calculator.

ESV’s findings and recommendations associated with the OFIs are summarised within the report and detailed in Appendix A.

Contents

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1 INTRODUCTION

1.1 Purpose

The purpose of this audit was to determine whether CitiPower/Powercor has appropriate asset inspection processes to effectively manage its network assets.

The objective of this specifically-focused Bushfire Mitigation systems audit was to:

- Assess the CitiPower/Powercor system for managing its Bushfire Mitigation responsibilities with emphasis on its wooden pole assessment and re-assessment criteria.

1.2 Background

1.2.1 Regulatory regime

ESV

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.

Process-based & Outcome focused regulatory approach

The safety regime (inclusive of Safety Cases & Electrical Safety Management Schemes) is a process-based regulatory regime that uses a mix of principle, performance and outcome based regulatory approaches. The Victorian government's position is that process-based regulatory approaches are preferred where[2]:

a. Safety related risks are substantial and diverse, and must be managed simultaneously
b. Multiple options exist to manage risk, and the selection of the correct option(s) is critical to appropriate risk management
c. The operators of electricity networks are capable of assessing risks and developing tailored solutions to manage risk.

ESV's position is that this approach is preferred for the regulation of electricity networks because[3]:

a. It is more suited to the control of network risks where they are complex, geographically diverse, and have significant consequences (regardless of whether or not the risk may occur rarely)
b. It recognises that Major Electricity Companies (MECs) are best placed to understand the risk of the networks that they operate, and are better able to select the most effective solutions to eliminate and minimise risks
c. It recognises that network safety cannot be achieved through mandating detailed and prescriptive requirements for MECs to follow.

The key concept that differentiates this regulatory approach is that the MEC makes a proposal to ESV as to how safety outcomes will be achieved (a safety proposition); ESV then accepts or rejects the proposal. ESV does not develop its own view of what the proposal is, as this transfers accountability for adequate management of safety risks to ESV.

[2] "Process-based regulation", p.7, in "Victorian Guide to Regulation (Updated July 2014) Toolkit 1: Purposes and types of regulation", http://www.dtf.vic.gov.au/Publications/Victoria-Economy-publications/Victorian-guide-to-regulation
[3] ESV draft policy "DOC 18 1309 DRAFT Acceptably Safe and Safety Case Regime discussion paper_v1.7_17.01.2017"

Electricity Safety Act & Electrical Safety Management Scheme (ESMS)

ESV monitors and enforces the safety of the Victorian MECs' design, construction, operation and maintenance of electrical transmission and distribution networks. It monitors their compliance to their obligations under the Electricity Safety Act 1998 to minimise risk "so far as practicable".

Specifically, the Electricity Safety (Management) Regulations 2009 (Vic), state that a MEC must submit an Electrical Safety Management Scheme (ESMS) to ESV for acceptance in order to operate. An acceptable ESMS demonstrates to ESV that the MEC has an integrated governance structure with risk and asset management processes to minimise as far as practicable:

1. the hazards and risks to the safety of any person arising from the supply network; and
2. the hazards and risks of damage to the property of any person arising from the supply network; and
3. the bushfire danger arising from the supply network.

Electricity Safety (Bushfire Mitigation) Regulations & Plans

The Electricity Safety (Bushfire Mitigation) Regulations 2013 require the MEC to demonstrate in a Bushfire Mitigation Plan (BFMP) how it manages the risk of bushfires, including details of its Bushfire Mitigation (BFM) activities and programs. It also prescribes the minimum intervals for MECs' inspection of assets as:

- intervals not exceeding 37 months from the date of the previous inspection in hazardous bushfire risk areas (HBRA), and
- intervals not exceeding 61 months from the date of the previous inspection in other areas (low bushfire risk areas (LBRA)).

An MEC's Asset Management System is a key component in delivering outcomes related to the Safety Case, ESMS and BFMP.

ESV regularly audits MECs against their BFMPs.

Asset Management

Asset lifecycle management is fundamental to informing decisions regarding how to sustainably address safety related risks and regulatory obligations. Inter alia, a MEC utilises a suite of asset management strategies / plans that explore these issues and define the MEC's approach to managing the lifecycle of the asset category.

During a price determination, the respective MEC makes its proposal for funding to the Australian Energy Regulator (AER). This process requires the MEC to articulate its forecast Opex and Capex expenditures in relation to physical assets for a five year period. In the case of electricity network poles, the associated expenditures are reviewed in detail as they constitute a significant proportion of the overall expenditure.

To efficiently manage the pole population and associated items, the asset management philosophy the Victorian MECs employ is a condition based monitoring and replacement program. This is consistent with wider industry practice. The key activities or outcomes of these programs are to inspect, repair, reinforce and replace. Pole reinforcement and the application of timber preservatives are used to extend the life of the pole, and delay replacement to achieve economic efficiency and reduce costs for electricity customers.

Additionally, these strategies follow an asset Lifecycle Management (LCM) philosophy. This involves the establishment of long term sustainable asset replacement and investment forecasts that take into consideration network safety and security. This process is supported through the monitoring and understanding of asset condition based assessment programs.

Additionally, these strategies assist MECs to avoid the penalties imposed by some of the incentive frameworks that discourage unassisted asset failures, some of which is set out in the National Electricity Rules (NER).

These incentive schemes encourage continuous improvement of the services MECs provide, they include the:

- Service Target Performance Incentive Scheme (STIPS)
- F-factor Scheme - incentivising to reduce bushfire risks, particularly in bushfire prone areas
- Efficiency Benefit Sharing Scheme (EBSS)
- Capital Expenditure Sharing Scheme (CESS)
- Demand Management and Embedded Generation Connection Incentive Scheme (DMEGCIS).

The forecast volume and unit rates of future replacements are reviewed in detail. The AER uses an age-based replacement forecast informed by the pole installation dates and respective useful lives. This is reported to the AER through a 'Category Analysis Regulatory Information Notice' (RIN) where all Capex and Opex expenditure forecasts are reported in templates. It is in the MEC's interest to demonstrate the condition and risk based investments that are required to meet its regulatory obligations.

ESV conducts regular risk focused audits of an MEC's asset management systems to ensure the MEC is effectively mitigating the key risks listed on the previous page. These audits focus on various areas across the full spectrum of asset management including:

1. Asset Management Strategies/Plans by class of asset – to determine if the MEC effectively manages its assets throughout the entire life cycle of the asset
2. Asset Inspection Practices and Manuals – to ensure Asset Inspectors are trained in a course approved by ESV, are competent, and ensure inspection occurs within the prescribed inspection intervals. Audits also review the Asset Inspection Manual and asset assessment criteria and confirm these criteria are providing safe network outcomes through monitoring and regulatory reporting of asset performance data. This recognises the risk posed (potential highest consequence) by the condition of the asset.
3. Asset Maintenance Practices – to ensure the activities are performed in accordance with published National and Victorian standards and intervals and include the latest innovations and technically acceptable methods; ESV investigates and may separately report upon such innovations.[4]

A key focus of the audits in all the above areas is the governance and systems for capturing, recording and reporting data to inform practices.

The MEC's asset management practices, procedures and inspection manuals are generally all consistent and based on National - Energy Networks Association (ENA) guidelines, and long standing Victorian (SECV) industry standards as demonstrated in Appendix C.

After the Victorian Bushfire Royal Commission (VBRC) the industry established standards for asset inspection qualifications and training. Competency is assessed against company practices by internal audits conducted by each MEC. ESV audits this practice too.

In Victoria the vast majority of work on poles is undertaken via Elevated Work Platforms (EWPs); however where access issues require work to be undertaken from ladders, the safety of workers climbing poles is managed by the 'safe to climb test' for poles as contained in section 4 of the VESI Fieldworkers Handbook[5].

1.2.2 Description of situation

In August 2017 ESV completed a BFM audit of CitiPower/Powercor before the declaration of the bushfire season. The key focus areas for that audit were:

- maintenance priority decision making

[4] ESV document titled "Review of 'WoodScan' pole inspection technology (CM-7376)"

[5] Victorian Electricity Supply Industry (VESI) Fieldworkers Handbook – – 2008 updated edition" http://www.vesi.com.au/files/WorkPractices/Fieldworker_Handbook/VESI_FIELDWORKERS_MANUAL.PDF

- management of the Bushfire Mitigation Index (BMI)
- field assessment of Asset Inspection practices against policy, and
- assessment of asset condition of key BFM related assets.

The additional BFM system audit in February 2018 was conducted as pole inspection has been the subject of the Victorian Bushfire Royal Commission (VBRC) deliberations and is often raised by stakeholders concerned about the adequacy of maintenance and asset management.

ESV conducted the audit to:

- investigate if CitiPower/Powercor assets were being maintained in accordance with its processes and procedures concerning its inspection and maintenance classification system

The audits were completed in accordance with ESV's standard Procedures[6] and the "BFM System Audit Plan" as sent to CitiPower/Powercor ten (10) business days prior to the audit.

1.3 Scope

The system audit scope was to review CitiPower/Powercor' s engineering analysis and risk assessments, focussing on its procedures and processes for classifying and reclassifying maintenance priorities.

1.3.1 Inclusions

The Systems audit included reviewing internal process, procedures and the engineering analysis which support the processes for classifying maintenance priorities.

1.3.2 Exclusions

The audit was limited to the maintenance classification system for wooden poles and the engineering and risk systems which support this system.

1.4 Network Description

The Powercor network covers an area of about 150,000 km2 west from Williamstown to the South Australia border, north to the Murray and south to Bass Strait, with about 530,000 poles and 84,000 km of power line (92% rural). It serves about 730,000 customers (85% residential).

The CitiPower network covers an area of about 157 km2 of the Melbourne CBD and inner suburbs, with about 60,000 poles and 3,200 km of power line, with 40% being underground. It serves about 321,000 customers (89% residential).

[6] DOC/15/17279 V7 - ESTR Operations manual, Section 6.5 - Audit and assessment practice

2 METHOD

The office based systems audit involved reviewing internal processes, procedures, engineering analysis and risk assessments to determine their effectiveness in assessing and classifying maintenance items and re-assessing maintenance items.

Two ESV Senior Network Safety Engineers conducted the office based audit at the head office of CitiPower/Powercor on 1 February 2018. Representing CitiPower/Powercor were a number of people responsible for various aspects of the bushfire mitigation plan.

CitiPower/Powercor provided some of the information requested prior to the audit, which ESV assessed prior to conducting the audit. Additional documentation was provided during the audit, and further documents were requested to be provided after the audit. CitiPower/Powercor provided ready access to its Melbourne office and a suitable meeting room for the duration of the audit.

2.1 Audit grading

Audit findings were graded as follows:

- Compliant: The audit found evidence of compliance with the applicable process or procedure and that the process or procedure meets statutory and business requirements.
- Opportunity for Improvement (OFI): These findings do not indicate noncompliance and so do not require corrective action. They are offered as feedback and an opportunity to conduct further research and apply risk management that may further improve performance.
- Minor Noncompliance (MNC): 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.
- Noncompliance (NC): 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

All necessary documents and evidence referenced during the audit was provided to ESV by CitiPower/Powercor before, during, and after the audit.

3.2 Audit description

This was an office based audit of the CitiPower/Powercor Bushfire Mitigation Plan (BFMP), and the systems which support this plan.

This audit targeted the asset condition assessment and re-assessment processes, and the effectiveness of the processes' implementation. The focus of the audit was on how the engineering and risk decisions are applied to the assessment, re-assessment and classification of pole maintenance.

3.3 Desktop review

The system audit was held at the CitiPower/Powercor Melbourne office covering the following elements:

- asset condition assessment process
- asset condition re-assessment process
- engineering analysis behind the asset inspection criteria.

3.4 Audit findings – summary

3.4.1 System Audit

CitiPower/Powercor clearly specifies its technical requirements of wood poles in documents ZD003. This document contains technical specifications for wood poles and makes references to relevant Australian Standards. This wood pole specification is based on the former State Electricity Commission of Victoria (SECV) wood pole specification, which was revised and rebranded as Victorian Electricity Supply Industry (VESI) Document # 0067 in 1993. Since then there have been a number of minor updates; however the key aspects remain the same as the original SECV standard.

CitiPower/Powercor has asset management plans for poles, documents AMP – CP 02 and AMP – PAL 02. These documents identify the causes and yearly rates of unassisted pole failures. These include information and analysis of the pole population including wood type, age, asset condition, inspection programs, performance summary, and failure profiles of timber poles. This analysis concludes that unassisted pole failures have been managed effectively with the rate of failure well below 1 in 10,000 of the pole population per annum. This document does not, however, identify the safety risks associated with pole failures or the potential consequences (Opportunity for Improvement). It was also noted that this document has gone beyond its required review date, Feb/2017, and as such contains no recent pole failure information.

There are two documents that describe the CitiPower/Powercor criteria for the inspection and assessment of poles, the Network Asset Maintenance Policy for Inspection of Poles Document No. 05-C001.D-390, and the Work Instruction for Inspection of Poles Section G.12-WI of the Asset Inspection Manual. The policy explains the inspection cycles and inspection task list for the inspection of poles. It also outlines the requirements for defining pole ratings, i.e.:

- Serviceable
- Limited Life[7]

[7] Note: A "Limited Life Pole" means a Pole that when inspected by the Distribution Business in accordance with its standard procedure is considered serviceable, but because of its condition may not remain serviceable until the next routine programmed inspection and therefore will be inspected more frequently.

- Unserviceable Priority 2
- WoodScan (to be explained further below)
- Unserviceable Priority 1.

The asset inspection work instruction is detailed and includes asset identification photos, pole inspection classification criteria of remaining life information and the training requirements for asset inspectors. The training requirements for asset inspectors comply with those accepted by ESV.

The classification criteria for pole condition are based on engineering work completed by the SECV in the 1980s prior to industry privatisation. The outputs from this engineering work are a number of technical drawings, graphs and figures that formed part of the SECV Line Inspection Manual. This manual now forms the basis for the CitiPower/Powercor (and other Distribution Businesses) pole life classification system for wooden poles.

In addition to the ratings and classifications from the SECV manual, CitiPower/Powercor has incorporated the use of a Pole Calculator. The Pole Calculator was created by a pole strength subject matter expert approximately 15 years ago using the engineering analysis and calculations from the SECV manual. The calculator is used to give greater clarity and better accuracy for pole strength. CitiPower/Powercor stated that the pole calculator gives better results and helps to minimise the risk of pole failures as it considers many other criteria in addition to pole sound wood and girth measurements. The pole calculator was originally Microsoft Excel based, however it has now been incorporated into the CitiPower/Powercor Personal Digital Assistant (PDA) programming.

CitiPower/Powercor were unable to explain the function of the pole calculator, and there is no documentation to explain this either, other than simple instructions to use it. CitiPower/Powercor should create a Pole Calculator Manual to explain the theory behind how it works as well as how to use it (Opportunity for Improvement).

During the audit CitiPower/Powercor explained that if a pole had been classified as unserviceable at the original inspection, it will never be reclassified as serviceable. The exceptions to this is are if there was an error in the original assessment practice; if the wood pole has subsequently been staked; or the pole has been assessed by WoodScan as part of the current trial and found to meet the criteria for serviceable or limited life.

CitiPower/Powercor has been using new WoodScan technology to aid in pole inspections for approximately one year. This process is explained in procedure 18-05-P0008. WoodScan is used only when a pole has been rated as unserviceable and meets other specific criteria (currently trialling on P2 poles only). The WoodScan assessment is then done to give a better result for pole strength. The WoodScan program uses the same calculations, variables, and criteria as the Pole Calculator. CitiPower/Powercor believes that using WoodScan reduces the risk of pole failure as it gives more accurate data of the composition of wood inside the pole. CitiPower/Powercor can therefore carry out its asset maintenance more effectively. It was noted during the audit that there was an instance of where a pole assessed as being limited life by WoodScan, subsequently failed. This was a result of incorrect inspection rather than failure of the WoodScan technology, as the pole had significant termite damage that was not found during the inspection.

The audit did not find any instances where a pole had been reclassified as serviceable after originally being classified as unserviceable, unless the pole is “staked”, or is assessed using WoodScan. There have been no recorded failures of poles that have been re-assessed.

In certain circumstances, e.g. to facilitate the alignment of works scheduling to increase the integration of planned works; or when pole replacement is not possible due to adverse ground conditions, a pole that has been rated unserviceable can be re-assessed to defer maintenance or replacement. This process includes having a qualified employee attend the pole, the employee completing a ‘Field Report’ which includes a simple worksheet based risk assessment, and gaining approval from the Lines Maintenance Manager. This process is controlled using SAP based monitoring and authorisations. The number of poles that have exceeded their priority due dates is further monitored monthly by management from a summary dashboard sent via email.

CitiPower/Powercor does not have any documented policy or procedure that explains the process of when and how wooden poles can be re-assessed (Opportunity for Improvement). CitiPower/Powercor should articulate its re-assessment process with sufficient explanation and detail including:

- Defining that once a pole has been classified as unserviceable it cannot be re-classified as serviceable, unless there was an error in the original classification, the pole is staked, or has been re-assessed by WoodScan.
- Explaining the situations where a pole may be re-assessed, i.e.:
    - eligible for WoodScan (particularly if expanded beyond P2 poles);
    - to facilitate the alignment of works scheduling to increase the integration of planned works; or
    - when pole replacement is not possible due to adverse ground conditions.

The Opportunities for Improvement are summarised in Appendix A.

4 CONCLUSION

The system audit found that CitiPower/Powercor has documented systems and processes in place for inspecting and assessing, as well as re-assessing and classifying assets. The system includes an overarching asset management plan for poles as submitted to the Australian Energy Regulator (AER) during a price determination which contains asset lifecycle management and basic analysis of unassisted pole failures. This analysis concludes that unassisted pole failures have been managed effectively with the rate of failure well below 1 in 10,000 of the pole population per annum.

The systems audit found no instances where a pole had been reclassified as serviceable after originally being classified as unserviceable, unless the pole was “staked” or had been re-assessed using WoodScan.

The CitiPower/Powercor pole assessment and re-assessment practices are consistent in approach with ESV expectations.

5 RECOMMENDATION

ESV recommends that CitiPower/Powercor address the three Opportunities for Improvement (OFIs), which have been identified during this audit, as detailed in Appendix A.

APPENDIX A: AUDIT FINDINGS - DETAILED

Finding 1

Opportunity for Improvement: reinforcing the Minor Non-Compliance finding from the December 2017 BFM audit that risk is not adequately considered in the preparation of the Asset Inspection Manual.

Finding 2

Opportunity for Improvement: CitiPower/Powercor does not have any documented policy or procedure that explains the process of when and how wooden poles can be re-assessed. CitiPower/Powercor should articulate its re-assessment process with sufficient explanation and detail including:

- Defining that once a pole has been classified as unserviceable it cannot be re-classified as serviceable, unless there was an error in the original classification, the pole is staked, or has been re-assessed by WoodScan.
- Explaining the situations where a pole may be re-assessed, i.e.:
    - eligible for WoodScan;
    - to facilitate the alignment of works scheduling to increase the integration of planned works; or
    - when pole replacement is not possible due to adverse ground conditions.

Finding 3

Opportunity for Improvement: Documenting the use and theory of the Microsoft Excel and tablet application based pole strength calculator.

APPENDIX B: BENCHMARKING OF MEC ASSET INSPECTION PRACTICES

Pole Inspection Practice	AusNet Services	CitiPower / Powercor	United Energy	Jemena
Engineering standard	Based on SECV engineering	Based on SECV engineering	Based on SECV engineering	Based on SECV engineering
Documents and references	SECV manuals / standards / charts Sound Wood: VESI Manual drawing VX9/7020/177 B Pole Girths: VESI manual drawing VX9/7020/178	SECV manuals / standards / charts Sound Wood: VESI Manual drawing VX9/7020/177 B Pole Girths: VESI manual drawing VX9/7020/178	SECV manuals / standards / charts Sound Wood: VESI Manual drawing VX9/7020/177 B Pole Girths: VESI manual drawing VX9/7020/178	SECV manuals / standards / charts Sound Wood: VESI Manual drawing VX9/7020/177 B Pole Girths: VESI manual drawing VX9/7020/178
Assessment criteria	Company asset inspection manual provided, contains detailed assessment criteria. Pole assessment principles are consistent with established SECV practice and all other businesses.	Company asset inspection manual provided, contains detailed assessment criteria. Pole assessment principles are consistent with established SECV practice and all other businesses.	Company asset inspection manual provided, contains detailed assessment criteria. Pole assessment principles are consistent with established SECV practice and all other businesses.	Company asset inspection manual provided, contains detailed assessment criteria. Pole assessment principles are consistent with established SECV practice and all other businesses.
Assessment classification	Serviceable pole – as SECV definition Limited life varies for different pole strength classes: between 40mm and 60mm Unserviceable 30mm	Serviceable pole – as SECV definition Limited life is determined by the pole strength calculator Unserviceable 30mm	Serviceable pole – as SECV definition Limited life 70mm Unserviceable 30mm	Serviceable pole – as SECV definition Limited life 85mm Unserviceable 30mm
Re-assessment Criteria	Re-assessment occurs to original assessment criteria AusNet Services has a re-assessment procedure BFM 21-90	Re-assessment occurs to original assessment criteria Additionally, P2[8] unserviceable poles are tested using WoodScan and may be returned to serviceable or limited life based	Re-assessment may occur to original assessment criteria, although it is very rare Maintenance target dates for priority maintenance items are	Re-assessment of poles does not occur. Pole are staked, supported or replaced by the target date, however this is not stated in a written policy

[8] Priority 2: allocated to items assessed to be at risk of failure within 32 weeks to 3 years, and need to be actioned within 32 weeks.

Pole Inspection Practice	AusNet Services	CitiPower / Powercor	United Energy	Jemena
		on WoodScan inspection results	unable to be adjusted United Energy does not have a documented procedure for re-assessment	
Re-assessment Classification	Classification cannot be better than previous classification, e.g. a pole classified as unserviceable cannot be reclassified as serviceable, unless the pole has been staked	Classification cannot be better than previous classification, e.g. a pole classified as unserviceable cannot be reclassified as serviceable, unless the pole has been staked, or WoodScan provides more accurate results	Classification cannot be changed	Classification cannot be changed
Re-assessment approval and controls	Prior consultation and approval is required for the re-assessment to occur from the Programs Planning Manager Asset inspection manual Statistical review by manager and Management Committee level oversight All unassisted pole failures are investigated	Prior consultation and approval is required for the re-assessment to occur from the Lines Maintenance Manager Asset inspection manual Statistical review by manager and Management Committee level oversight All unassisted pole failures are investigated	Prior consultation and approval is required for the re-assessment to occur from the Maintenance Manager Asset inspection manual Statistical review by manager and Management Committee level oversight All unassisted pole failures are investigated	Maintenance items that go beyond target dates have to be approved by the Maintenance Manager Asset inspection manual Statistical review by manager and Management Committee level oversight All unassisted pole failures are investigated
Pole Staking	Yes, per industry standards	Yes, per industry standards	Yes, per industry standards	Yes, per industry standards.
New technology pole testing, i.e. WoodScan	No, however may commence trial of WoodScan technology soon	Use of WoodScan for unserviceable priority 2 (P2)[8] poles only	Trial of WoodScan on unserviceable priority 2 (P2)[8] and some Limited Life poles only	No

[8] Priority 2: allocated to items assessed to be at risk of failure within 32 weeks to 3 years, and need to be actioned within 32 weeks.