# RIN Supporting Information

## EDPR 2016-20
## (PUBLIC)

| | |
|---|---|
| **Document number** | NA |
| **Issue number** | 1 |
| **Status** | Final |
| **Approver** | Jacqui Bridge |
| **Date of approval** | 30 April 2015 |

# ISSUE/AMENDMENT STATUS

| Issue Number | Date | Description | Author | Approved by |
|---|---|---|---|---|
| 1 | 30 April 2015 | Initial document draft | J Dyer | J Bridge |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## Disclaimer

This document belongs to AusNet Services and may or may not contain all available information on the subject matter this document purports to address.

The information contained in this document is subject to review and AusNet Services may amend this document at any time. Amendments will be indicated in the Amendment Table, but AusNet Services does not undertake to keep this document up to date.

To the maximum extent permitted by law, AusNet Services makes no representation or warranty (express or implied) as to the accuracy, reliability, or completeness of the information contained in this document, or its suitability for any intended purpose. AusNet Services (which, for the purposes of this disclaimer, includes all of its related bodies corporate, its officers, employees, contractors, agents and consultants, and those of its related bodies corporate) shall have no liability for any loss or damage (be it direct or indirect, including liability by reason of negligence or negligent misstatement) for any statements, opinions, information or matter (expressed or implied) arising out of, contained in, or derived from, or for any omissions from, the information in this document.

## Contact

This document is the responsibility of AusNet Services.

Please contact the indicated owner of the document with any inquiries.

John Dyer
AusNet Services
Level 31, 2 Southbank Boulevard
Melbourne Victoria 3006
Ph: (03) 9695 6000

## Table of Contents

# 1 Introduction

## 1.1 Purpose

The purpose of this document is to provide information in relation to information requested in Schedule 1 of the Regulatory Information Notice (RIN) for the forecast period 1 January 2016 to 31 December 2020.

Most of the information requested in Schedule 1 is included in AusNet Services' submission, the appendices to the submission, or in supporting documentation. Information is included in this document where the submission, the appendices to the submission, or the supporting documentation does not provide the information requested in Schedule 1.

## 1.2 Structure

This document provides information referenced to the numbering in Schedule 1 of the RIN.

# 2 Replacement Capital Expenditure Modelling

| RIN Reference | Commentary |
|---|---|
| 6.1(a)(i)(A) | Data in template 2.2 has been provided in the asset categories defined in Appendix F of the RIN with the exception of the following nine categories.<br>OTHER - CURRENT TRANSFORMERS<br>Current Transformers (CTs) measure the current flowing through a high voltage electricity circuit within the distribution network and transform this current into convenient quantities for use in protection and control relays. Current transformers are located in zone substations.<br>OTHER - VOLTAGE TRANSFORMERS<br>Voltage transformers (VTs) measure the operating voltage of a high voltage electricity circuit and transform this measurement into convenient voltages for use in protection and control relays. VTs consist of Capacitive Voltage Transformers (CVT) and Magnetic Voltage Transformers (MVT) (single and three-phase). Voltage transformers are located in zone substations.<br>OTHER - STATION SERVICES<br>Station services transform high voltages to low voltages for use within the zone substation. Low voltages are used to provide power at the station for equipment such as lights, air conditioners and battery chargers. Includes the transformer, similar to a distribution transformer and associated equipment such as fuses.<br>OTHER – EARTHING<br>Station earth grids are installed below ground level in zone substations. Typically, the grids comprise stranded copper conductor that is welded together at connection and crossover points. Vertical copper risers (typically, flat copper conductor) are then welded to the grid and either welded or bolted to the installed plant and equipment items.<br>OTHER - CAPACITOR BANK<br>A capacitor bank is a grouping of several identical capacitors interconnected in parallel or in series to correct or counteract undesirable characteristics, such as power factor |

| | |
|---|---|
| | lag or phase shifts inherent in alternating current (AC) electrical power supplies. These are located in zone substations. This category does not include pole-top capacitors installed on feeders.<br>OTHER - NEUTRAL EARTH RESISTORS<br>Neutral Earth Resistors (NERs) are passive devices, with no moving parts, protected from the weather within an enclosure and only operate during medium voltage network phase to earth faults. The NER limits the magnitude of the earth fault current that would flow on the occurrence of a phase to earth fault in a medium voltage circuit. This improves public safety by limiting the energy released at the fault location, reducing risk of bushfire ignition.<br>OTHER - SURGE DIVERTERS<br>Surge arresters (also known as surge diverters) are used to protect key items of electrical plant within the zone substation that are susceptible to internal failure following transient lightning over-voltages or over-voltage surges created by network switching. Surge arresters are installed between each active phase and the electrical earth grid at 66 kV line entries, on each side of power transformers, at cable ends and on 22 kV, 11 kV and 6.6 kV feeder exits from zone substations. The category does not include surge arresters outside zone substation such as those installed on lines and distribution transformers.<br>OTHER - SITE REPAIRS<br>The site repairs category covers civil infrastructure including buildings, environmental systems, security fence and overall switchyard including switchyard surface, access roads, stations lights, cable ducts and trenches, signage and name plates, support structures and foundations that all contribute to the overall function of the stations. This category only includes zone substation and voltage regulator sites.<br>OTHER – REGULATORS<br>Line voltage regulators are the means by which the distribution voltage is kept at the appropriate level. Regulators are either directly mounted on a pole or on a suitable foundation in an enclosure at the base of a pole midway along a 22kV feeder. All such line voltage regulators are located in regional areas of Victoria. Both three-phase and single-phase regulators are used. |
| | |
| 6.1 (b)(i)(ii) | AusNet Services uses condition, not age-based, probability distributions to forecast asset replacement volumes. The methods used to forecast asset replacements are detailed in the Plant Strategies and summarised in Appendix - Network Capital Expenditure Overview 2016-2020.<br>The methodology used to determine the replacement life statistics provided in the 2014 Category Analysis RIN is described in the AusNet Electricity Services Pty Ltd Category Analysis Basis of Preparation 2014 Regulatory Year.<br>The replacement life statistics were based on recorded disposal life of the assets extracted from AusNet Services' Asset Management systems. |
| 6.1 (b)(iii) | AusNet Services considers that a normal distribution should be used to simulate the replacement needs of an asset category unless appropriate information is available to develop a more appropriate distribution. Our experience is that the detailed information is rarely available to develop a more appropriate distribution and therefore factors such as the skewness of the distribution cannot be properly considered.<br>Most asset categories in Template 2.2 comprise a mix of assets including differing material types, manufacturers and technologies. For example, wood poles in a specified voltage range are likely to comprise a variety of timber species. Further, the rate of deterioration of assets is dependent upon the environment and operating conditions. The typical age when the 'wear out' phase becomes evident will depend |

<table>
<tr><td></td><td>upon these factors and the asset condition monitoring methodology.<br>Any process to verify that the parameters are a reasonable estimate of life should consider available data and experience. For example, if the estimated life is based on recorded age at asset disposal, consideration should be given to factors such as the proportion of assets that are replaced for reasons other than end of effective life and asset design life.</td></tr>
<tr><td>6.1 (c) (ii) (iii) (iv) (v)</td><td>The derivation of unit costs is detailed in Appendix 7C – Unit Rates.<br>Double counting has been avoided by developing the forecast in asset categories consistent with AusNet Services' budget process and by explicitly accounting for potential double counting. For example, the conductor replacement forecast assumes a level of 'business as usual' conductor replacement which is included in the total forecast. Another example is circuit breakers where the breakers to be replaced in zone substation rebuild projects is explicitly separated from the program of circuit breaker replacements.<br>Variability in unit costs will occur in all asset categories. The variability arises from many factors such as location, terrain, material type, structure complexity, and emergency vs planned replacement. As described in the Unit Rates document, unit costs for most assets have been derived from a 12 month historical period. The forecast programs are extensions of current programs and therefore the historical unit rates should provide a reasonable estimate of future unit costs.</td></tr>
<tr><td>6.1 (d)</td><td>The key drivers affecting asset replacement expenditure are described in Chapter 7 of the submission, Appendix 7A – Network Capital Expenditure Overview and in the asset plant strategies. A summary of the factors and the affected asset categories is shown below.
<table>
<tr><th>Factor</th><th>Asset categories</th><th>Impact</th></tr>
<tr><td>Network safety obligations (Rules, codes, license conditions, statutory requirements)</td><td>Lines assets including cross-arms, conductors, EDO fuses.<br>Secondary equipment</td><td>Assets are replaced before the end of their effective life in order to reduce the risk of bushfire ignition.</td></tr>
<tr><td>Development of asset management system & techniques (Internal planning & asset management approaches.)</td><td>Most asset categories</td><td>Risk based analysis leads to life extension of lower risk assets; particularly in stations.<br>Improved condition monitoring techniques should lead to more targeted replacement of assets resulting in life-extension of some assets and less failures in other asset classes.<br>Improved condition assessment and data leads to more accurate forecasts of replacement needs.</td></tr>
<tr><td>Asset factors – installation profile</td><td>Poles, cross-arms, conductor, power transformers, circuit breakers</td><td>The quantity of assets reaching the end of effective life is increasing the need for asset replacements. This particularly affects poles, cross-arms and conductors where historical volumes of asset replacements have been small as a proportion of the asset population.<br>(Further detail is provided in plant asset strategy documents.)</td></tr>
<tr><td>Value of Customer Reliability (External factor)</td><td>Zone substation plant</td><td>The lower Value of Customer Reliability combined with the use of economic analysis to determine the timing of plant</td></tr>
</table></td></tr>
</table>

| | | | |
|---|---|---|---|
| | | | replacements leads to assets remaining in service longer (and therefore fewer replacements than would otherwise occur.) |
| | Security requirements | Zone substations | The threat of terrorist related activity and increasing theft incidents leads to increasing measures to mitigate the risk. These measure lead to changing standards and higher replacement costs. For example, a deteriorated zone substation fence will be replaced with a more expensive fence. |

**7.2 (a)(iii)**

Maximum demand forecasts were prepared for each zone substation and each distribution feeder for each year of the forecast period. The average was calculated by summing the P50 forecast growth for each year and dividing by the number of years.

Table 2.4.1- The average growth rate for the terminating zone substation of the sub-transmission line was applied.

Tables 2.4.2 and 2.4.3 - Growth rate forecasts applied directly.

Table 2.4.4 - Growth rate estimated to be the growth rate of the HV feeder the distribution substation is connected to.

**7.2 (b)**

The information provided below relates to the forecast elements of Table 2.4.6.The Historical elements of Table 2.4.6 are described in the document Reset Regulatory Information Notice Basis of Preparation – Historical Information.

Costs included in this table are the direct costs consistent with the Project Costs Estimating Methodology. These include costs such as the cost of project approval, design, materials, outage planning and procurement. They exclude an allocation of overhead costs (such as legal or HR) and exclude other costs such as network planning.

Forecast capacity and costs associated with the subtransmission lines segment were sourced from the KLO-DRN 66kV line and KMS1 rearrangement projects.

High voltage feeders' capacity and costs were extracted from the specific projects included in the forecast. The costs and capacity were allocated to urban or rural short/long based on the current or expected categorisation of the feeder.

An analysis of historical projects was used to allocate forecast Distribution substation expenditure into urban or rural short/long. Each substation upgrade was assumed to add 50 kVA of capacity.

All forecast augmentation expenditure has been allocated to the NSP-initiated & capacity related augmentation group. No expenditure was allocated to the Customer-initiated & capacity related augmentation group as the AER's Augmentation Model Handbook (2013) states that "…the augex model is not intended for the assessment of capex allocated to the customer connection component of demand-driven system capex."

**7.2 (c)**

The projects and programs that have been allocated to the unmodelled augmentation category in table 2.4.6 are shown below. These projects and programs are described in the Electricity Distribution Network – EDPR Network Capital Expenditure Overview 2016 to 2020. Supply improvement capital expenditure is a component of the Distribution Substations & LV program described in 12.2.3 of the Network Capital Expenditure Overview document.

| Program (Primary driver) | Proportion of unmodelled augmentation in template 2.4.6 | Relationship to demand, service levels and network capacity |
|---|---|---|
| Supply | 3% | This program is targeted at improving power |

| | | | |
|---|---|---|---|
| | improvement | | quality. Improvements to power quality are often made by adding or reconfiguring circuits; primarily at the LV level. The addition of circuits results in augmentation of the network. |
| | Vibration Dampers & Armour Rods (Safety) | 55% | None |
| | Overhang Removals (Safety) | 12% | None |
| | Animal / Bird Proofing (Safety and Reliability) | 22% | No relationship to demand or network capacity. Should result in some improvement to service through less outages. |
| | Enhanced Protection & Control (Safety & Reliability) | 7% | None |

| | |
|---|---|
| 7.2 (d) (ii) (D) (E) | AusNet Services has not performed any analysis of the distribution of network augmentation utilisation thresholds. A normal distribution is likely to simulate the augmentation needs of a network segment.<br>The utilisation thresholds are a reasonable estimate as they are based on actual augmentation as described below:<br>AER segment groups 1 & 3 – Completed projects were analysed to determine the mean value of the utilisation threshold.<br>For AER segment groups 5, 6 & 7 – The utilisation threshold is that applied to actual projects. i.e. AusNet Services augments distribution feeders when utilisation reaches 100%.<br>For AER segment groups 9, 10 & 11 – The utilisation threshold is that applied to actual projects. i.e. AusNet Services augments distribution transformers when utilisation reaches 120%. |
| 7.2 (d) (iii) (C) (D) | There is a low probability that any double-counting of augmentation has occurred because there are very few augmentation projects and, if any additional capacity is added say, at a different segment, then the added capacity will be immaterial.<br>The parameters are a reasonable estimate as they are based on actual historical projects and standard upgrade sizes. |
| 7.2 (e) | There are a number of factors which may result in different augmentation requirements for AusNet Services compared to other DNSPs. These include:<br>Probabilistic planning – AusNet Services applies probabilistic planning which can lead to the deferral of augmentation that might otherwise proceed if a deterministic standard were applied. Under probabilistic planning there may be conditions under which all the load cannot be supplied with a network element out of service hence the N-1 criterion is not met. This affects subtransmission and HV including subtransmission lines, zone substations and HV feeders. AusNet Services is likely to have lower augmentation levels on these network elements than other DNSPs that do not apply probabilistic planning.<br>Active Demand Management (DM) program – AusNet Services has an active DM program targeted at reducing peak demands. This program leads to deferral (or indefinite postponement) of network augmentation projects. This primarily impacts zone substations and HV feeders (as these have been the primary DM target) but will have a secondary impact on subtransmission lines and distribution substations. AusNet Services is likely to have lower augmentation levels on these network elements |

<table>
<tr><td></td><td>than other DNSPs that do not have an active DM program.<br>Rural network – A large proportion of the network is rural and rural networks typically have few interconnections and, in some cases are supplied by radial subtransmission lines. This means that load transfers are not widely available and lead to augmentation of the network earlier than a highly interconnected network. This primarily impacts HV feeders, subtransmission lines and zone substations. This will result in higher augmentation levels on these network elements than other DNSPs that have urban networks or higher customer densities.<br>Residential customers – AusNet Services has a greater proportion of residential customers than other DNSPs. The network residential customers have a summer air conditioning peak that occurs in the evening. Because the peak occurs late in the day there is very little offset from solar PV generation. This impacts all network segments and will result in AusNet Services having higher augmentation than other DNSPs that have a greater proportion of industrial and commercial customers.<br>Growth corridors – The network on the fringe of Melbourne contains two residential growth corridors. The new customers connecting in these growth corridors generate demand growth in the areas and so network augmentation is required even if demand per customer is falling. This differs from growth in established areas where a fall in demand offsets the growth from infill customer connections. The impact in the forthcoming regulatory control period from these growth corridors is expected to be at the HV feeder and distribution substation levels. This will result in AusNet Services having higher augmentation than other DNSPs that do not have high residential growth corridors.</td></tr>
<tr><td>8.3 (r)</td><td>16 feeder projects are planned to commence or continue during the forthcoming regulatory period:<ul><li>Upgrade CLN22</li><li>New CRE24 Feeder</li><li>New CLN24 Feeder</li><li>Upgrade CPK22</li><li>New DRN24 Feeder</li><li>Reconfigure HPK13, 21 & 23</li><li>Upgrade KLO14</li><li>Extend KLO11 Feeder</li><li>Reconfigure KLO14 & DRN22</li><li>OFR #1 Bus & OFR11 & OFR12</li><li>New OFR13 Feeder</li><li>Reconfigure TT6 & EPG31</li><li>Reconfigure TT9 & TT4</li><li>Upgrade WT9 Feeder</li><li>Reconfigure WT13 & WT6 Feeders</li><li>WGL13 Upgrade</li></ul></td></tr>
<tr><td>8.3 (r) (i) (A)</td><td>
<table>
<tr><th>Project</th><th>Feeders</th><th>Future Load Transfers Between Feeders</th><th>Comments</th></tr>
<tr><td>Upgrade CLN22</td><td>CLN13 & CRE33</td><td>0</td><td>CRE33 is a long feeder and is required for LLG contingency & thus no load transfers available. Project timing is</td></tr>
</table>
</td></tr>
</table>

| | | | |
|---|---|---|---|
| | | | selected after all the neighbouring feeders reach their ratings and thus no load transfer capability. |
| New CRE24 Feeder | CLN13, CLN12 & CRE33 | 0 | CRE33 is a long feeder and is required for LLG contingency & thus no load transfers available. Project timing is selected after all the neighbouring feeders reach their ratings and thus no load transfer capability. |
| New CLN24 Feeder | CLN22 | 0 | New feeder to address new growth in SE of CLN. Only feeder in the area is CLN22. Project timing is selected after all the neighbouring feeders reach their ratings and thus no load transfer capability. |
| Upgrade CPK22 | CPK11, CPK12, CPK23 & RWN31 | 0 | This is to address the low feeder rating due to low design temperature at the start of the feeder. Thus, load transfers assumed zero. |
| New DRN24 Feeder | DRN13 & DRN23 | 0 | The new feeder to address the load growth on DRN13. DRN23 is a long rural feeder and additional load will cause voltage and reliability issues. Due to the feeder configurations and these issues, load transfer assumed to be zero. |
| Reconfigure HPK13, 21 & 23 | HPK13, 21 & CRE21 | 230 A | Sufficient load transfers available between these feeders. Thus, project is to transfer the load. |
| Upgrade KLO14 | KLO24, KMS21 & DRN22 | 100 A | This project is to address KLO14 new loads. DRN22 = 60 A & KMS21 = 40A. |
| Extend KLO11 Feeder | KLO14 | 0 | KLO24 feeder over-loaded. To address new loads on KLO24. KLO14 is 100% loaded. |
| Reconfigure KLO14 & DRN22 | KLO24, KMS21 & DRN22 | DRN22 = 60 A & KMS21 = 40A. | This project is to address KLO14 new loads and to transfer load to DRN22. |
| OFR #1 Bus & OFR11 & OFR12 | OFR22 & OFR23 | 0 | Project timing is selected after all the neighbouring feeders reach their ratings and thus no load transfer capability. |
| New OFR13 Feeder | OFR22, OFR11 & OFR23 | 0 | Project timing is selected after all the neighbouring feeders reach their ratings and thus no load transfer capability. |
| Reconfigure TT6 & EPG31 | EPG31 | 60 A | This project is to transfer load from TT6 to EPG31. Unable to transfer to TT9 as it is carrying over the rating. No transfers. Transfers are only to EPG31. |
| Reconfigure TT9 & TT4 | EPG31, TT6 & TT4 | 50 A | This project is to transfer load from TT9 to EPG4. Unable to transfer to EPG31 |

| | | | | |
|---|---|---|---|---|
| | | | | and TT9 - No transfers. Transfers are only to TT4. |
| | Upgrade WT9 Feeder | WT12 | 0 | WT12 does not have capacity for load transfers. |
| | Reconfigure WT13 & WT6 Feeders | WT6 & SMG31 | 100A | 50 A each to WT6 & SMG31. |
| | WGL13 Upgrade | WGL11 and WGL21 | WGL21: No transfer capacity<br>WGL12: No Transfer capacity | WGL21 and WG12 are forecast to be > 90% loaded at time of augmentation. |

8.3 (r) (i) (B)

| Project | Load Growth Rate | Comments |
|---|---|---|
| Upgrade CLN22 | 19.8% p.a. | Growth rate 2015-2020 for CLN13. |
| New CRE24 Feeder | 19.8% p.a. | Growth rate 2015-2020 for CLN13. |
| New CLN24 Feeder | 19.8% p.a. | Growth rate 2015-2020 for CLN13. |
| Upgrade CPK22 | 2.5% p.a. | Growth Rate for CPK22. |
| New DRN24 Feeder | 10.2% p.a. | Growth rate 2015-2020 for DRN13. |
| Reconfigure HPK13, 21 & 23 | 2.6% p.a. | Growth rate 2015-2020. |
| Upgrade KLO14 | 11.8% p.a. | Growth rate 2015-2020. |
| Extend KLO11 Feeder | 11.8% p.a. | Growth rate 2015-2020 for KLO24. |
| Reconfigure KLO14 & DRN22 | KLO14: 11.8% p.a.<br>DRN22: 2.0% p.a. | Growth rate 2015-2020. |
| OFR #1 Bus & OFR11 & OFR12 | 29.4% p.a. | Growth rate 2015-2020 for OFR24. |
| New OFR13 Feeder | 29.4% p.a. | Growth rate 2015-2020 for OFR24. |
| Reconfigure TT6 & EPG31 | TT6: 1.7% p.a.<br>EPG31: -0.2% p.a. | |
| Reconfigure TT9 & TT4 | TT9: 1.8% p.a.<br>TT4: 0.0% p.a. | Growth rate 2015-2020. |
| Upgrade WT9 Feeder | 3.3% p.a. | Growth rate 2015-2020. |
| Reconfigure WT13 & WT6 Feeders | WT13: 1.0% p.a.<br>WT6: 0.7% p.a. | Growth rate 2015-2020. |
| WGL13 Upgrade | WGL13: 5.24% p.a. | Growth rate 2015-2020. |

<table>
<tr><td>8.3 (r) (i) (C)</td><td>There are no assumed block loads and associated demand assumptions for any of the projects.</td></tr>
<tr><td>8.3 (r) (ii)</td><td>
<table>
<tr><th>Project</th><th>Existing Embedded Generation Capacity</th><th>Comments</th></tr>
<tr><td>Upgrade WT9 Feeder</td><td>50 A</td><td>Temporary Grid Energy Storage System (GESS) is available on WT12.</td></tr>
</table>
There is no existing embedded generation capacity connected to the other feeders to be augmented.
</td></tr>
<tr><td>8.3 (r) (iii)</td><td>No future embedded generation is forecast for any of the feeder projects.</td></tr>
<tr><td>8.3 (r) (iv)</td><td>
<table>
<tr><th>Project</th><th>Assumed Future Embedded Generation Capacity</th><th>Comments</th></tr>
<tr><td>Upgrade CLN22</td><td>1000 kW</td><td>Demand management contract with large customer for peak demand reduction.</td></tr>
<tr><td>Reconfigure WT13 & WT6 Feeders</td><td>400 kW</td><td>Demand management contract with large customer for peak demand reduction.</td></tr>
</table>
There are no non-network solutions on the other feeders to be augmented.
</td></tr>
<tr><td>8.3 (r) (v)</td><td>No future non-network solutions are assumed for the following feeder augmentation projects:<ul><li>Upgrade CLN22</li><li>New CRE24 Feeder</li><li>New CLN24 Feeder</li><li>Upgrade CPK22</li><li>Reconfigure HPK13, 21 & 23</li><li>Upgrade KLO14</li><li>Extend KLO11 Feeder</li><li>Reconfigure KLO14 & DRN22</li><li>New OFR13 Feeder</li><li>Reconfigure TT9 & TT4</li><li>Reconfigure WT13 & WT6 Feeders</li></ul>Non-network solutions are considered for the following feeder augmentation projects<ul><li>New DRN24 Feeder</li><li>OFR #1 Bus & OFR11 & OFR12</li><li>Reconfigure TT6 & EPG31</li><li>Upgrade WT9 Feeder</li><li>WGL13 Upgrade</li></ul>Details of the non-network solutions are provided in Chapter 9, Demand Management.</td></tr>
<tr><td>8.3 (r) (vi)</td><td>There is no diversity between feeders. All feeders subject to augmentation and adjacent feeders that could provide load transfer experience an evening peak.</td></tr>
</table>

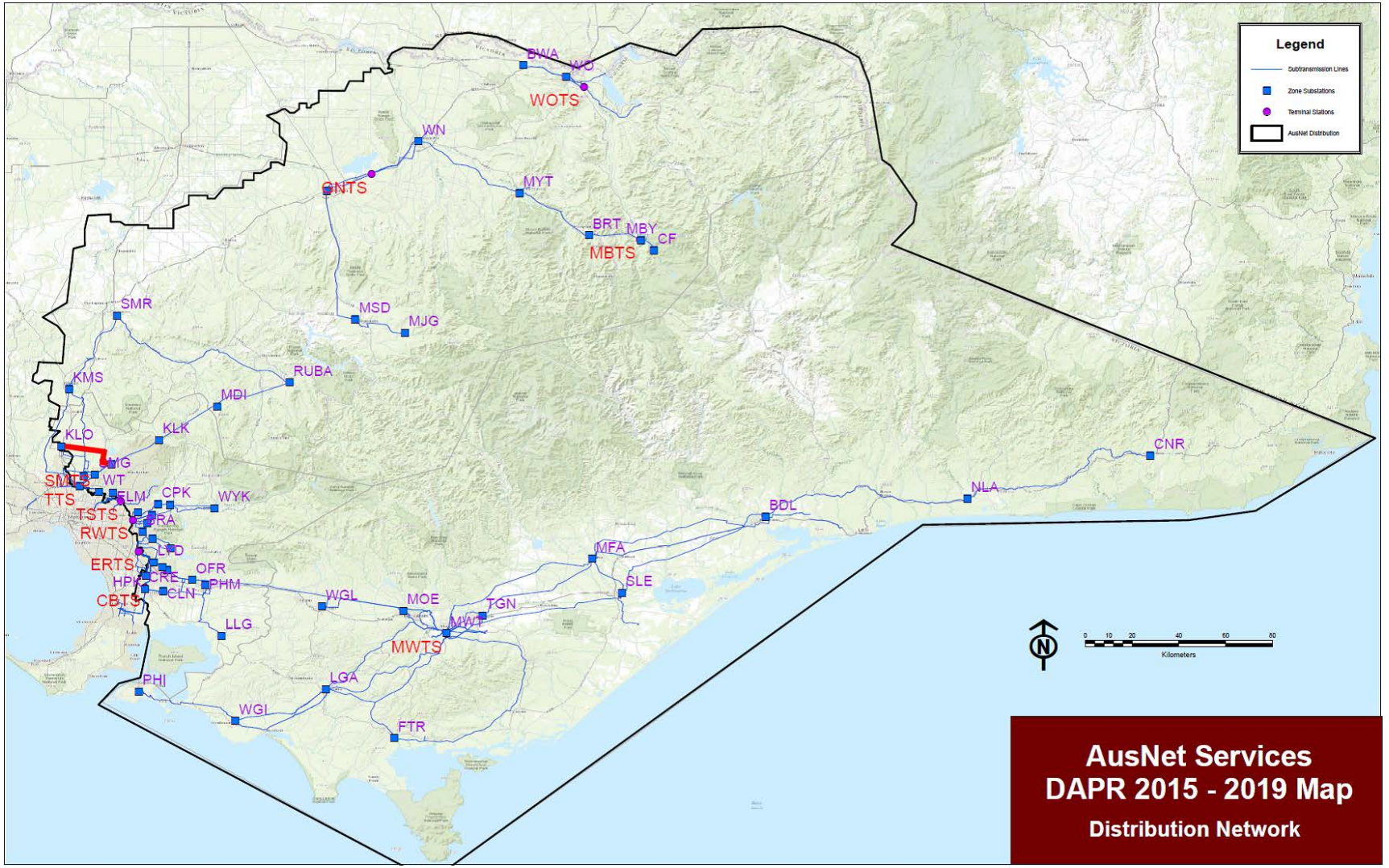
<table>
<tr><td>10.15</td><td>Audits of vegetation management compliance are undertaken annually by Energy Safe Victoria (ESV). Copies of the audit reports for 2011, 2012, 2013 and 2014 are attached as an appendix to this document.</td></tr>
<tr><td>21.5</td><td>Actual and forecast payments to embedded generators to avoid network augmentation are shown below.
<table>
<tr><th>Embedded Generator</th><th>2011</th><th>2012</th><th>2013</th><th>2014</th><th>2015</th></tr>
<tr><td colspan="6">Actual/budget ($end 2015)</td></tr>
<tr><td>Traralgon Power Station</td><td>-</td><td>-</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td></tr>
<tr><td>Bairnsdale Power Station</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td></tr>
<tr><td colspan="6">Forecast ($end 2015)</td></tr>
<tr><td></td><th>2016</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th></tr>
<tr><td>Traralgon Power Station</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td></tr>
<tr><td>Bairnsdale Power Station</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td><td>C-I-C</td></tr>
</table></td></tr>
<tr><td>30.1</td><td>Forecast maps of AusNet Services' distribution system for the forthcoming regulatory control period are attached as an appendix to this document. A single new major network asset is proposed; a sub-transmission line from zone substation KLO to zone substation DRN.</td></tr>
</table>

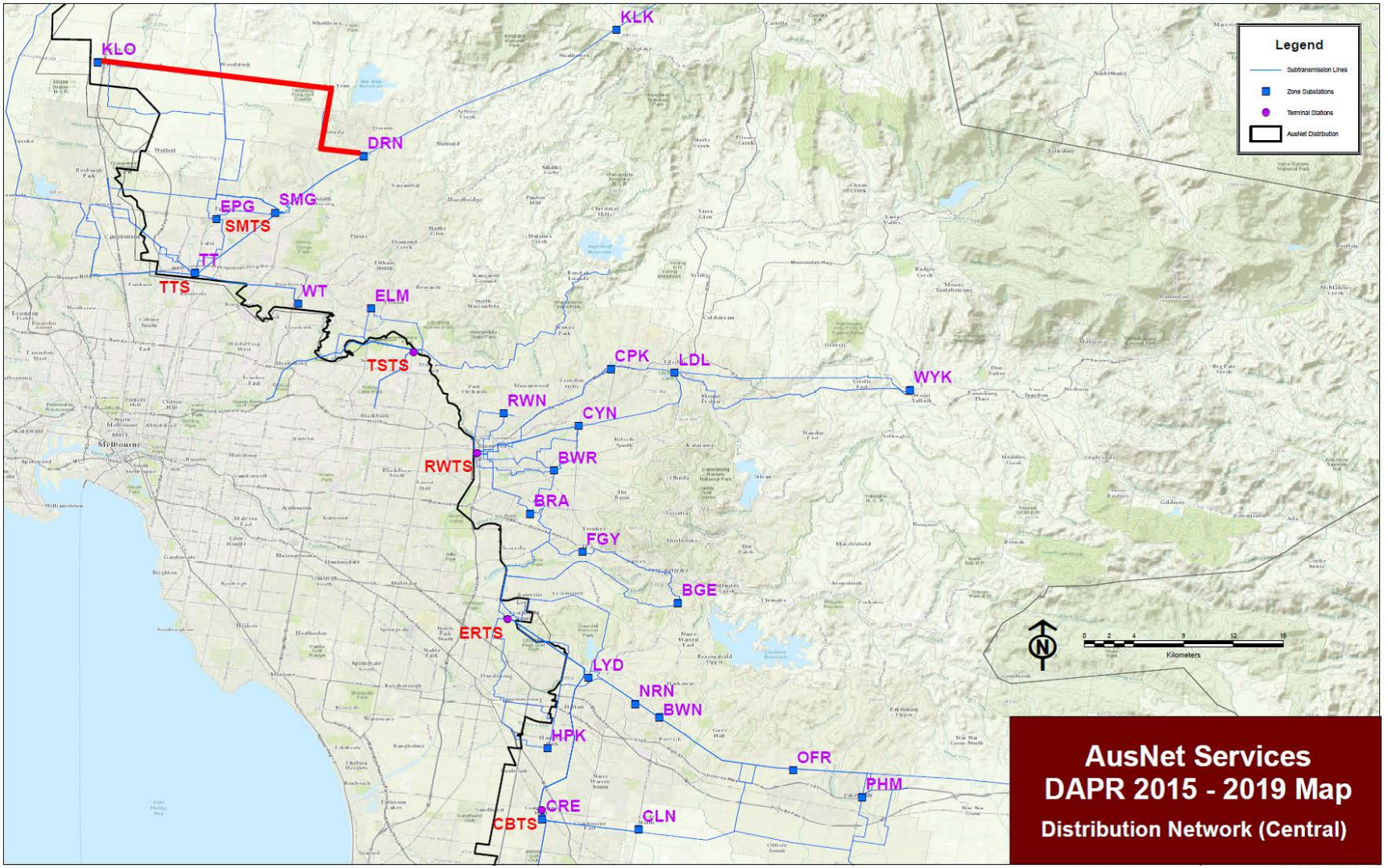
# 3 Appendices

## 3.1 Vegetation Management Audits

Attached.

## 3.2 Forecast Distribution System Maps




KLK
KLO
DRN
EPG
SMG
SMTS
TT
TTS
WT
ELM
TSTS
CPK
LDL
WYK
RWN
CYN
RWTS
BWR
BRA
FGY
BGE
ERTS
LYD
NRN
BWN
HPK
OFR
PHM
CRE
CBTS
CLN
Legend
Subtransmission Lines
Zone Substations
Terminal Stations
AusNet Distribution
N
Kilometers
AusNet Services
DAPR 2015 - 2019 Map
Distribution Network (Central)

# Table of Contents

# BUSHFIRE MITIGATION AUDIT 2011-2012

## 1. AUDIT SCOPE AND APPROACH

The audit was conducted on SP AusNet Distribution (SP AusNet (D) in accordance with Energy Safe Victoria (ESV) Bushfire Mitigation Audits 2011/2012 Scope of Works, dated August 2011, and in conjunction with Electricity Safety Regulations and other subordinate legislation. Particular emphasis was placed on the Policies, Procedures, and Practices adopted in the Electricity Supplier's plans that mitigate the potential for bushfire starts. SP AusNet's (D) Bushfire Mitigation Plan 2011-12 Electricity Distribution Network (BMP) and Vegetation Management Plan and Procedures 2011-2012 (VMP) have been used as the base reference documents to outline the Company's standard of performance, and activities undertaken to comply with the intent of the Regulations.

As part of this implementation, an assessment of the Electricity Supplier's assets and vegetation line clearance was carried out in the field.

The Audit was conducted in three stages, between 26th September 2011 and 1st October 2011 with the Company being given a weeks notice on all aspects of the audit to be undertaken. (SP AusNet (D) requested that they be given 2 weeks notice of the scope and questions in the future:

1. A follow-up on issues raised from ESV's assessment of the Company's Bushfire Mitigation Plan;
2. A desktop assessment of the Company's policies, procedures and work program in relation to their Bushfire Mitigation and Vegetation Management Plans, including deviations from past practices to determine the effectiveness of the programs over the past 12 months;
3. The field audit included a detailed check of 107 sites (104 sites in the HBRA and 3 sites in the LBRA) after downloading the pole details and asset defects from the Company's database. The sites were visited with a Company representative where the detailed information taken from the Company's database records were crosschecked against the actual assets in the field. Where an asset defect/anomaly existed not recorded by the Company or the vegetation clearances at the site did not meet the new Electricity Safety (Electric Line Clearance) Regulations 2010 it was noted. The information was then filtered to determine the:
   - accuracy of the Asset Inspectors inspection and data capture;
   - accuracy of the vegetation assessment and data capture; and
   - quality of the information contained in the Company's database.

The field audits were carried out within the Electricity Suppliers licensed boundaries in accordance with the areas specified by ESV Executive Manager Infrastructure Safety. The level of the Company's compliance was determined from the selections.

### *1.1 Bushfire Mitigation Plan*

SP AusNet (D) submitted their Bushfire Mitigation Plan 2011-2012 and Bushfire Mitigation Strategy 2011-2012 to Energy Safe Victoria (ESV) on 30th June 2011.

The Plan outlines how the Company intends to comply with the Electricity Safety Act and the Electricity Safety (Bushfire Mitigation) Regulations 2003 plus Amendment Interim Regulations 2010.

The objectives of the SP AusNet (D) Bushfire Mitigation Plan (BMP) are to:

- To be the primary tool for the implementation of SP AusNet's bushfire mitigation programs;
- To compile in one place all the essential information for the implementation of SP AusNet's bushfire mitigation programs in a format that can be readily understood by personnel at all levels;
- To be an information resource on bushfire mitigation issues, relevant legislation and policies for the control of associated operational activities;
- To provide a basis for assigning responsibilities for bushfire mitigation to SP AusNet's personnel and service providers;

- To provide a consistent approach to bushfire mitigation management which ensures that changes to personnel and organisation structure do not detract from the standard of bushfire mitigation performance;
- To minimise and control incidents with the potential to start a bushfire; and
- To help demonstrate due diligence on the part of SP AusNet in preventing incidents which may cause the ignition of fire and threaten public safety.

They are aiming to adopt the following long-term strategies to minimise the risk of electric lines starting fires or causing electrocution.

- Use skilled people and modern technology to continue to develop and improve methods of environmental management and ongoing development of fire safe distribution assets;
- Work with municipalities, landowners and other affected persons to ensure the planting of appropriate trees near powerlines and relocation of powerlines where appropriate; and
- Investigation and implementation of new technologies that reduce the risk, for example line insulation techniques, undergrounding and line protection devices.

The Bushfire Mitigation Plan 2011-2012 and Bushfire Mitigation Strategy 2011-2012 is detailed and covers the intent of the Regulations and at the date of the audit had not been approved by ESV.

Additional Information Requested by ESV

ESV requested clarification and additional information in relation to the BMP in an email to SP AusNet dated 4th August 2011. SP AusNet provided a full response to this request, including an updated BFM Plan and Strategy, in an email to ESV dated 14th September 2011.

- Observation - The table of prescribed particulars of the regulations and the corresponding location of SP AusNet Reference Documents presented in section 8.1 and 8.2 of the Plan are a reflection of the 2003 regulations and do not include amendments introduced in 2010 detailing regulations pertaining to major electricity companies. It is suggested that the Plan be reviewed in consideration of these amendments and omissions be addressed.

  *Response - Plan has been reviewed and updated accordingly.*

- 5A(c) - The Strategy document identifies those persons responsible for carrying out the plan but does not provide the addresses of these persons.

  *Response - Strategy has been updated to include this information*.

- 5A(i) -The Plan identifies a document (Procedure BFM 21-62) as containing information regarding various works and the due dates of these works for achieving strategies to minimise the risk of the supply networks starting fires. No copy of this procedure was provided with the submission.

  *Response - Copy of BFM 21-62 provided.*

  The Manual identified a program to install NERs at other Zone Substations but no copy of this program was provided with the submission.

  *Response - No additional NERS are planned at this stage, but this is subject to ongoing review based on risk.*

- 5A(j) - The Strategy document describes aerial inspection of at-risk supply networks alternating with ground level inspections to achieve an inspection interval of less than 37 months. The quality of information received from aerial inspection should be demonstrated to be as good as, or better than, that obtained from ground level inspection.

  *Response - On 25/8/11 SP AusNet was granted an exemption by ESV to enable the implementation of a transition program to achieve full compliance with the requirement for an inspection interval of no longer than 37 months. In granting this exemption ESV have reviewed aerial inspection images of SP AusNet distribution line assets and considered the enhanced ground based inspection program that will now also include visual inspections of the upper sides of pole top hardware. On this basis ESV have accepted that SP AusNet meets the requirement for the inspection intervals.*

  The plan should describe how an inspection frequency of no less than 37 months will be achieved for electrical assets located in areas where aerial inspection cannot be undertaken.

*Response - SP AusNet has identified those assets where aerial inspections cannot be performed and for these assets will carry out ground-based inspections at an inspection interval of no longer than 37 months.*

- 5A(k) - The Strategy document refers to refresher training in accordance with VESI training matrix. ESV has yet to approve a training course, including practical assessment, for inspection of at-risk supply networks.

  *Response - A training course for asset inspectors is being developed by Gippsland TAFE and will require final approval by ESV. In the interim SP AusNet applied to ESV for an exemption from this requirement until such time as the training course can be finalised and approved. ESV responded on 25/8/11 that whilst they do not propose to grant this exemption, they expect that there will be an approved asset inspection training course in place (including a process for recognition of prior learning) in September 2011. On this basis the expectation is that there will be a high level of acceptance of existing asset inspectors.*

- 5A(l)(i) - The Strategy document refers to an operational procedure when a fire occurs (BFM 21-83) but no copy of this procedure was provided with this submission.

  *Response - Copy of BFM 21-83 provided.*

- 5A(l)(ii) - the Manual document identifies the following in relation to operation and maintenance on days of TFB. No documents were provided to support these procedures.

  - Permits Required for Days of Total Fire Ban (Procedure BFM 21.80).

    *Response - Copy of BFM 21-80 provided.*

  - Maintenance and Construction Activities on Total Fire Ban Days (Procedure BFM 21.82).

    *Response - Copy of BFM 21-82 provided.*

  - Bushfire Mitigation Strategy Plan (BFM 21-63) – Total Fire Ban Day.

    *Response - Copy of BFM 21-63 provided.*

    and also:

  - In general a 3.5kA phase to ground fault level is the point at which a NER is installed or the feeder is suppressed on Days of Total Fire Ban.

    *Response - This is the fault level above where it has been found that a meaningful reduction in fault level can be achieved by installing an NER.*

    No documents were provided to support these procedures.

- 5A(m) - The Manual, at section 8.4.3 describes a line inspection frequency of 5 years and 3 months for timber poles and 10 years and 3 months for concrete poles. These inspection frequencies do not meet the requirements for inspection of at-risk electric lines.

  *Response - This will be updated in the Manual to meet the new requirements.*

  The Manual describes investigation of significant fires by reference to BFM 21-70 and BFM 21-71 but copies of these documents were not provided with this submission.

  *Response - Copies of BFM 21-70, BFM 21-70A, BFM 21-70B, BFM 21-70C, BFM 21-70D, BFM 21-70E and BFM 21-71 provided.*

- 5A(n)(i) - The Manual describes measuring the Bushfire Mitigation Index according to procedure BFM 21-67 but no copy of this procedure was included with this submission.

  *Response - Copy of BFM 21-67 provided.*

- 5A(n)(ii) to (vi) - The Plan did not contain details of processes and procedures to be employed to:
  - Identify deficiencies in the Plan or its implementation;

    *Response - The Bushfire Mitigation Management Committee meets regularly and has responsibility to review and approve the plan and then monitor its implementation. SP AusNet has also developed and monitors the achievement of KPIs that are designed to minimise bushfire risk, including by the implementation of programs under the plan.*
  - Monitor and audit the effectiveness of inspections carried out under the plan;

    *Response - ESV carry out annual BFM audits, which include checking to ensure that nothing has been missed by SP AusNet's asset inspectors. Independent audits of the asset inspectors are also carried out regularly. As indicated in the response to item 5 above, ESV have advised that there will be an approved asset inspection training course in place (including a process for recognition of prior learning) in September 2011.*
  - Improve the plan and its implementation if deficiencies are identified;

    *Response - As per the response to the first dot point above.*
  - Ensure necessary training is provided;

    *Response - SP AusNet has developed and implemented employee training policies and procedures to ensure that both initial and refresher training is performed as required. It also reviews these requirements for contractors as part of the process of their engagement and ongoing employment.*
  - Monitor and audit the competence of persons carrying out inspection under the plan.

    *Response - As per the response to the second dot point above.*
- 5A(p)(i) - Providing a Private Electric Line brochure to customers with POELs does not fulfil the requirement to enhance public awareness of the responsibilities of owners of POELs in relation to bushfire mitigation.

  *Response - The following address shows the media release we drafted and distributed to kick off the public awareness campaign. This was sent to media in regional Victoria. The following address shows the Television and Radio advertisements we produced and which appeared on regional TV and radio during last summer.*

  http://www.sp-ausnet.com.au/?id=2202421008A14E92BB2BD6129CA257694000273A6
- 5A(p)(ii) - No copy of the POEL brochure was provided with this submission so it is not clear if it informs the public of the responsibility of the electricity company to inspect POELs within its distribution areas.

  *Response - The following address is to our external website for people to access the Private Overhead Electric Line brochure.*
- ES Act 1998 **s.**113B(3) (a) - While SP AusNet's website invites the public to view the accepted bushfire mitigation plan no copy of an accepted bushfire mitigation plan was found on its website.

  *Response - The accepted BFM Plan for the Electricity Distribution Network for 2010/11 can be viewed at the following address.*
- ES Act 1998 **s.**113B(3) (b) **-** No mention was found in the plan or documents associated with this submission to indicate the plan and associated documents would be made available for inspection at the company's principal office in Victoria.

  *Response - Section 7 of the plan has been updated accordingly.*

The Company's Bushfire Mitigation Plan is supported by the Bushfire Mitigation Strategy and Manual and is a complex set of documents and in the Auditors opinion would benefit from the consolidation of strategies, policies, and procedures to a specific document covering all aspects of their BFM programs.

## *1.2 Electric Line Clearance Management Plan*

The Vegetation Management Plan and Procedures 2011-2012 for SP AusNet (D) was originally submitted on 31st March 2011. The Plan contains the process and procedure to be employed to meet the Electricity Safety (Clearance of Lines) Regulations 2010.

The objectives of the Vegetation Management Plan (VMP) are to:

To implement a powerline vegetation management strategy that complies with the requirements of all participants and creates a harmonious balance for the community between preservation of the environment, safety, and cost effectiveness.

SP AusNet (D) aims to:

- Meet the requirements of the Act, Regulations and Code;
- Review annually and develop management programs, processes, practices, methods and implement efficiencies for the benefit of customers and other stakeholders;
- Preserve and enhance the integrity of existing and proposed vegetation;
- Minimise the frequency and length of disruptions to the general public;
- Be committed to the safety of the community, as a whole, and employees engaged in the provision of the services;
- Raise awareness of all aspects of line clearance through increased communication;
- Adopt the following long-term strategies to minimise the risk of electric lines starting fires and causing electrocution;
    - Use skilled people and modern technology to continue to develop and improve methods of environmental management and ongoing development of fire safe distribution assets;
    - Work with municipalities, landowners and other affected persons to ensure the planting of appropriate trees near powerlines and relocation of powerlines where appropriate; and
    - Investigate and implement new technologies that reduce the risk eg. Line insulation techniques, EDO fuse phase out/replacement, undergrounding, and line protection devices and fault energy reduction measures (NERs, auto reclose suppression).

On the 8th August 2011 SP AusNet (D) received a table from ESV titled ELCMP Evaluation and was requested to provide responses/clarifications to 2 items and amend the ELCMP accordingly:

- 3(a) & (b) - While the submitted plan does not describe a requirement to inspect a reported hazard tree by a suitably qualified arborist the plan does refer to Procedure VEM 20-01 – Hazardous Tree and 56M Assessment where this requirement might be described. VEM 20-01 requires reported trees to be assessed by a Field Officer (not defined) as distinct from a Field Assessor (defined as qualified and experienced).

  *Response: SP AusNet has removed the term Field Officer and added a definition for Assessor. SP AusNet has also replaced the word Field Officer throughout the document with 'Arborist' to better reflect the current mode of operation (see revised document VEM 20-01 attached).*

- The procedure calls for an Arborist's assessment once the DB and Council(s) have agreed the tree is a hazard. This does not quite appear to be what the regulation is calling for.

  *Response: SP AusNet's interpretation of what "the procedure calls for" (referring to VEM 20-01) is different to that of ESV. Section 9.2 of SP AusNet's Procedure VEM 20-01 "Council / Shire Tree Negotiations" refers only to the process of seeking an agreed approach in relation to the hazard tree inspection program and not whether an individual tree is hazardous or not. This determination is made by SP AusNet's arborist.*

These documents have been amended and were submitted to ESV on the 15th September 2011. At the date of the audit SP AusNet (D) had not received an acceptance from ESV for their Electric Line Clearance Management Plan.

### *1.3 CFA Expectations for the 2011/12 Fire Season*

Mr Luke Heagerty conducted a briefing on 27th October 2011, which covered the expected risk and severity of fire conditions, weather, and projected anticipated commencement of the Victorian declaration periods. Victoria can expect an above normal grass fire potential this season, as a result of significant rainfall across the State. This is a complete change in conditions from the last decade and providing similar background conditions to Ash Wednesday:

- Wetter seasonal rainfall this year;
- Grass growth across the state is prolific and widespread, representing a return to conditions more consistent with the long term average;
- Highest on record rainfall and partial inundation has resulted in significant and widespread native grass growth across the Mallee;
- Expected above average temperatures (both day and Night) this season;
- Prolific grass growth in paddocks and roadsides;
- The reduction of stock during last 10 years of drought and the switch to grain farming reduces fire breaks and adds available ground fuel; and
- The forests are saturated which has reduced the risk of campaign fire potential this season.

In consideration of the above indicators the implementation of the fire declaration dates is to be progressive across the State. These dates shall come into effect as the fire risk increases with the exception of the Colac Otway and Corangamite Shires, which are to commence on the 1st November 2011. No indication was given when the remaining Shires are likely to declare but it is expected that it would progress from the North West through the State. At the time of the audit no Shire had been declared in SP AusNet's operational area.

## 2. GENERAL MATTERS

### *2.1 Management Operational Organisation Structure*

SP AusNet's (D) current operation/maintenance management organisation structure is outlined in the Bushfire Mitigation Strategy:

- The Group General Manager, Networks Strategy & Development has overall accountability for Bushfire Mitigation obligations.
- The Network Strategy & Planning Manager and the Manager, Networks Safety and Risk are responsible for developing and implementing policies and strategies to satisfy Bushfire Mitigation obligations.
- The Manager Asset Engineering is responsible for the implementation of the policies and strategies through a team comprising the Works Planning and Performance Monitoring Manager, the Works Integration Manager and two Regional Maintenance Representatives each functionally responsible for Bushfire Mitigation works.

### *2.2 Major Step Changes*

SP AusNet (D) has implemented the following step changes in the last 12 months:

- SP AusNet's (D) transition plan includes an assessment that has been carried out to determine the highest risk areas in SP AusNet (D) HBRA. The inspections are to be prioritised on risk during the transition period. The fire consequence assessment was conducted by Doctor Tollhurst of Melbourne University and this has been incorporated into a Network Fire Risk Model;
- Priority Codes have been reviewed to provide a uniform approach to time delay between observing a defect and maintaining or replacing the item. The alignment of the Priority Targets (PT) is across Transmission, Distribution, and Gas. Currently the Priority Rating system across the 3 main business streams allows for 19 different categories. The intention is to simplify this down to eight (8);

- In 2011 Select Solutions changed their 56M tree data capture from a paper based process to an electronic process using a Personal Digital Assistant (PDA). This change enables the data to be transferred directly to the 56M database eliminating the time consuming process of hand writing on spreadsheets in the field and then manually inputting the information into the database. This process also reduces the possibility of errors from data inputting occurring.

## *2.3 New Initiatives the Electricity Supplier has Implemented to Mitigate Fires*

SP AusNet (D) has implemented several major programmes and expanded some initiatives previously commenced to mitigate fires within their operational area:

- EDO Fuse replacement – This program requires the progressive replacement of 11,050 EDO units with Boric Acid fuses over a period of 5 years. During 2011, 2,000 have been programmed for replacement with the Company behind target at the date of the audit with 346 completed and 290 units on issue to Thiess.
- Conductor replacement – This program requires the replacement of 250 kilometres of conductor (predominantly steel conductor with a small amount of copper), which is to be carried out over a 2 year period. At the time of the audit SP AusNet (D) stated that they are behind target due to adverse environmental conditions. The Company anticipates that they should be able to catch up during the summer period.
- Neutral Screen Service cable replacement – This program requires the replacement of approximately 28,000 neutral screen service cables over a period of 5 years. The Company are on target with 13,823 completed to date.
- Introduction of a plan to inspect assets at no more than 37 month intervals - As directed by ESV, SP AusNet is rescheduling its asset inspection program to ensure that all poles are inspected within the specified 37 month window. It is aimed to achieve full compliance as per the transition plan by 31st December 2012. The Company is on target.
- Ground based Asset Inspection has been in-sourced - This function was previously carried out by UAM and SP AusNet (D) has now moved 36 of UAM's existing asset inspectors to Select Solutions. This commenced on 1st April 2011.

Previous commenced initiatives/step changes:

- An audit of the Asset Inspection process was undertaken by an SP AusNet Internal Audit in 2011. This reviewed the benefits of undertaking an aerial inspection program and compared the results of maintenance items identified from conventional ground based inspections performed on the same poles in three sample areas - Completed
- The Steel conductor Assessment Guide developed by SP AusNet's Distribution Asset Engineering department in conjunction with experienced field personnel and is now fully operational.
- Conductor replacement – This program required the replacement of 169 kilometres of aging copper or corroded steel conductor during 2008 to 2011. At the time of the audit SP AusNet (D) have completed 151 kilometres of this project. The remaining 3 shutdowns are to be carried out during the summer period when access becomes available – In progress
- The introduction of a mid cycle inspection that involves an aerial patrol (by helicopter) or alternatively by ground based aerial devices (EWP, Himast, Drone, Camera on a Stick) in areas that cannot be covered by the helicopter, of all assets in the HBRA. This is aimed at capturing issues relating to the pole top structure that can only be detected from above, and in addition gives the Company a second assessment of the asset half way through the cycle. This was introduced early to mid 2009 and all assets are to be inspected by 31st March 2012 – In progress

## *2.4 Analysis of Faults for Potential Causes of Fire*

Reporting Fire Starts to ESV

SP AusNet's (D) criteria for reporting fire starts to ESV are detailed in their Bushfire Mitigation Reporting procedure covering:

- Pole Fire Report;
- Pole and Crossarm Failure Report;
- Flashover Report;
- Plant Failure Report.

All ground and pole fires and other electrical incidents are reported to Energy Safe Victoria in accordance with the Electricity Safety Act – Section 1.4.2 (1) & (2) and Electricity Safety (Management) Regulations Section 27 (2) and as detailed in the ESV Distribution Business Electrical Safety Performance Reporting Guide.

Reporting is undertaken using the following methods:

- As soon as practicable report to ESV by telephone all relevant details;
- Follow up with a completed Electrical Incident Confirmation Form (Schedule 1) sent to ESV by fax or email within 2 business days of the telephone report; and
- Send by fax, surface mail or email a complete Electrical Incident Report Form (Schedule 2) to ESV within 20 business days of the telephone report

Ground Fire Starts from Electrical Distribution/Transmission Assets in the Last 12 Months

There have been 21 ground fire starts in SP AusNet (D)'s operational area over the past 12 months. These are broken down by:

- HBRA - 16
- LBRA – 5

Pole Top Fires in the Last 12 Months

There have been 117 pole top fires in SP AusNet (D)'s operational area over the past 12 months. These are broken down by:

- HBRA - 114
- LBRA – 3

Since January 2010 ESV has amended the definition of pole top fires to include "fires on aerial network assets themselves (e.g. pole fires, "candling" fuses etc), irrespective of whether they start a ground fire or not" and the Company has modified their report to comply with this directive.

Reviews Conducted on Potential Causes of Fire Starts

SP AusNet Distribution conducts reviews on potential causes of fire starts and produces a summary report annually and they use history of fires as a catalyst to review potential causes of fire starts. The Bushfire Mitigation Management Committee (BMMC) requests that the fire reports for the past 12 months be reviewed and the details checked. The aims of this exercise are:

- To determine if there are any trends in the probable causes of these fires, in particular, if there has been any increase in the number of fires starting at a particular asset; and
- To use these results to determine any future improvement plans concerning the management of electrical assets.

During the period 2004 – 2010/11 there have been 18 probable causes of fire reviews carried out and of the 18 the following 8 have been updated in 2011:

- Trees;
- Birds;
- Vehicles;
- Conductor;
- Pole;
- Surge Diverters
- Fuses;
- Transformer Failure;

An analysis carried out to identify the root cause of the failures as outlined in the "Action Plan to Mitigate potential fires caused by SP AusNet Distribution Assets" shows the number of fires started was lower than in the previous four years. In addition, the number of fires likely to start from conductors, joints, etc, had dropped to 3.

A review of fire starts over the past 5 years has been conducted which has resulted in expanded programs in the following areas:

- Conductor replacement of corroded copper and steel conductor;
- Conductor joint replacement;
- Steel conductor audit;
- Neutral Screen service cable replacement;
- Fitting of Service Cable break away device when a service is replaced or repaired;
- Pole top rebuild program and crossarm replacement;
- Special Pole top aerial inspections;
- Replacement of Air break switches with gas switches;
- Reduction of bird and animal contact hazards;
- Earth Testing program;
- EDO fuse replacement program;
- Assessment of hazard trees that are outside the clearance space; and
- Publicity programs to reduce probable fires due to human activity.

All programs above have now been implemented and are ongoing.

## *2.5 Analysis of Asset Failures*

Where an asset failure occurs on SP AusNet's (D) system it is reported in the PowerOn Fault report system, which also records all faults on the network. This system has a field covering the asset affected that is linked to the root cause of each fault. Raw data for 2010-2011 is provided from this system and used in the "Action Plan to analysis asset failures with the aim of mitigating potential fires. The report "Action Plan to Mitigate Potential Fires caused by SP AusNet Distribution Assets" has an appendix that lists the faults against each type of asset and the root cause of the fault.

- Survey of Pole failures
- Pole failure Xmas Hills
- Pole failure Ringwood
- Pole failure Benalla
- Pole failure – by Car – Croydon
- Pole failure Newborough
- Strength testing of disc insulators.
- Bent Stay bolt failure- Gooramadda
- Bent stay Bolt Analysis by Attar
- Pole Failure – Emerald

SP AusNet (D) has developed a range of strategies, which also included the analyses of asset failures, and the introduction of advanced technologies and service life condition monitoring.

These strategies are contained on SP AusNet's Intranet.

- Conductors
- Capacitor Banks & Pole Top Capacitors
- Circuit Breakers
- Civil Infrastructure
- Crossarms
- Distribution Transformers
- Electrical Earths
- MV Switches & ACR's
- MV Fuse Switch Disconnectors
- HV Switches, Disconnectors & Earth Switches
- Instrument Transformers
- Insulated Cable systems
- Insulators/ Medium Voltage
- Line Surge Diverters
- Line Voltage Regulators
- Poles
- Power Transformers & Station voltage Regulators
- Protection and Control Systems
- Public Lighting
- Services Cables
- Surge Diverters in Zone Substations
- Neutral Earthing Devices
- Auxiliary Power Supplies
- Communication Systems
- Remote control and monitoring
- Asset Date Gathering Networks

The following projects were instigated as a direct result of reviews over the last 5 years:

- Neutral Screen service cable replacement - *Ongoing*
- Conductor replacement of corroded copper and steel conductor - *Ongoing*
- Pole top rebuild program - *Ongoing*
- Conductor joint replacement - *Ongoing*
- EDO fuse replacement program - This program also involves a change of supplier for EDO fuse links from ABB to NGK and where EDO fuse tubes are found to be > 10 years they are to be replaced with new EDO fuse tubes - *Ongoing*

SP AusNet (D) has also carried out extensive risk assessments as part of it's ESMS for the electricity distribution network that was submitted to and received acceptance from ESV. Many of the risks identified and assessed were associated with asset classes and subclasses.

## *2.6 Preparation for the Fire Danger Period*

SP AusNet (D) has developed a List of Works required to be undertaken in readiness for the next Fire Season and this is outlined in the Bushfire Mitigation Calendar of Important Events Procedure and at the date of the audit the status of the works to be undertaken in readiness for the next fire season is as follows:

- Prepare list of outstanding critical maintenance items. Forward list to Manager Asset Engineering and Manager, Networks Safety and Risk - *Ongoing*
- Prepare summary of Fire Reports and issue to BMMC - *Ongoing*
- Prepare Bushfire Mitigation Report and issue summarised report to BMMC - *Ongoing*
- Provide BMMC with Bushfire Mitigation Status Report - *Ongoing*
- Review Bushfire Mitigation Reports and initiate action as required - *Ongoing*
- Resolve queries & initiate action on matters requiring attention from summarised Bushfire Mitigation Report - *Ongoing*
- Include summary of Bushfire Mitigation Report in Business Report - *Ongoing*
- Arrange meetings of BMMC - *Ongoing*

- Prepare SP AusNet Vegetation Management Plan - *Complete*
- Approve SP AusNet's Vegetation Management Plan - *Complete*
- Submit Vegetation Management Plan to the ESV for approval by 28 February - *Complete*
- Finalise Fire & General Liability Insurance Renewal Underwriting Submission - *Complete*
- Draft Bushfire Mitigation Strategy Plan and submit to BMMC for endorsement - *Complete*
- Submit Bushfire Mitigation Plan to ESV for approval by 1 July - *Complete*
- Decide on advertising for summer period - *Complete*
- Commence monthly BFM reporting to ESV until end of the fire season (BFM Index) - *In progress*
- Issue letter and information brochures to Overhead Private Electric Line customers - *In progress*
- Request permits to work on days of Total Fire Ban from MFB, CFA and DSE - *October*
- Coordinate senior management review visit programs - *October*
- Post on the Intranet copies of permits to work on Days of Total Fire Ban - *November/December*
- Perform Senior Management Reviews - *December*
- Target date for submission of Operational Contingency Plan (if required) - *1st December*
- Complete all BFM works - *1st December*
- Complete all vegetation works in HBRA areas - *15th December*
- Complete all BFM obligations - *15th December*

SP AusNet has not made any significant modifications to their Bushfire Mitigation Calendar of Important Events in the last 12 months.

Corrective action where Deadlines are not achieved Prior to the Summer Fire Season

SP AusNet (D) outlines in their Bushfire Mitigation Manual the requirement to establish an Operational Contingency Plan detailing those lines on which fire prevention work is incomplete and for which possible disconnection maybe required on days of Total Fire Ban. This is supported by the Operational Contingency Procedures Plan that describes the process to be undertaken before supply can be disconnected.

The role of the Bushfire Mitigation Management Committee (BMMC) is to oversee the promulgation of policy and standards and review performance of the various bushfire mitigation programs.

The Committee focuses on a range of matters such as to:

- Approve changes to policy or standards, which impact the bushfire mitigation program and the Business Rules;
- Initiate review of operating, design and maintenance standards where required to meet the KPI's of the Bushfire Mitigation Program
- Co-ordinate the Insurance Program and the Public Awareness Program;
- Initiate and maintain appropriate systems to monitor performance and compliance, Initiate recovery actions when required;
- Arrange Senior Management Audits;
- Monitor significant events;
- Liaise at high level with external authorities;
- Report to the Environmental Management Committee;
- Report performance against KPI's to Asset Governance Committee and key stakeholders:
- Assess network bushfire risks in accordance with the corporate risk framework;

- Monitor the delivery of the Bushfire Mitigation program against KPI's and initiate corrective actions where required;
- Monitor the scope of internal audits to ensure desired compliance objectives are being met;
- Review corrective actions from internal and external BFM audits and initiate corrective actions as required;
- Manage and coordinate audits conducted by ESV;
- Oversee the management of the risk of SP AusNet's assets causing a bushfire.

The frequency of meetings is monthly or more often as required, especially in the lead up to the fire season.

SP AusNet has a number of mature processes to monitor the performance of contractors across their operational area to ensure activities are completed by the Fire Danger Period deadlines. Monitoring has always ensured the Fire Danger Period deadlines are achieved and therefore to date SP AusNet (D) has not needed to put corrective actions in place.

These processes cover:

- monthly contractor meetings;
- regular field inspections;
- regular bushfire mitigation meetings.

Works Remaining to be completed prior to the CFA Fire Declaration Dates

At the time of audit SP AusNet (D) was in the process of working through the items identified for rectification in preparation for the Fire Danger Period. Their Look Ahead Report lists any outstanding works to be completed prior to their nominal Fire Danger Period (nominally the 1st December). The Company had completed their September BFM meeting but the minutes were not finalised so for this report the August 2011 outstanding works figures have been used:

- Attachments – 897
- Bird Covers – 378
- Conductors – 11
- Line Inspection – 4009
- Surge Diverters - 0
- Poles Not Fire Safe
  - Group 1 & 2 (unserviceable poles) – 196
  - Group 3 (Limited Life past Inspection) – 122

Reporting Requirements to ESV on Outstanding Works Prior to and During the Fire Danger Period

SP AusNet (D) provides regular reports in an agreed format to ESV with additional information supplied on request. The Bushfire Mitigation Index report (BMI) is prepared and submitted to ESV between September and declaration date monthly, and during the Fire Danger Period monthly or more often by agreement with ESV.

The Company stated that they have the resources to complete all outstanding works prior to the Fire Danger Period. Due to adverse environmental conditions and limited access the Company has secured additional resources to ensure completion of all outstanding works prior to fire danger period. These additional resources are made up of:

- Tenix;
- Thiess;
- Jemena;
- Transfield;
- Conneq.

## 2.7 Fire Season Operational Plans

In general terms, during the Fire Danger Period SP AusNet Distribution's network is operated as normal and apart from the "CFA Restrictions for the Declared Fire Danger Period" procedure and the "Bushfire Mitigation Strategy 2011-2012" there are no operations or maintenance activities on the network that are specific to the declared Fire Danger Period.

- The CFA Restriction procedure specifies fire fighting equipment required on vehicles travelling off-road during the declared fire season. SP AusNet (D) has adopted the CFA requirements for vehicles as standard;
- The Bushfire Mitigation Strategy 2011-2012 outlines the process on how to deal with urgent defect work identified by Asset Inspectors during the declared Fire Danger Period.

Operational Plans Followed in the Event of a Fire

SP AusNet (D) has a procedure that sets out the process to be followed when SP AusNet Distribution personnel or their contractors attend a fire. The fault crew is to immediately call Customer Energy and Operations Team (CEOT) and inform them of:

- any isolation required;
- the size of the fire;
- the requirement for the CFA/MFB to attend; and
- another crew is required to assist.

The fault crew assesses the immediate public risk and isolates the fault if appropriate. The fault crew is to remain on site until the fire is out or SP AusNet Networks or contractor personnel have relieved them. The site is not to be left until a thorough inspection of the affected assets has been performed and the assets confirmed as good. That is, leaving the assets permanently or temporarily repaired so that the appropriate standards are maintained. This is to be carried out in conjunction with the CFA (or MFB if appropriate) to ensure no poles/cross arms continue to burn.

When a fire or disaster occurs and is established by a MECC Coordinator, the authorised Electrical Operator is not to proceed into the defined Fire Disaster Zone either through road blocks or other access routes.

SP AusNet (D) had several minor fires (grass and pole top) during the Fire Danger Period 2010/11 of which the process above was put in place and this proved to be effective. The procedure allows for escalation should it be required associated with the size of the fire.

## 2.8 Effectiveness of the Operational Plans

The Bushfire Mitigation Strategy 2011-2012 outlines the SP AusNet's Centre Electrical Operational Team (CEOT) responsibilities on days of TFB covering the following activities.

Urgent Defective Private Lines - Disconnection of any outstanding urgent defective Private Overhead Electric Lines (POELs), which includes:

- Arranging Field Crews to disconnect any urgent defective POELs;
- Contacting owners of urgent defective POELs to advise them of the disconnection;
- Arranging Field Crews to reconnect any disconnected POELs when TFB has ended.

The Asset Inspections Manager has the responsibility to ensure that the CEOT has up to date information on all urgent defective POELs required to be disconnected on TFB days.

Fires - The Availability Officer is to be advised immediately of any fires attended by fault crews, regardless of how they were started

Sustained Unplanned Interruptions to Supply - If any feeder or HV line protection device operates and supply is interrupted (other than successful reclosers) and the fault is not known:

- The feeder or line must be patrolled prior to attempting restoration.
- If the suppression of an Automatic Circuit Recloser or Circuit Breaker was for the sole purpose of working on the line, then only one attempt to reclose may be made. This is dependent upon the conditions of the day and should not be attempted under extreme conditions of wind and temperature.

Area Operations Officers - To notify the CEOT of any planned interruptions that have been cancelled, and those that have Regional Manager's approval to proceed. The CEOT in turn is to:

- Advise the Faults Call Centre and the NSC Complaints Resolution Team Leaders
- Update Power-on to reflect the cancellation
- Liaise with Senior Network Services Representatives as to media releases of cancelled interruptions where appropriate

This information is to be available to the Faults Team Leader no later than 15 minutes prior to the planned interruption time.

Auto Reclose Suppression - The Manager, Network Operations shall ensure auto reclose is suppressed on designated feeders supplying HBRA areas on TFB days.

POEL Disconnections - POELS with urgent defects shall, where practicable, be disconnected for the full period of the TFB.

On 31st January 2011 the CFA declared a TFB day for the East Gippsland District for 1st February 2011. On receipt of this advice, the CEOT sent an email to all SP AusNet personnel informing them of this. As a result, Level 2 in SPIRACS was declared.

## *2.9 Assistance Provided to Fire Control Agencies*

SP AusNet Distribution's Bushfire Mitigation Manual outlines the assistance to be provided to Emergency Response Authorities.

SP AusNet is represented on each of the 8 Regional Fire Management Planning Committees and support is provided to the fire control agencies on an as needs basis through this committee process. The Company has also established strong working relationships and communication links with Municipal Fire Prevention Committees, ESV, CFA, Department of Sustainability and Environment, Local Government and other relevant authorities. This includes developing guidelines that set out the electrical hazards, which may be encountered in carrying out their duties and in conducting any investigation of fires near their electricity assets.

SP AusNet personnel maintain contact with the CFA to discuss matters of common interest including liaison, fire hazard ratings and fire period declarations; and to assess climatic conditions and bushfire risk for the current season in consultation with fire authorities in order to decide whether the completion of bushfire mitigation activities in certain regions need to be advanced to ensure zero index is achieved by declaration.

In the event of a major fire necessitating field work such as major repairs and/or protection of our assets, the SP AusNet officer responsible for bushfire mitigation, or other appropriate officer as nominated by the SP AusNet, is to co-ordinate and direct activities associated with the fire (field assessment, damage, reinstatement, operational requirements) and set up a base and establish communications/liaison with the CFA, Operating Authority and field areas.

## *2.10 Effects of Fire on Assets*

As a direct result of the Victorian Bushfire Royal Commission report SP AusNet (D) has implemented the following in order to achieve the recommendations:

Recommendation 27

- The progressive replacement of all SWER (single-wire earth return) power lines in Victoria with aerial bundled cable, underground cabling, or other technology that delivers greatly reduced bushfire risk. The replacement program should be completed in the areas of highest bushfire risk within 10 years and should continue in areas of lower bushfire risk as the lines reach the end of their engineering lives

- The progressive replacement of all 22-kilovolt distribution feeders with aerial bundled cable, underground cabling or other technology that delivers greatly reduced bushfire risk as the feeders reach the end of their engineering lives. Priority should be given to distribution feeders in the areas of highest bushfire risk.

  *Status – This recommendation was referred by the Victorian Government to the Powerline Bushfire Safety Taskforce (PBST) for consideration. The PBST (established by the Victorian Government in 2010 and includes representatives from ESV and the distribution businesses), is due to submit its final report to the Victorian government by 30th September 2011 and it SP AusNet's (D) intention to implement this recommendation once it has been reviewed and agreed by the Victorian Government and subject to funding.*

Recommendation 28

- The State (through Energy Safe Victoria) require distribution businesses to change their asset inspection standards and procedures to require that all SWER lines and all 22-kilovolt feeders in areas of high bushfire risk are inspected at least every three years.

  *Status – an exemption has been received from ESV to allow SP AusNet (D) to implement a transitional program to achieve full compliance by 2015*

Recommendation 29

- The State (through Energy Safe Victoria) require distribution businesses to review and modify their current practices, standards and procedures for the training and auditing of asset inspectors to ensure that registered training organisations provide adequate theoretical and practical training for asset inspectors.

  *Status – A training course for Asset Inspectors is being developed by Gippsland TAFE in associated with the industry and requires final approval by ESV. In the interim SP AusNet applied to ESV for an exemption for this requirement until the training course can be finalised and approved.*

  *In response to this application ESV stated in their letter dated 25th August 2011 that ESV does not propose to grant an exemption from the requirements of the Regulation 5A(k). ESV expects there shall be an approved asset inspection training course in place (including a process for recognition of prior learning) in September 2011. The Exemption is that there shall be a high level of acceptance of existing asset inspectors.*

Recommendation 30

- The State amend the regulatory framework for electricity safety to require that distribution businesses adopt, as part of their management plans, measures to reduce the risks posed by hazard trees that is, trees that are outside the clearance zone but that could come into contact with an electric power line having regard to foreseeable local conditions.

  *Status – SP AusNet applied for and received an Exemption from ESV to enable a transition period to achieve full compliance with the requirements for maintaining the minimum clearance space by nominated dates depending on the assets involved. ESV granted the Exemption on the basis that it recognised that the achievement of full compliance will take time.*

Recommendation 31

- Municipal councils include in their municipal fire prevention plans for areas of high bushfire risk provision for the identification of hazard trees and for notifying the responsible entities with a view to having the situation redressed.

  *Status – an exemption has been received from ESV to allow SP AusNet (D) a transition period to achieve full compliance.*

  *SP AusNet applied for and received funding under its "Enhanced Safety Program" in the last Electricity Distribution Price Review (EDPR) following the determination by the Australian Energy Regulator (AER) to implement the requirements of Recommendations 30 & 31 over the 5 year period between 2011 and 2015.*

Recommendation 32

- The State (through Energy Safe Victoria) require distribution businesses to do the following:
  - disable the reclose function on the automatic circuit reclosers on all SWER lines for the six weeks of greatest risk in every fire season
  - adjust the reclose function on the automatic circuit reclosers on all 22-kilovolt feeders on all total fire ban days to permit only one reclose attempt before lockout.

  *Status – This Recommendation was referred by the Victorian Government to the PBST for consideration. The PBST is due to submit its final report to the Victorian government by 30th September 2011 and its SP AusNet's (D) intention to implement this recommendation once it has been reviewed and agreed by the Victorian Government and subject to funding. In the meantime it has been agreed by the Victorian Government that the Distribution companies, including SP AusNet, are to implement some changes to the operation of the distribution network that addresses this Recommendation during the forthcoming Fire Danger Period as a trial.*

Recommendation 33

- The State (through Energy Safe Victoria) require distribution businesses to do the following:
  - fit spreaders to any lines with a history of clashing or the potential to do so.

  *Status – A directive from ESV for retrofitting of spreaders was issued in January 2011 that requires SP AusNet (D) to retrofit spreaders on specific lines in the HBRA by 1st November 2015 and in all other areas by 1st November 2020. A program was subsequently submitted to ESV that meets the requirement of this directive. ESV has since responded by requesting additional information associated with this program and SP AusNet (D) is in the process of providing this. Once the program is accepted by ESV the ESMS for the electrical distribution network is to be updated, which should then enable a pass through application by SP AusNet to the AER for funding.*

- fit or retrofit all spans that are more than 300 metres long with vibration dampers as soon as is reasonably practicable

  *Status – A directive from ESV for retrofitting of dampers was issued in January 2011 that requires SP AusNet (D) to retrofit dampers on specified lines in the HBRA by 1st November 2015 and all other areas by 1st November 2020. (SP AusNet has a significant volume of work to perform in order to meet the requirements of this directive.) In response to this directive SP AusNet (D) submitted a prioritised plan to ESV on 1st February 2011 which was not accepted by ESV on the basis that they considered the costs in the current regulatory period would be too high. A revised plan was submitted by SP AusNet (D) in August 2011 which extended the installation time in the LBRA to 2025 however, ESV has rejected this plan on the basis that it does not meet the 2020 date of completion for all works in the LBRA. A 3rd plan is now being prepared by SP AusNet (D) and is to be submitted to ESV. Once the program is accepted by ESV the ESMS for the electrical distribution network is to be updated, which should then enable a pass through application by SP AusNet to the AER for funding.*

Several implementations from the Recommendations are subject to The Powerline Bushfire Safety Taskforce, which has now completed its work, and the report is being finalised by the Secretary for submission to the Victorian Government by 30th September 2011. The report included a range of work packages that consider various criteria and results in difference levels of bushfire risk reduction, along with estimates of the expenditure and timelines required for each. Following review and acceptance of specific work package(s) by the Government, the DB's need to reach agreement with the AER by October 2012 on the pass through of costs for this regulatory period so that works can commence by 1st January 2013.

At this stage the report remains confidential, as the Government has chosen not to release it to the community at this stage.

# 3. ASSET INSPECTION AND MAINTENANCE PROGRAM

## *3.1 General*

Asset Inspection Manual Priority Codes

The priority codes in SP AusNet's Asset Inspection Manual are not contained within the Bushfire Mitigation Plan as they were removed to allow for their common use across all 3 networks. The application of the Priority Codes is outlined in the Asset Inspection Manual associated with the Q4 codes (Asset Item). The actual codes are defined in standard operating procedures.

Priority Codes Alignment with the Fire Risks

SP AusNet's priority codes for action on distribution assets have been established to align with the potential risk of failure and not to fire risk. A priority rating is a predetermined a timeframe allowed to complete a task, based on the type of defective or critical plant and the likelihood of failure and consequence.

Currently the priority rating system indicates the perceived urgency to complete an item without indicating the business expectation of how long that should be. The business then relies on personnel sourcing the correct matrix or procedural document in order to determine the allowable timeframe to complete the task.

A Priority Target is a measure of calendar days.

- PT1 - 1 Calendar day;
- PT 7 - 7 Calendar days;
- PT14 - 14 Calendar days;
- PT30 - 30 Calendar days (1 month);
- PT90 - 90 Calendar days (3 months);
- PT180 - 180 Calendar days (6 months);
- PT365 - 365 Calendar days (1 year); and
- PT912 - 912 Calendar days (2.5 years).

PT912 is to be phased out in the HBRA and replaced by an observation code however it will remain in the LBRA where the inspection cycle is 5 years.

At the time of the audit SP AusNet (D) has 1418 corrective work orders on issue that are past their target date. This is predominately due to adverse environmental conditions during the winter months.

Policy Regarding Unserviceable Poles, Staked and Reinstated and Returned to Limited Life

SP AusNet's (D) Asset Inspection Manual describes all processes in the inspection of poles. Inspection programs designate poles as either:

- Serviceable;
- Limited life – must be retested, replaced, staked (where suitable) or have approved repair action taken;

- Unserviceable - must be replaced, staked (where suitable) or have approved repair action taken; or
- Pole Staking – a pole is staked in accordance with the criteria set out in Table 2 of the "Pole Stake or Replace Decision Matrix of the Distribution Standard Maintenance Guideline".

When eventually the staked pole deteriorates the pole may be classified as limited life and at this stage the pole is to be retested in accordance with the Company's Business Rules (currently tested every 2.5 years).

Unserviceable Poles Remaining in the System During the Fire Danger Period

SP AusNet (D) Bushfire Mitigation Manual has business rules for the time allowed to action poles classified as Unserviceable (to be actioned within 90 days). The Bushfire Mitigation Manual has no requirement to treat unserviceable poles differently in the Fire Danger Period. Any pole found to require an urgent repair is done as a fault.

The Company had 626 unserviceable poles remaining in their system during the 2010/11 Fire Danger Period broken down into:

- HBRA = 238
- LBRA = 388

Period from Inspection to Issuing of Work Orders

SP AusNet performs a two stage inspection process. Stage one is in the field with an Asset Inspector where the inspector performs tests and inspections of the asset, collects data and hi-resolution digital imagery. Stage two is in the office with a qualified Technical Assessment Officer reviewing the digital imagery on large 80cm monitors. Work is issued post stage one inspection on average to the following timeframes:

- PT30 = < 7 days (ie. 7 days to assess and issue the work to construction and then 23 days to complete the rectification);
- PT90 = < 28 days (ie. 28 days to assess and issue the work to construction and then 62 days to complete the rectification);
- PT180 or greater = < 42 days. (ie. 42 days to assess and issue the work to construction and then 138 days to complete the rectification).

This works the same for the mid cycle aerial inspection with the priority being allocated at the time of inspection and the countdown commencing at that point.

Identification of Inappropriate Pole Assemblies

SP AusNet's (D) Standard Installation Manual has three types of pole top assemblies, i.e. Pole Assembly A (pole cap with a strap), B (concrete pole), and P bracket (current standard for wood poles).

*Note: Pole Assembly A has been superseded by the P bracket.*

The Company's Asset Inspection Manual has a procedure for visual inspection in relation to the identification and requirement for correction of inappropriate pole top angle assemblies.

The Asset Inspector is required to determine missing or unsecured pole cap or major splits in the top of the pole.

## *3.2 Asset Inspection*

Asset Inspection Alignment to the 37-Month Inspection Requirement

Ground level inspections of assets are carried out at intervals of no longer than five years and three months. In addition, aerial inspections of assets in HBRA's are carried out at intervals of no longer than five years and three months. The ground level and aerial inspections are staggered to provide an effective inspection interval in HBRA's of less than 37 months.

An application for an Exemption, together with justification for SP AusNet's (D) proposed inspection program to comply with the Regulatory requirement for a 37 month inspection cycle in HBRA's has been submitted to ESV, subsequently accepted and is now being implemented. The Company shall make a subsequent Exemption request following the new Bushfire Mitigation Regulations that are due by 21 October 2011.

Pole inspected (cyclic):

- Timber/steel = 5 years & 3 months maximum (to be carried out by a staggered cycle where the inspection is no greater than 37 months.)
- Concrete = 37 month maximum (HBRA to be carried out by a staggered cycle where the inspection is no greater than 37 months and the LBRA is moving to a 5 year cycle over a transition period to March 2016)

However the SP AusNet (D) is aiming to achieve an inspection cycle of 2.5 years or 4 inspections in 10 years (2 x ground and 2 x aerial inspection).

SP AusNet monitors inspection on a daily basis and as at 22nd September 2011 the Company has 33,542 inspections to be completed prior to the CFA Fire Danger Periods.

These are broken into:

- Cyclic Inspection – 33,390
- Limited Life Retest – 152

The 33,390 poles outside the 37 month inspection cycle are covered by the transition period in the ESV exemption. At the date of the audit 7,033 poles outside the 5 years plus 3 month inspection period are programmed for inspection by the end of November 2011.

SP AusNet has developed a process flow based on the requirements of the move to the 37 month cycle requirement for wood, concrete and steel in the HBRA, and is also progressing toward a 5 year cycle for concrete poles in the LBRA which commenced in April 2011 with an estimated completion date of March 2016.

Limited Life Poles

The retest period for Limited Life poles has not altered and remains at PT912 days, i.e. 2.5 years.

In the Auditors opinion this is out of step with their current operation. The Company should consider reducing their limited life retest period to approximately half their inspection cycle. (The inspection cycle is now being aimed at 2.5 years or 4 in 10 years - 2 x ground and 2 x aerial inspection);

There were 489 poles re-inspected during the 2010/11 fire Danger Period broken down into the following areas:

- Central – declared 30/11/2010 to 22/03/2011 – 255 Limited Life inspections
- East – declared 14/12/2010 to 28/03/2011 – 181 Limited Life inspections
- North – declared 14/12/2010 to 07/03/2011 – 53 Limited Life inspections

Pole Staking or Temporary Supporting

SP AusNet's (D) has a policy for temporary supporting or fully supporting unserviceable poles that cannot be changed within the specified priority timeframe (PT90) as follows.

**Temporary Supported:**

- All poles not suitable for staking and classified unserviceable for greater than 90 days, are to be temporarily supported until conditions allow access.
- Any pole that is temporarily supported is to be replaced within 180 days of the inspection date.

**Fully Supported:**

- All poles not suitable for staking and classified unserviceable for greater than 90 days and which are not suitable for temporary supporting, shall be fully reinforced by a dummy/support pole until conditions allow access.
- Any pole that is fully supported is to be replaced within 365 days of the inspection date and a status of limited life applied.

The Company has 23,771 poles rated as staked reinstated to serviceable and 704 staked poles rated as Limited Life:

- HBRA = 13,042
- LBRA = 10,729

The process has been in use since 1980 and the Company does not have the records available to provide a profile of the age of poles after staking.

SP AusNet (D) currently has 76 temporary supported poles Identified in Q4 with an Unserviceable Temporary support (UT) status.

- HBRA = 76
- LBRA = Zero

With the installation of temporary supported status it extends the time by an additional 6 months thereby allowing the Company 9 months to change the pole.

In the Auditors opinion temporary supporting of poles is an acceptable practice up to but should not remain in service during the Fire Danger Period.

SP AusNet (D) currently has 90 staked poles that have been reclassified as unserviceable within their network:

- HBRA = 51
- LBRA = 39

Wood Pole Design Criteria Loadings

SP AusNet (D) are still using the same specs and testing criteria for poles as previously established by the State Electricity Commission of Victoria. This incorporates the safety factor of 2 for concrete, 2.5 for treated wood poles, and 3.5 for de-sapped poles, however they are in the process of implementing the revised limit state design criteria specified in AS7000.

The design tool used by line designers and surveyors is known as “NPoles”, which has been updated to accommodate the design criteria changes. The testing criteria for thickness of wood is based on a combination of remaining strength and a conservative estimate for the loss of wood due to deterioration during the next inspection period .

SP AusNet has individual records of wood loss in each pole to demonstrate this approach is safe.

## *3.3 Asset Inspectors Training and Qualifications*

The service provider (Select Solutions) has a system of recording and managing training requirements including a training matrix and Asset Inspector specific training records. All Asset Inspector qualifications and refresher training is in line with both Business and VESI requirements.

The modules include:

- Certificate II Asset Inspection / Asset Inspection underpinning knowledge (Not Refreshed);
- CPR;
- VESI First Aid in an ESI Environment;
- Sae Approach Distances;
- Manual Handling;
- Safe to Approach SWER;
- Traffic Management (Traffic Control);
- Traffic Management (Traffic Guidance Schemes);
- Line Inspection Manual – Duties of the Line Inspector and Pole Inspection (Not Refreshed);
- Identify Transmission and Distribution hardware (Not Refreshed);
- Line Inspection Manual – Pole Inspection and reinforced pole inspection (Not Refreshed);
- Line Inspection Manual – Line hardware Inspection (Not Refreshed);
- Line Inspection Manual – HV Fuse and Surge Arrestors (Not Refreshed);
- Line Inspection Manual – Conductors (Not Refreshed);

- VESI Safety Framework;
- Enter Enclosures;
- Apply ESI Safety rules (Green/Blue Book training) (Not Refreshed);
- Network Operator Induction;
- Apply OHS practices in the workplace (Not Refreshed);
- Comply with environmental and incident response procedures (Not Refreshed);
- Working safety near live electrical apparatus as non electrical worker (Not Refreshed);
- Line Inspection Manual – Private Line Inspection (Not Refreshed);
- Line Inspection manual – Preservation and treatment of poles, wood technology (Not Refreshed);
- Australian ESI skills passport (Not Refreshed);
- Line Inspection Manual – Termites (Not Refreshed);
- Construction Industry Induction (White/Red Card) (Not Refreshed);

## *3.4 Conductors and Ties*

SP AusNet has produced a comprehensive Steel Conductor Assessment Guide. Asset Inspectors are trained on how to apply the assessment. All conductors identified by an Asset Inspector as having a condition rating 6 or below receive a detailed conductor assessment. This detailed conductor assessment is then undertaken by a team using special hi powered camera equipment and detailed analysis on 80cm television monitors.

Conductors

- Condition Rating 8 - Majority of surface has a white metallic coating with white corrosion i.e. loose zinc, product on it. Rust beginning to form.
- Condition Rating 7 - Relatively light coloured rust all over. If on a concrete pole then conductor must be satisfactory for 10 yrs until next inspection.
- Condition Rating 6 - No galvanizing remains, surface no longer smooth medium pitting/flaking, no loss of cross section. Create work order PT912 condition monitor.
- If any conductor or hardware requires a reassessment prior to the next cyclic pole inspection, assign PT912
- Condition Rating 5 - No galvanizing remains, advanced corrosion, and pitting. Pitting has caused some loss of cross section.
- Condition Rating 4 - No galvanizing remains. Significant corrosion and excessive pitting. Significant loss of cross section.
- Condition Rating 3 - No galvanizing remains. Major pitting/flaking. The conductor has lost shape, it may appear deformed.
- Condition Rating 1 Emergency Response (Fault) - Variations of the above references that are deemed critical at the inspector's discretion.

Conductor Ties

- Condition Rating 8 - Patchy rust present. Mostly galvanized. Tie wire intact, and firmly holding conductor to insulator. Suitable to go through to next inspection.
- Condition Rating 7 - Partial galvanizing remains. (Dark Red Rust) minor pitting/flaking present. Tie wire is intact, still firmly holding conductor to insulator. Stretched ties still holding conductor to insulator. Suitable to go through to next inspection. If on a concrete pole then tie must be satisfactory for 10 yrs until next inspection.
- Condition Rating 6 - Minimal galvanizing remains. (Dark Red Rust) medium pitting/flaking present. Tie wire Strands no longer smooth. Tie wire is intact and still holding conductor to insulator. If any conductor or conductor hardware requires a reassessment prior to the next cyclic pole inspection, assign PT912

- Condition Rating 5 - No galvanizing remains. Advanced corrosion and pitting. Pitting has caused some loss of cross section. Tie wire is intact and still holding conductor to insulator
- Condition Rating 4 - No galvanizing remains. Significant corrosion and excessive pitting. Significant loss of cross section. One broken tie wire strand present, but forces holding conductor onto insulator. Two remaining tie wire strands still intact. Ties visibly loose around neck of insulator. Stretched ties, conductor is lifting from insulator.
- Condition Rating 3 - No galvanizing remains. Major pitting/flaking. The tie wire has lost shape, it may appear deformed. One or two broken tie wire strands present, forces still holding conductor to insulator. Only one tie wire strand remaining intact. The weight and tension (force) of the conductor on the insulator reduces the risk of falling.
- Condition Rating 1 Emergency Response (Fault) - Variations of the above references that are deemed critical at the inspector's discretion.

Life Assessment of LV Spreaders

LV spreaders are being inspected from the ground every 37 months (irrespective of whether it is inspected from the air) as per the Transition Plan, and are replaced or maintained based on condition. SP AusNet has not considered there is a need to establish a life assessment of LV spreaders as they are low cost items.

In the Auditors opinion, irrespective of the low cost, an LV spreader that is suspected to be reaching its end of life is a proven high fire risk item and needs to be determined

## *3.5 Pole Top Attachments*

SP AusNet (D) does not have a current remedial program for bulk replacement of HV wooden crossarms. However during the recent re-conductor program all wooden HV crossarms were replaced with steel irrespective of condition. Where major works are carried out on the pole (e.g. insulator or pole replacement) the HV crossarm is also upgraded to steel.

Their standard is that once a HV crossarm has deteriorated (classified as PT365 or less) it is replaced with a HV steel crossarm and deteriorated LV crossarms are replaced with timber crossarms.

SP AusNet (D) has a cyclic program for inspection and assessment of wooden crossarms. The assessment of crossarm condition and subsequent action falls in line with the Asset Inspection Manual. Two methods of inspection are used to assess pole top assets.

- Ground based - During the periodic inspection of poles and other structures a ground based inspection is completed on all assets.
- Aerial - An alternate inspection is also undertaken of the assets attached to distribution poles. This inspection is completed between ground based inspections. The method uses equipment to view the asset from above or up close. Equipment being used is Ladders, EPV, Helicopter, Elmast telescopic mast with camera, or an UAV (Unmanned aerial vehicle).

**I**nspection of Wood Crossarms – Viewed From Ground

Crossarms are initially inspected from two positions on the ground using a pair of image stabilised binoculars, then photographed showing location and construction detail, any defect observed is photographed using the camera zoom features. This method provides an inspection and record of the visible parts of the structure such as the ends and sides. When the Asset Inspector observes deterioration or if maintenance is required, a rating is required that is based on a cautious evaluation of risk. This report is recorded in the Asset Inspectors PDE.

The top surface and holes is where decay usually begins on the wooden crossarm. Any defects may be deduced by indicators such as insulator pins leaning over, open cracks or splits or enlarged holes.

The photographs are examined by a technical assessor whilst checking the inspection results and all defects are rechecked and rated with a new maintenance priority. The site maybe re-visited by the technical assessor or they could use an EPV, extension mast or stick with camera or from helicopter to verify the assessment, and work orders are recreated with the new priority rating for replacement.

Since 1990, the wood used for crossarms has been of high durability and strength. Before this date, a range of the timber species was used. These provided a service life that varied between two to forty years service.

Inspection of Wood Crossarms – Viewed From Above Ground

On inspections viewed from above ground all distribution poles in the HBRA are inspected either by aircraft and/or where there are no fly zones then they are again inspected from the ground. This inspection focuses on an assessment of the upper part of the crossarm that may be difficult to assess from the ground without the aid of hi-resolution digital imagery.

Following these inspections, the same process is followed, i.e., the Technical Assessment Officer views the reports and the photographs taken and appropriate work orders created for any item found that needs maintenance or replacement.

SP AusNet (D) asset replacement program estimates 8,743 units are to be replaced during the 2011-2012 financial year. As at the end of August 2011, 5,289 units have been completed against a forecast prediction year to date (month 5) of 3,118, therefore the Company is ahead of target with this program.

Contaminated HV Insulators

SP AusNet (D) do not have a policy for contaminated HV insulators however in polluted areas targeted insulator washing programs are conducted. The Company does not consider oxidized insulators as an issue based on history.

Bird and Animal Proofing

Bird and animal proofing is targeted on all HV structures within the High Bushfire Risk Areas as defined by the CFA. All new HV poles are installed with animal proofing regardless of location. Known areas of high possum activity or extra large bird activity also receive consideration for Bird and Animal contact mitigation.

The “Animal Proofing – Standard Guidelines” policy involves the ceasing of installation of covers on conductor ties and conductor at the 22kV post insulator due to the following issues:-

- Inspection of ties cannot be performed without removing the cover (tie inspections are required for live-line work);
- There is a tendency for insects to hide under the covers (leading to bird activity);
- Costly to cover all insulator lengths.

The policy involves utilising post insulators of sufficient length that do not require animal/bird barriers (except where there is known large bird/ high animal activity on a concrete pole) as follows.

New 22kV Construction (Concrete or Wood poles in Fire or Non-Fire Areas):-

- Use 9 shed tie-top / clamp-top, or in high-pollution areas use 11shed 22kV insulators.
- No animal/bird barriers/covers are required for the above insulators except where there is known large bird/ high animal activity on a concrete pole (fire or non-fire area) – in these instances install disc-type bird/animal barriers to the base of insulators.

Existing Construction – non-bridging insulators:-

- When work is carried out on an existing pole with 9 shed 22kV insulators with covers fitted to the insulator and conductor, remove all existing covers, and implement dot point 2 above.
- When work is carried out on an existing concrete pole with 22kV insulators with less than 9 sheds in fire or non-fire area :-
  - Replace insulators with 9 shed or 11shed (high pollutions area) insulators implement dot point 2 above – Preferred Option, or
  - Fit disc-type bird/animal barrier to the base of existing insulator (remove any covers to be installed on conductor tie or conductor) - Non Preferred Option

Existing Construction – bridging insulators:

- When work is carried out on an existing concrete pole with 22kV bridging insulators with less than 9 sheds in fire or non-fire area:
  - If no bird/animal barriers installed, fit disc-type bird/animal barrier to the base of existing insulator

Existing bird/animal covers installed on the conductor tie & conductor are acceptable and can remain.

"D" Loops

The inspection acceptance criteria adopted for the classification of serviceable D Loops is outlined in the SP AusNet Distribution Asset Inspection Manual.

- Burnt or discoloured "D" Loop steel wrap or where the "D" loop is toggled at both ends.
- For transformers of 50kVa or less they are recorded as stock item only.
- For transformers greater than 50kVA or spur lines with more than one transformer they are recorded as a work order only.

## *3.6 Fuse Units*

EDO's

SP AusNet's (D) Surge Diverter and HV Fuse Identification 2004 Manual identifies brown bodied EDO fuses for wood pole installations only.

The Asset Inspectors are required to identify non-acceptable units & tubes during the cyclic inspection program. Any units or tubes identified during this process are given a priority associated with an age based profile and actioned accordingly. In addition, SP AusNet (D) has a specific program that targets EDO units in high fire risk consequence areas (per Doctor Tolhurst model). These units are removed and generally replaced with Boric Acid fuses.

During 2010 a review of Q4 revealed that they had 1,099 brown bodied EDO fuses and 4,273 brown/black EDO fuse tubes as non-acceptable across both the HBRA & LBRA.

Boric Acid Fuses

SP AusNet (D) has encountered minor problems with water ingress into the Boric Acid fuse when the fuse has been left in the open position during inclement weather. They do not have an issue with inappropriate storage of these fuse elements as they are held within the covered section of the store. The Company has carried out extensive investigations involving manufacturers, and as a result has issued instructions to field personnel on handling Boric Acid Fuses covering:.

- Storage - Ensure that the fuse tubes are always kept in the sealed plastic bag inside the box when they are stored in trucks. Do not keep unpacked fuse tubes in open air (especially in job lots):
- Installation - Ensure that fuse tubes are NOT kept hanging upside down in an open position in the fuse mounts for more than a day e.g. awaiting commissioning.

Over the past 3 years SP AusNet (D) has purchased 23,968 Boric Acid (BA) fuse units. The Company stated that their database for the installation of Boric Acid units is not up to date although they have had 5 hang ups involving these units in the last 12 months.

## *3.7 Surge Diverters*

SP AusNet (D) Surge Diverter and HV Fuse Identification Manual have photographs clearly indicating the surge arrester types that are suitable for installation across their Network. The types of surge diverter currently in service within SP AusNet's (D) operational area are:

- Bowthorpe 1973 - 1978 (SWER 12.7kV Silicon Carbide type);
- Bowthorpe 1973 - 1978 (22kV Silicon Carbide type);
- Asea 1978 - 1982 (22kV Silicon Carbide type. Fitted with adaptor for earth lead disconnect device);
- Bowthorpe 1980 - 1981 (22kV Silicon Carbide type);
- Bowthorpe 1980 - 1983 (SWER 12.7kV & 22kV Silicon Carbide type);

- Bowthorpe 1980 - 1992 (22kV Zinc Oxide Type);
- Bowthorpe 1982 - 1995 (22kV Silicon Carbide Type);
- Bowthorpe 1985 – 1995 (Identified by NO Earth Lead Disconnect);
- Bowthorpe 1986 - 1989 (22kV Zinc Oxide Type);

All polymeric surge diverters are acceptable to SP AusNet (D) with the exception of Cooper VARISTAR AZLP 1992 & Cooper VARIGAP AZLP 1992.

Any surge diverters identified during the asset inspection cycle are given a priority associated with type and conditioned and actioned accordingly.

The Asset Inspector is required to identify missing or disconnected surge diverters on:

- Transformer => 100kVa,
- Missing or blown lead on Transformer < 100kVa,
- Missing or blown on fuseless Transformers regardless of size,
- Surge Diverter missing or blown from HV cable head,
- Surge Diverter missing or blown from HV ABC interface,
- Surge Diverter missing or blown from substation on HV term pole,
- Surge Diverter missing from gas switch on an open point,
- Surge Diverter missing or blown the ACR's and Regulators.

As at 28th September 2011 SP AusNet (D) has 120 units of non-acceptable Surge Diverters in service identified by the failure code 70B:

- 12 are committed for replacement and work orders have been issued;
- 55 have provisional status – indicates the Field Asset Inspector has identified these units while performing stage one of the inspection cycle; and
- 53 have raised status – Indicates Technical Assessment Officer (TAO) to review the field assessment. At this point there is an expectation that a large number of these units may be found to be disconnected from supply and the TAO then reviews the criteria and classifies the unit either for replacement or cancels the work order

## *3.8 Company Specific Questions*

Current HV Construction Standard Crossarms & Insulators

The current standard construction for 66kV and 22kV covering length and type of crossarms requires the installation of steel crossarms for both voltages. This involves a range of crossarms from SL1, SL2, SL10, SL11, SL12, SL20 plus S(INT)2 for intermediate construction and SL21, SL22, SL23, SL24, SL25, SL26, SL27 and SL28 plus S(ST)2.6 for strain constructions.

The type of construction (cruciform or vertical) and the installation how the insulators are installed is determined at the design stage based on the variable options to achieve appropriate line clearances for the voltage.

There is an established standard in SP AusNet (D) that only line post insulators (porcelain or polymeric) be used for intermediate construction and polymeric, or glass disc insulators for strain construction. The creepage distance (insulators length) varies dependent on the voltage and the environment.

Installation Dampers and Armour Rods

SP AusNet's (D) standard for the installation of Amour Rods and Vibration Dampers is outlined in the Standard Installations Manual. This details the location and type of armour rods and dampers to be installed appropriate to the construction type, landscape and the stringing tension.

To alleviate confusion in the field with respect to the installation of armour rods and vibration dampers and to make it easier for the installers SP AusNet (D) has introduced the following rules:

- Install Armour rods on all HV AAC, ACSR, SG/GZ and SC/AC conductor types at the insulator position for all conductors regardless of tension or insulator type.
- Install vibration Dampers on all HV conductors regardless of span lengths or tension. For new constructions install on spans either side of the pole at each pole location. For maintenance work install on either side of the pole being worked on.

The Company understands that this is above the minimum standard requirement.

This instruction to all staff was sent out in a Lines Group NSD standard Bulletin in September 2011 therefore the effect in the field was not noticeable during the field audit.

# 4. VEGETATION MANAGEMENT

## *4.1 Vegetation Management Organisation Structure*

The following management structure outlines SP AusNet's positions and responsibility for the preparation, approval, resourcing, submission, and implementation of the Vegetation Management Plan:

- Charles Popple - General Manager Network Strategy & Development
- Gary Towns - Manager Asset Engineering
- Renzo Negrelli - Environment Manager
- Matt Peters - Group Manager Utility Solutions
- David Crook – Vegetation & Easement Manager
- Karl Jesser – Vegetation & Easement Area Manager Rural
- Brett Fox - Vegetation & Easement Area Manager Urban

## *4.2 Overview*

Transitional Vegetation Management Plan

SP AusNet (D) submitted a Transitional Vegetation Management Plan requesting an exemption to achieve the requirements of the Electricity Safety (Electric Line Clearance) Regulations 2010 to ESV on the 16th December 2010 and it was granted by ESV on the 24th January 2011.

The Company's Vegetation Management Plan exemption from the requirement to maintain a clearance space in accordance with tables 1, 2, and 3 of the Code of Practice for electric line clearance in the Electricity Safety (Electric Line Clearance) Regulations 2010. The Exemption takes effect on the date on which the Director of Energy Safety signs this exemption document and expires as follows (unless revoked earlier in accordance with this clause):

- Clause 2.1 – on 30 December 2013 – Minimum Clearance Spaces Surrounding a Powerline All Areas - Aerial Bundled Cable or Insulated Cable (as at 31 December 2011 22% of the Network is to be complete) – *SP AusNet is on target with this requirement*
- Clause 2.2.2 – on 30 December 2013 – Minimum clearance Spaces Surrounding a Powerline – Low Bushfire Risk Areas – Other than Aerial Bundled Cable or Insulated cable (as at 31 December 2011 40% of the Network is to be complete) – *SP AusNet is on target with this requirement*
- Clause 2.3.2 – on 30 June 2013 – Minimum clearance Spaces Surrounding a Powerline – High Bushfire Risk Areas – Other than Aerial Bundled Cable or Insulated cable (as at 31 December2011 93% of the Network is to be complete) – *SP AusNet is on target with this requirement*
- Clause 2.3.3 – on 29 June 2015 – Minimum clearance Spaces Surrounding a Powerline – High Bushfire Risk Areas – Other than Aerial Bundled Cable or Insulated cable - Overhanging Trees (as at 31 December 2011 there are to be only 1880 spans with overhanging trees in HBRA on the network) – *SP AusNet is on target with this requirement*

The changes to the Regulations have been communicated to the Vegetation Management Company, Select Solutions (a division of SP AusNet) employees and contractors during the Assessment Procedure Training delivered on the 16th February 2011.

The Company has not implemented any further changes since the delivery of the 2009/10 Victorian Bushfire Royal Commission report as the only impact on vegetation management relates to Hazard trees and the Company already has a program in place to manage this requirement.

Proportion of the Network Annually Inspected for Vegetation Line Clearance

The Vegetation Management Company inspects the clearance space in accordance with the following cycles:

- all spans are assessed at least annually in the hazardous bushfire risk area to allow for any clearing to be undertaken to maintain compliance to the regulations;
- all spans are assessed at least biennially in the low bushfire risk area, however during the transition period the cycle is progressively reducing to achieve a 1 year cycle.

In determining the location where work is required to maintain the clearance space one or more of the following inspection programs are undertaken:

- cyclic work programs;
- pre-summer inspection in hazardous bushfire risk areas; and
- reports from asset inspections.

The above are supplemented by reports from the public on areas of concern. At each location the most appropriate method of maintaining the clearance between powerlines and vegetation is to be determined.

In the HBRA all spans are programmed to be inspected and cleared prior to 31st October 2011 or declaration, whichever comes first. At 1st September 2011 SP AusNet (D) pre-summer vegetation inspection had 1,098 spans outstanding to be inspected and 7,086 spans yet to be cleared. The Company considers (environmental conditions permitting) they are on target to meet the 31st October deadline for 99% of the network. There should be approximately 1,000 spans remaining to be cleared after this date which are predominantly climbing spans in Leongatha and Traralgon plus a small number of wet spans in all areas that have been given until the 30th November to achieve a zero index.

In the LBRA SP AusNet (D) is slightly behind target to meet its biennial inspection and cutting program. A KPI report was produced that shows a 45% actual completion of program against a target of 51% completion against program. The works program is slightly behind target for August and YTD, impacted by wet weather and an increase in find rates of 2.3% which accounts for an additional 10% (Approx.) in cut spans. The Program is also still recovering from the impact of a climbing incident in late May. Additional resources are to be engaged as required.

Cutting/Removal Cycle

If cutting and/or removal is deemed the most appropriate method then the cutting/removal cycle shall be determined at each locality. In specific locations and from time to time the maintenance cycle may be varied as per the following;

- Rural Areas – 6 months to 3 years as appropriate;
- Urban Areas – 6 months to 2 years as appropriate.

The process used to determine the Maintenance Cycle at specific locations takes into consideration the following factors;

- Financial and budgetary constraints;
- Community impacts;
- Environmental and conservation issues;
- Tree species & regrowth characteristics;
- Line voltage & configuration; and
- Area fire rating.

SP AusNet uses a Vegetation Management Program to detail the priority of the feeders to be inspected and actioned in accordance with their procedure.

The HBRA program has been established to show the pre-summer inspection and cutting by feeders with the aim that all works are completed by a nominal date of 31st October. The works program is slightly behind target for August and YTD, impacted by

SP AusNet (D) is confident they have the resources to achieve their pre-summer cutting.

Default Times for Vegetation Classified as Requiring Attention

SP AusNet Distribution classifies vegetation as requiring attention as:

- PT1 (55's) - On the day of inspection vegetation has been recently contacting the conductor due to sag or sway or environmental conditions, but is not physically in contact on the day required to be cut or removed within 24 hours;
- PT30 (56's) - On the day of inspection vegetation is within the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2005 but is not in contact with open wire conductors or un-insulated assets required to be cleared within 4 weeks;
- PT 2011 - On the day of inspection vegetation is 'highly likely' to encroach upon the required distance as defined in the Electricity Safety (Electric Line Clearance) Regulations 2005, prior to the end of the bushfire declaration period. i.e. vegetation requiring action in the current year's cycle;
- PT RE - On the day of inspection vegetation is outside the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2005, and where vegetation 'may', although there is some uncertainty encroaches upon the clearance space prior to the end of the bushfire declaration period. In this instance a RE code allows a re-assessment to take place closer to the declared fire season. i.e. vegetation 'may' require action in the current year's cycle;
- PT 2012 - No action required this year – may require action in 2012;
- PT 2013 - No action required this year – may require action in 2013;
- PT 2014 - No action required this year – may require action in 2014
- PT CV - Vegetation within the span may require action beyond 2014 ; and
- PTM - Phantom Code – to be used in the following circumstances. When using a PTM code, there must be a detailed explanation of the reason why that span requires a PTM code.

Measures Adopted to Assess Performance

As part of its Environmental Management System, SP AusNet has developed a set of Key Performance Indicators (KPIs), measures and targets to monitor its overall environmental performances. KPI targets are set each year and monitored and reported to Senior Management and the Board on a quarterly basis. The Bushfire Mitigation Index is reported to and monitored by Senior Management and the Bushfire Mitigation Management Committee monthly. The KPIs related to bushfire mitigation aspects together with the 2011/2012 measures and targets are detailed below.

- Bushfire Mitigation Index during the Declaration Period 0%;
- Ground fires associated with SP AusNet assets/activities as a % of CFA wildfires for period 1 July 2011 to 30 June 2012 < 1.0%.

Audit Processes Adopted To Determine Compliance

The accountability for auditing of the Vegetation Management Group rests primarily with the Manager Asset Engineering, Network Strategy and Development who is responsible for the regular auditing of the Vegetation Management Group to ensure that it complies with the requirements of their Plan.

This includes:

- Internal audits prior to the commencement of the fire season to validate the completion of all bushfire mitigation obligations prior to the commencement of the fire season;

- As part of the Senior Management Bushfire Mitigation Review Program, reviews of all facets of the Bushfire Mitigation Program are undertaken by managers at General Management level to validate the efficacy of SP AusNet's management process, program compliance, and program relevance. These audits are undertaken during December of each year;
- Audits are undertaken during the fire season to check that vegetation clearances are being maintained;
- The SP AusNet Internal Auditor undertakes audits of the Bushfire Mitigation Management system;

SP AusNet or its nominated representative is responsible to conduct a sample audit of the contractor's work (without any limitation), procedures, and practices in order to determine their compliance with the relevant Standards and Codes of Practice.

- The V&E group field officer/representative then undertakes a compliance audit based on but not limited to the following criteria:

- Assessment:
  - Correct priority coding of all spans;
  - Identification of all assets;
  - Correct property owner identification;
  - Correct identification of voltages;
  - Correct identification of fire zones.
- Cutting:
  - Clearance achieved;
  - Appropriate cutting techniques used;
  - Site tidiness;
  - Correct herbicide application;
  - Slashing requirements met.

Where deadlines are not achieved prior to the Fire Danger Period

SP AusNet has a number of mature processes in place to monitor the performance of the contractor company responsible for their operational area to ensure the Fire Danger Period deadline is always achieved and therefore has not needed to put corrective actions in place.

- monthly contractor meetings;
- regular field inspections;
- regular bushfire mitigation meetings;
- tracking via the BFM Index.

## *4.3 Clearance Space for Electric Lines*

Methods Employed to Calculate Vegetation Clearance

SP AusNet (D) has a procedure that matches the requirements of the Regulations, which gives consideration to sag and sway of lines when determining the clearance space and when assigning assessment codes:

- PT1 - within the clearance space and is in contact with the conductors;
- PT30 - within the clearance space but not in contact with the conductors;
- 2011 - outside the clearance space but highly likely to encroach in the clearance space prior to the end of the declaration period;
- RE - outside the clearance space but may encroach in the clearance space prior to the end of the declaration period;
- 2012 - no action required this year – may require action in 2012;
- 2013 - no action required this year – may require action in 2013.

Vegetation clearance consistency is achieved by the Vegetation Management group through the engagement of qualified/competent contractors supported by an established refresher training program combined with audits covering assessment and cutting.

The audit sample size is based on established criteria and is determined by the number of spans submitted as completed.

- An audit sample is selected, for each WO submitted. The WO size submitted for assessment is to be approximately 500 spans. Should the sample size submitted be below 40 spans, then a minimum of 20 spans are to be audited. The sample size can be based either on the exact number of spans submitted or the closest lower number of spans.
- To ensure that the work order (WO) is consistently audited across the entire spread of assessment or cutting data, the sample size is divided into the number of spans submitted. This calculation methodology is to be employed for each individual audit.

Methods Employed to Monitor the Growth of Vegetation.

The assessment of growth rates is used to determine the amount of cutting required to maintain vegetation outside of the clearance space. The assessment methodology by in-field assessors include:

- Climate factors (Rainfall, temperature, wind, and amount of sun);
- Soil factors (Soil Makeup or structure, Moisture content, Mulch and Drainage);
- Topography (Aspect (North/South), Slope, and Elevation); and
- Competition (other vegetation, animals, History of Pruning).

Sites are not always easy to assess. The factors within the site and the way trees interact on that site are independent of each other. However, the VMC often come across conditions, which can be described either as 'ideal' for tree growth or at the other end of the scale, 'very poor'. In these circumstances growth rates and patterns are easier to predict.

Management Plan/Program for the Removal of Overhanging Vegetation in the HBRA

SP AusNet (D) submitted a request to ESV for an Exemption to clause 2.3.3 of the Regulations on the 16th December 2010 and ESV approved this on the 24th January 2011.

The following outlines the agreed timeframe to achieve compliance.

- 31 December 2011 – 120 spans to be actioned;
- 31 December 2012 – 219 spans to be actioned;
- 31 December 2013 – 340 spans to be actioned;
- 31 December 2014 – 560 spans to be actioned;
- 29 June 2015 – 761 spans to be actioned.

There has been an increase in the total of Code 56M spans caused by the boundary changes from LBRA to HBRA by the CFA this year

- Total 56M Spans as of 8-1-11 – 2177 spans to be actioned;
- Less new 56M caused by HBRA Change by CFA – 149
- Total to be actioned – 2028
- Less Augmentation spans projects programmed to 13-12-11 – 150
- New target as of 31-12-11 – 1878

The clearance space in the HBRA shall in general be in accordance with tables 1 and 2 of the Code except for overhanging trees in certain circumstances (56Ms). These trees are of a size, age, and significance where community outrage, environmental impact, and negative economical benefits prevent them from being cleared. These trees require re-augmentation solutions to ensure that the clearance space is clear at all times.

Whilst SP AusNet is transitioning to compliance overhanging trees shall be managed according to the following process;

- an annual risk assessment is to be undertaken by an arborist who has the qualification of National Certificate Level IV in Horticulture and Arboriculture including the "Assess Trees" module, or the equivalent of that certificate, and at least 3 years of field experience in assessing trees; and

- the annual risk assessment on the tree shall be in accordance with Procedure VEM 20-01-Vegetation and Easement Management Hazardous Tree and 56M Assessment and be completed before 1 November in each year; and
- keep records for a period of no less than 5 years of the annual risk assessment on any branches and trees, including details of the condition and possible hazards in relation to each tree and branch.

These overhanging trees shall be allowed to remain during the transition period provided they meet the following criteria;

- any overhanging branches and the trees supporting the branches do not exhibit any potentially hazardous structural defects; and
- a minimum clearance of 3000 millimetres is maintained above the powerline to any overhanging tree branch.

This assessment program is currently in progress therefore the data was not available for this audit. Select Solutions considers that they are approximately 80% through the program and are confident they shall meet the contract requirement date of 14th October for completion.

Management of Vegetation within the Clearance Space for Covered Conductors (ABC)

Currently SP AusNet (D) has an Exemption under Regulation 10 of the Electricity Safety (Electric Line Clearance) Regulations 2010 which allows vegetation within the clearance space for covered conductors (ABC) until the 31st December 2013 which is in line with their Transitional Plan.

Under the Transitional Plan the Company is exempted from commencement of cyclic clearing – aerial bundled cable or insulated cable - all areas until June 2012, at which time they are required to have 35% clearance completed.

Management of Vegetation within the Clearance Space for Covered Conductors

Where vegetation is the responsibility of SP AusNet (D) to clear all endeavours are made to clear vegetation around insulated cables so that they do not enter the clearance space during the nominated 12-month cycle. Due to a previous cutting regime there are a number of trees that have large limbs/trunks adjacent to or below the conductors that are inside the required clearance space. These trees require augmentation solutions to ensure that the clearance space remains clear at all times.

Where a customer's service wire / cable / line are not compliant to the 2010 Regulations an advisory notice is issued at the time of inspection and all PDA: PCS defect fields are completed with no further follow up being carried out until the following annual cyclic inspection.

The Vegetation Management Plan does not give any special consideration to achieve service clearance (customer's responsibility) for high-populated vegetated areas.

## *4.4 Hazard Trees*

The Assessor is responsible for the identification of hazardous trees whilst carrying out standard assessment tasks. A hazardous tree can be defined as any tree that is considered a threat to any SP AusNet electrical asset. This includes trees that have been identified to exhibit evidence of either or all of the following;

- dead or dying;
- decay;
- overbalanced;
- ground lifting.

The identification of trees that could become a hazard is included in routine inspection and is recorded on the Hazardous Tree database.

SP AusNet has a process in place where a Council may contact the vegetation group and advise them of a tree that they believe is hazardous to their assets. The call is recorded in the D&T ESR Database and then sent to an appropriate Arborist to investigate.

There are several means by which Hazard Trees are reported:

- Inspections undertaken as part of the formal hazardous tree program; and
- Information obtained from councils, public, other authorities, company personnel, contractors.

The Company has identified 5,822 Hazard trees during the past 12 months.

The following steps outline what actions are to take place once a hazardous tree has been identified and reported to an arborist for assessment.

- If the assessed tree is likely to fail at any moment then the Arborist must report this to the Program Leader for immediate action;
- If the tree is not likely to fail at any moment the Tree Assessment - Hazard Tree or 56M Span form is to be completed and submitted (electronically) to the Program Leader.

The Program Leader prioritises works according to the hazard rating of the tree or:

- Allocates work to the relevant contractor for cutting;
- Allocates to an Arborist for Re-Assessment if the tree is not to be actioned prior to the declared bushfire period.

The Program Leader is responsible for:

- ensuring that random audits are conducted on a sample of completed works; and
- updating the Hazard Tree Database.

### *4.5 Habitat Trees*

SP AusNet (D) ensures the cutting or removal of trees that are the habitat of any threatened “Invertebrate Fauna” or “Vertebrate Fauna” is undertaken outside of the breeding season for that species wherever practicable. If it is not practicable to undertake the cutting outside of the breeding season then translocation of the fauna must be undertaken wherever practicable.

The process to be undertaken is through:

- The engagement of a suitably qualified Environmental Expert;
- The development and review of a number of relevant procedures/processes;
- Consultation with DSE, Local Government and land owners to establish areas where threatened species exist;
- Implementing systems to ensure compliance with the code
- Awareness training of existing/future cutting resources regarding threatened species.

The Environmental Expert liaises with external stakeholders on threatened flora & fauna and works with the DSE, Local Government and land owners at a local level to develop a “Threatened Vertebrate and Invertebrate List” of the species that exist in each Region, and the location of these species on each Distribution feeder or Transmission line. Once determined, these locations are mapped onto the VMS system and details incorporated into the ESR database to ensure works are undertaken in a considered manner.

Access to this information is to be made available to employees and contractors in accordance with SP AusNet’s (D) Transition Plan. However the Personal Digital Assistant (PDA) currently being used by field staff contains regions of the Vegetation Management System which has the facility to flag spans where there is an ESR requirement. This alerts the contractor to go to the printouts of the ESR database appropriate to the region issued. It is anticipated that the information gained from the Environmental Expert should be available to employees and contractors by January 2012.

The printout from the ESR database shall then list all areas of “threatened species” on that feeder. The ESR database has been in existence for approximately 6 years and is understood by all vegetation field personnel.

## *4.6 Notification and Consultation*

SP AusNet has a procedure that outlines the process to be employed to notify and, where appropriate, consult with persons affected by cutting or removal activities. The affected persons at each location shall be determined as part of the vegetation assessments at each location.

After determining who should be notified, the process of consultation is employed at all levels where proposed vegetation removal or cutting immediately affects the owner/occupier of the land. If urgent pruning is undertaken in accordance with the Code, the responsible person or landowner shall be notified as soon as practicable after the event in accordance with section 6 of the Code.

Notice by the Electricity Supplier Prior to Cutting or Removal of Vegetation

Before performing any cutting required by the Code SP AusNet gives at least 14 days written notice to the occupier of the land on which the vegetation is to be cut and any affected person. If the tree intended to be removed is within the boundary of a private property consultation is employed for the following:

- arrangements for property access;
- the use of chemicals for the treatment of regrowth;
- the disposal of debris resulting from pruning and clearing;
- planning of new powerlines which require pruning or clearing.

A signed record detailing the proposed works in accordance with the outcome of the consultation is prepared and a copy provided to all parties. Where the affected person refuses to sign, a copy signed by the SP AusNet representative is provided to the affected person detailing the proposed works.

Variations made to Vegetation Clearance Activities

In accordance with the VMP the method to maintain clearance between powerlines and vegetation shall be determined so that Code compliance is achieved. This however does not preclude affected persons from negotiating conditions under which other solutions may be used.

- During the consultation process, where agreement to the vegetation management solution is not achieved, the affected person shall be advised of the procedures to negotiate alternative powerline construction arrangements to avoid or reduce the need for cutting or removal and the conditions that apply to such arrangements. Costs of alternative proposals shall be provided to affected persons;
- Where agreement is reached, a signed record detailing the proposed works in accordance with the outcome of the consultation shall be prepared and a copy provided to all parties. Where the affected person refuses to sign, a copy signed by the SP AusNet representative shall be provided to the affected person detailing the proposed works.

Vegetation of Cultural or Environmental Significance

The Company has a procedure to ensure vegetation of Cultural or Environmental Significance is identified and given special consideration when cutting or removal of vegetation is proposed.

The location of important vegetation is determined by consultation including:

- Government Records;
- Local Government and Interest Groups;
- Land Owners.

The PDA currently being used by field staff contains regions of the Vegetation Management System and has the facility to flag spans where there is an ESR requirement. This alerts the contractor to go to the printouts of the ESR database appropriate to the region issued. The printout from the ESR database lists all vegetation of Cultural or Environmental Significance on that feeder.

Consultation and negotiation with those responsible for vegetation of Cultural or Environmental Significance is undertaken prior to commencement of works to obtain the most effective way of protecting the affected vegetation while maintaining public safety.

Methods utilised to avoid and minimise the impact on vegetation include but are not limited to the following:

- Transplanting of significant trees away from powerlines;
- Line Augmentation/Relocation;
- Reduced Cutting Cycles;
- Site Specific Management Plans.

There are a number of single tree plans in the ESR database, which have specific instructions for contractors to minimise the cutting impact on the tree. Advice is obtained from a qualified Arborist or horticulturalist in relation to the regrowth of that vegetation prior to commencing cutting or removal of vegetation of Cultural or Environmental Significance.

## *4.7 Urgent Cutting or Removal*

SP AusNet Distribution's has a procedure that describes the process by which the need to undertake urgent pruning of vegetation near powerlines is minimised and if required how it is to be undertaken.

Urgent pruning/clearing may be required as a result of:

- Encroachment or growth of vegetation that was not anticipated in the management plan. Need for urgent pruning as a result of this is avoided by carrying out annual assessments and pruning/clearing which allows for re-growth;
- A tree falling or damage to a tree requiring the tree to be cleared to maintain the clearance space required by this code. Need for urgent pruning as a result of this is minimised by managing the network in accordance with the Hazardous Tree Procedure;
- From the 1st November (if declaration was imminent) in any year until the end of the fire danger period declared under the Country Fire Authority Act. The need for urgent pruning as a result of this is avoided by having a tree assessment and pruning/clearing programme completed before the Bushfire Declaration date in each specific region.

If urgent pruning is required the vegetation distance achieved must not exceed 1 metre beyond the clearance space (including the distance allowed for the sag and sway of the conductors). If urgent pruning has occurred the owner and occupier of the land on which vegetation was cleared is notified as soon as practicable after completing the pruning or clearing using the Urgent Tree Works Notification form.

Records of this type are recorded in the Extra Service Required Call Log (ESRCL) database for a period of at least 2 years. These details include but are not limited to the following:

- When and where the pruning or clearing was undertaken,
- Details of why the pruning or clearing was required,
- Details of the last inspection of that section of the electric line where the clearing was required.

To date Select Solutions has not had to undertaken any urgent pruning of this type.

## *4.8 Additional Duties of Local Councils, Roads Corporation and Others*

The Company has a procedure, which outlines the process to be employed to assist Local Councils, Road Corporation and Others in carrying out their duties about vegetation near powerlines. They proposed vegetation work programs and advice on the need to use safe electrical work practices are communicated to Local Government Authorities to ensure that tree clearing activities are coordinated and rationalised.

On request, SP AusNet assists Responsible Persons to safely prune or remove trees near powerlines by:

- providing specialist advice on safe work practices;
- de-energising lines by agreement;
- suppressing the auto reclose feature on HV circuits by agreement;
- providing a list of authorised local service providers;

- advising them on where to obtain advice and information on methods for maintaining clearance between electric lines and vegetation; and
- advising how to identify places where the cutting or removal of trees will be required.

SP AusNet annually sends out a letter advising all shires/councils of their requirements under the "No Go Zone" legislation.

## *4.9 Management Procedures to Minimise Danger*

SP AusNet (D) has a procedure, which outlines the process to be employed to provide advice to occupiers of land where there is vegetation near a Private Overhead Electric Line (POEL). SP AusNet communicates these line clearance issues by:

- Issuing a letter to owners of overhead private electric lines each year to advise them of their responsibilities in relation to such lines, the dangers of cutting and removal of vegetation, and the precautions they should take to safely maintain the line;
- Issuing a letter to owners of POEL's of any tree clearing requirement it finds during inspections of POELs;
- Issuing a maintenance notice to property owners when tree clearing is required around service lines which are their responsibility.

Leading up to and throughout the summer period, SP AusNet undertakes a public awareness program utilising mediums which include print, electronic media and mobile billboards which primarily focus on the danger of vegetation being too close to powerlines.

## *4.10 Dispute Resolution*

Should a dispute arises during the process of consultation between landowners, affected persons and SP AusNet regarding proposed cutting/removal/alternative construction activities, it is to be resolved in accordance with SP AusNet's complaint procedure. The Customer Complaint Procedure is based on the resolution of the complaint at the lowest management level possible. The majority of issues arising have been resolved at this level.

If the dispute cannot be settled at the current negotiating level, then the process allows for escalation up to the next level of management within the appropriate organisation. The final escalation then rests with the Energy and Water Ombudsman (Victoria) Limited.

There have been 14 complaints escalated to this level over the past 12 months. In addition, there were 9 other enquiries. Not withstanding the nature of the dispute, and the need to resolve the dispute in accordance with the dispute resolution procedure, SP AusNet's duty to maintain the clearance space at all times should not be compromised.

SP AusNet Distribution provided an example of an ESR customer ID 2089 Mr David Honig who contacted the EWOV to complain about proposed tree cutting and requesting that the work be carried out on the weekend. This is an ongoing annual issue with this customer.

## *4.11 Training and Qualifications*

SP AusNet (D) employees are required to have sufficient knowledge and training to ensure that vegetation activities under their control are conducted in a safe and environmentally responsible manner. The Company only engages contractors who have sufficient experience in the electrical industry to perform tree clearing works in a safe manner. Whilst the level of experience that a new employee has varies greatly, all employees that are new to the electrical industry must be approved by SP AusNet and be initially supervised by an experienced person.

The Company has a procedure to ensure that cutting or removal of vegetation is undertaken in a responsible manner. The procedure stipulates that SP AusNet Distribution is to conduct regular training needs analysis of their employees and contractors to ensure that the level of training is consistent with the requirements of the post. Results of audit processes are then reviewed in determining these needs.

Training programs emphasise the need to cut to meet Code requirements and prevent excessive pruning. Auditing of contractors regularly undertaken to verify this requirement is being meet. The training program covers competencies for:

- Ground worker
- Wood Chipper Operator
- EWP worker
- Tree Climber
- Assessor

## 5. FIELD AUDITS AND DATABASE VERIFICATION

The field audit included a detailed check of 107 sites (104 sites in the HBRA and 3 sites in the LBRA) after downloading the pole details and asset defects from the Company's database. The sites were visited with Company representatives (Asset Performance Co-Coordinator and Select Solutions Program Leaders) where the detailed information taken from the Company's database records were crosschecked against the actual condition of the assets in the field. Where an asset defect/anomaly existed that was not recorded by the Company or the vegetation clearances at the site did not meet the new Electricity Safety (Electric Line Clearance) Regulations 2010 it was noted. The information was then filtered to determine the:

- accuracy of the Asset Inspectors inspection and data capture;
- accuracy of the vegetation assessment and data capture; and
- accuracy of the information contained in the Company's database.

The standard of asset maintenance and its agreement with the database in the LBRA was not able to be determined due the lines that were chosen to be audited were under major road realignment or being converted to underground due to expansion of residential subdivisions in the area.

Only minor non-maintenance items were identified that needed to be included in work packs for field crews when carrying out other maintenance or construction work on the lines. They did not constitute an immediate fire risk for the forthcoming for Fire Danger Period.

Vegetation clearances in the HBRA audited areas were excellent and cleared to Code requirements, however vegetation service cable clearances on private property require more attention.

Results of Field Audit / Database Check

| | |
|---|---|
| Total Sites Audited in the Field (Chosen from 205 plus sites downloaded sites form the Company's database) | 107 |
| Defective/Missing Asset Items | 15 |
| Audited items not Matching Company Database | 1 |
| Vegetation Spans Non Compliant with the Regulations - Electricity Suppliers Responsibility (HBRA = 2 – LBRA = Zero) | 2 |
| Vegetation Spans Non Compliant with the Regulations - Other Authorities Responsibility (HBRA = 2 – LBRA = Zero) | 2 |

SP AusNet (D) is at present carrying out the pre-summer works and they have assured the Auditor that they are able to complete all outstanding works for both assets and vegetation prior to their nominal declaration date of 1st December 2011, or earlier if the CFA should bring forward the Fire Danger Period dates. The Company is also confident that they can maintain a zero index throughout the Fire Danger Period.

# 6. OBSERVATIONS

There are 6 general and 6 field audit Company specific observations made during the audit relating to SP AusNet's (D) Bushfire Mitigation Program:

- The Company is in the process of changing to a one year vegetation inspection and clearing cycle in the LBRA. This is programmed to commence in 2012;
- In the main vegetation found requiring cutting that is the responsibility of the Company had been inspected and cut or programmed for cutting;
- Vegetation Maintenance Notices are being issued to customers to clear their service lines but until follow-up is carried out in the main it will not occur;
- In the Auditors opinion temporary supporting of poles is an acceptable practice up to the Fire Danger Period but they should not remain in service during that period;
- SP AusNet has not considered there is a need to establish a life assessment of LV spreaders as they are low cost items. In the Auditors opinion, irrespective of the low cost, an LV spreader is suspected to be reaching its end of life and is a proven high fire risk item and remainder of life needs to be determined;
- The move by the Company to install service cable breakaway devices is excellent as it leaves the services de-energised on the ground after being hit by vehicles or branches and reduces the risk to the public;
- There was little evidence within the areas audited in the field of an increased retrofitting program for vibration dampers and armour rods at this stage, as the Company has only just sent out a Lines Group NSD Standard Bulletin in September stating their requirements to all staff;
- There were several defective crossarms between Corryong and Walwa, which the Auditor could not gain details of due to paddocks being under flood. This area was flown in January 2011 so it is anticipated that they were assessed in line with the field audit assets that were able to be checked;
- Bird and animal proofing program is very evident in the field and it is clearly being requested in the work orders being raised covering targeted HV structures;
- The priorities being allocated by aerial inspectors is on the conservative side which matches with the Company's statement that the inspectors have been informed that "if there is a doubt they are to allocate a lower priority";
- The Company is aiming to achieve an inspection cycle of 2.5 years or 4 inspections in 10 years (2 x ground and 2 x aerial inspection). In the Auditors opinion this aim could be confirmed as policy (eg. 2.5 years plus 3 months) as it clearly aligns with current practice and well within the Regulations.
- Doctor Tollhurst of Melbourne University conducted a fire consequence assessment and this has been incorporated into a Network Fire Risk Model. In the Auditors opinion this assessment could be used to determine areas (e.g. bushfire consequence figure of 1000 or greater) where new customers or customers that are doing major relocation of the service point of attachment could be made to install an underground service. This would reduce the risk of service damage/fires rather that continually adding to the problem.

# 7. CONCLUSIONS

SP AusNet's (D) Bushfire Mitigation Management personnel were well prepared and co-operative during the audit and provided information to demonstrate their bushfire mitigation preparedness for the forthcoming Fire Danger Period. Three Company personnel accompanied the field auditor and worked in cold and inclement weather to maintain the audit schedule.

The Company's Bushfire Mitigation documentation is complex and in the Auditors opinion would benefit from consolidating their Bushfire Mitigation Plan, Strategy, and Manual (which contains their policies and procedures) into one specific document covering all aspects of their bushfire mitigation programs.

The field audit of the Company's operational area covered lines mainly in the HBRA (Kangaroo Ground Patten Hill, Nariel Valley, Walwa, Burrowye, and Beechworth). The lines chosen in the LBRA (Whittlesea and Diamond Valley) were under major road realignment or being converted to underground due to expansion of residential subdivisions in the area. 21 minor defects and/or vegetation non-conformances were identified out of 107 sites visited (104 HBRA and 3 LBRA).

SP AusNet (D) appears to have significantly improved the standard of asset inspection with only minor differences being detected between the database/inspection reports and the actual assets in field within the areas covered by this audit. The Company had carried out an aerial inspection of the areas audited in the North East and allocated a conservative priority of identified defects, which was most times higher than what the Auditor would have allocated. This is a direct change from the results of pervious year's audits.

SP AusNet (D) has established and gained agreement with ESV for transitional arrangements to comply with the Electricity Safety (Electric Line Clearance) Regulations 2010 with arrangements providing for full compliance by 29th June 2015. During the transitional period, they are therefore operating outside the new/changed obligations imposed under the 2010 Regulations.

Although the pre-summer inspection cut was not complete the easements throughout the areas audited were clear. Each site was crosschecked against the vegetation database and in all cases the vegetation that was the responsibility of the Company to cut was programmed but in some cases access would be difficult at this time due to flooding or poor ground conditions, although no site constituted an immediate danger. The Company is issuing Vegetation Maintenance Notices to customers to clear their service lines but in the main this is ineffective as there is no follow-up or penalties involved.

Although this audit was carried out earlier this year the Company is well into their pre-summer scheduled work and in the Auditor's opinion SP AusNet's (D) preparedness for the forthcoming fire season is in line with their Bushfire Mitigation and Vegetation Management Plans. At the date of the audit the Company was confident that they have the resources to complete the remaining asset replacement work and the vegetation pre-summer cutting/removal. This opinion was supported from observations in the field.

## 8. RECOMMENDATIONS

It is recommended that:

- SP AusNet (D) modifies the heading of document number BFM 21-77 & BFM 21-78 to reflect that this procedure is used across the business;
- SP AusNet (D) modified the Business Rules to reflect the change in inspection cycles and acknowledge the transition period for concrete, steel, and timber poles.
- SP AusNet (D) considers reducing their limited life retest period to approximately half their inspection cycle. (Currently 2.5 years with the asset inspection cycle now being aimed at 2.5 years or 4 in 10 years - 2 x ground and 2 x aerial inspection);
- SP AusNet negotiate with ESV to amend the targets in the Exemption to reflect the actual total of 56M spans to be eliminated
- SP AusNet (D) moves to completing the changing of all unserviceable poles in the HBRA before the commencement of the Fire Danger Period and should any be detected during the Fire Danger Period that they are treated as faults and changed immediately;
- SP AusNet (D) instigates a follow-up to the Vegetation Maintenance Notices for customer service clearance and ensures that clearance is achieved;
- SP AusNet (D) modifies their Vegetation Management Plan to reflect the correct terminology in relation to information issued to POEL and private service lines, which is the owner's responsibility.

**Auditor's Signature:** **Date:** 1 November 2011

**Ian J McDonald**

David Matassoni
for reply please
GS

energysafe VICTORIA

Creating a safer state with electricity and gas

ESV Ref: CM-218

6 December 2012

SP AUSNET
10 DEC 2012
BS-FWP MAILROOM

Mr Charles Popple
General Manager, Regulatory and Business Strategy
SP AusNet
Locked Bag 14501
MELBOURNE VIC 8001

Dear Mr Popple

**BUSHFIRE MITIGATION AND ELECTRIC LINE CLEARANCE AUDIT 2012/2013**

Please find enclosed the final report for the above mentioned audit. As you are aware, as part of the Energy Safe Victoria (ESV) ongoing safety regulation program, a bushfire mitigation / electric line clearance audit has been conducted on the SP AusNet distribution network in November of this year.

IJM Consulting, whose principal is Mr Ian MacDonald, conducted the audit on behalf of ESV. The audit this year continued the previous practice of having both a desk top and field component. The audit topics differed slightly from those in previous years, with a focus on specific matters identified by ESV in its review of your company's bushfire preparedness plans and related programs.

ESV greatly appreciated your organisation's assistance and trusts benefit can be gained from the audit works and any follow-up discussions we have.

ESV requests a formal response to be provided by Monday 24 December 2012 in relation to any findings requiring attention. The response shall include a plan to address the findings and a deadline for completion of the various actions.

Should you have any queries in relation to this matter, please contact Ed Micallef on 9203 9714.

Yours sincerely

Noel Murray
**MANAGER ELECTRICAL INFRASTRUCTURE SAFETY**

**Energy Safe Victoria**
ABN 27 462 247 657

Level 5 Building 2
4 Riverside Quay
Southbank VIC 3006

PO Box 262
Collins St West VIC 8007
DX 212569 Melbourne VIC

T (03) 9203 9700
F (03) 9686 2197
www.esv.vic.gov.au

Victoria

# Table of Contents

# BUSHFIRE MITIGATION AUDIT 2012-2013

## 1. AUDIT SCOPE AND APPROACH

The audit was conducted on SP AusNet Distribution in accordance with Energy Safe Victoria (ESV) Bushfire Mitigation Audits 2012/2013 Scope of Works, dated August 2012, and in conjunction with Electricity Safety Regulations and other subordinate legislation. Particular emphasis was placed on the policies, procedures, and practices adopted in the Electricity Supplier's plans that mitigate the potential for bushfire starts. The SP AusNet Bushfire Mitigation Plan (BMP) and Vegetation Management Plan 2012-13 (VMP) have been used as the base reference documents to outline the Company's standard of performance, and activities undertaken to comply with the intent of the Regulations.

The audit was conducted in four stages, between 1st November 2012 and 12th November 2012 which included an assessment of the Electricity Supplier's assets and vegetation line clearances in the field. The Company was given a minimum of a weeks notice on the aspects of the audit to be undertaken. As part of this implementation:

1. A desktop assessment was conducted of the Company's policies, procedures and work programs in relation to their bushfire mitigation and vegetation management plans, including deviations from past practices to determine the effectiveness of the programs over the past 12 months, including a detailed audit of the statistics supplied to ESV and assessment of the Company's ability to meet agreed targets;
2. A discussion with field personnel and their Management (at their depots) to determine their understanding of the Company's major bushfire mitigation programs and the methods used to disseminate information relating to changes to the Company's policies and procedures;
3. A field audit which included a detailed check of 266 asset sites after downloading pole details and asset notifications (defects) from the Company's database. (195 sites in the high bushfire risk area (HBRA) and 71 sites in the low bushfire risk area (LBRA). The sites were visited with Company representatives where the data records were crosschecked against the actual assets in the field. Where an asset defect/anomaly existed that was not recorded by the Company or the vegetation clearances at the site did not meet the Electricity Safety (Electric Line Clearance) Regulations 2010 it was noted. The information was then filtered to determine the:
   - accuracy of the Asset Inspectors assessment and data capture;
   - accuracy of the vegetation assessment and data capture; and
   - quality of the information contained in the Company's database.
4. For the vegetation audit 4 separate areas of SP AusNet's vegetation data was downloaded from the Company's database showing pre-summer inspection and cutting complete of which 208 sites were chosen. These sites were then visited and an assessment made from this sample on the ability of the Company to achieve code clearance and meet regulatory requirements for the Fire Danger Period;
5. The audit also included visiting 10 sites taken at random from the Electricity Suppliers work schedule to confirm that work in the field is being completed in line with Company policies and procedures, and that the standard complies to their construction manuals;

The field audits were carried out within the Electricity Supplier's licensed boundaries in accordance with the areas specified by ESV Executive Manager Infrastructure Safety. The level of the Company's compliance was determined from the selections.

### *1.1 Bushfire Mitigation Plan*

SP AusNet Distribution submitted their Bushfire Mitigation Plan to Energy Safe Victoria on 28th June 2012, and a letter of acknowledgement was received on 12th July 2012. The BMP outlines how the Company intends to comply with the Electricity Safety Act and the Electricity Safety (Bushfire Mitigation) Regulations 2003 plus the Amendment Interim Regulations 2010.

The objectives of the SP AusNet Bushfire Mitigation Plan are to:

- Describe the strategies and programs implemented to mitigate the risk of fire ignition from supply network assets in high bushfire risk areas;
- Describe the processes and procedures for monitoring the implementation and effectiveness of the bushfire mitigation strategies and programs;
- Describe the corrective action processes and procedures ensuring effectiveness of the bushfire mitigation program;
- Describe the processes and procedures that apply to operation and maintenance of the supply network in high bushfire risk areas during the fire season period and total fire ban and code red days;
- Nominate persons responsible for preparation and implementation of the Plan and their contact details;
- Provide contact details in the event of an emergency;
- Demonstrate compliance with the Electricity Safety (Bushfire Mitigation) Regulations 2003; and

Appendix 1 provides a compliance matrix for this Plan.

SP AusNet responded to previous ESV audit observations that their Plan and Strategy should be reviewed to provide a less complex framework. The Company consulted with ESV on the development of a revised BFM Plan which has now replaced the previous version of a combined BFM Plan and Strategy.

The new Bushfire Mitigation Plan 2012- 2013 is detailed and covers the intent of the Regulations and was accepted by ESV on the 31 October 2012.

Additional Information Requested by ESV for the BMP

ESV required SP AusNet to provide additional information in the BFM Plan due to the revision of the Electricity Safety (Bushfire Mitigation) Regulations on 28 June 2012. The changes included unintended consequences that effectively required all network assets to have prescribed inspection intervals of < 37 months.

SP AusNet applied to ESV for an exemption from regulations 5A (e), (g), (h), (j), (l), (m) and (o) of the Electricity Safety (Bushfire Mitigation) Regulations for all supply networks within low bushfire risk areas on 13 July 2012. ESV subsequently consulted with SP AusNet over the required information to support the exemption application. A revised exemption application was made in SP AusNet's letter dated 10 September 2012.

The Company subsequently submitted a revised BFM Plan (version 16) on 15 October 2012 in accordance with the regulatory framework under the exemption request. ESV responded on 18 October 2012, providing an evaluation matrix noting some minor changes required of the BFM Plan.

1. 5A(h) Preventative strategies to be adopted by the major electricity company to minimise the risk of the major electricity company's supply networks starting fires.

   *ESV* - 8.2.1 'All remaining supply network assets are exempt from a prescribed maximum inspection interval of 37 months. These assets do present a risk of bushfire ignition and are therefore excluded from the Bushfire Mitigation Plan' Plan must consider LBRA area in accordance with the Act and Regulations. This area has a Low Bushfire risk and can not be excluded from the plan on the grounds of no risk.

   *SP AusNet Response* - Amended in Plan (v16) dated 18/10/2012

2. 5A(i) A list of all works required for the strategies referred to in paragraph (h) to be undertaken and the date by which the works are to be completed.

   *ESV* - What is the BMI calculation? Where is it? How often is it reported to ESV?

   *SP AusNet Response* - Not discussed in Plan. Details of BFM Index for Distribution are referenced in the BFM Manual and procedures. (As with Transmission). Report is sent monthly ESV during declared fire season.

3. 5A(j) a plan for inspection that ensures that all of the major electricity company's supply networks are inspected at regular intervals of no longer than 37 months;

   *ESV* - See 1 above for comment.

   *SP AusNet Response* - Refer 1 above

4. 5A (n)(vi) monitor and audit the competence of the persons assigned to carry out inspections under the plan;

   *ESV* - Plan mentions audit templates. Please provide templates.

   *SP AusNet Response* - Provided templates

SP AusNet subsequently responded the same day with revisions to the BFM Plan (v16) as recommended and received acceptance of their Bushfire Mitigation Plan 2012-2013 on 31 October 2012.

## *1.2 Vegetation Management Plan*

SP AusNet submitted their Vegetation Management Plan on 30th March 2012 and received approval of their Plan from Energy Safe Victoria on 4th July 2012. ESV did not request any additional information regarding the Plan prior to acceptance.

The objectives of the Vegetation Management Plan are:

- To demonstrate SP AusNet's compliance with the Electricity Safety (Electric Line Clearance) Regulations 2010 (the Regulations) and the Schedule - Code of Practice for Electric Line Clearance (the Code) for the preparation of a management plan;
- To provide a framework to ensure the prescribed clearances are maintained between vegetation and electric lines.
- To provide for safe and reliable operation of distribution lines;
- To attain self-managing easements by removing inappropriate species, limiting existing vegetation height to an acceptable level at any position along a span and encouraging low growing appropriate species;
- To develop easements in the long term which are more sustainable, are subject to minimal disturbance to significant vegetation and provide amenity for the community;
- To provide guidance to SP AusNet personnel and contractors for vegetation management practices associated with the Code; and
- Implement the Plan in accordance with exemptions

SP AusNet's VMP is detailed and well laid out making it easy to read and understand.

## *1.3 CFA/DSE Expectations for the 2012/13 Fire Season*

The CFA conducted a briefing on 30th October 2012, which covered the expected risk and severity of fire conditions, weather, and projected anticipated commencement of the Victorian declaration periods. Recent climate conditions have shown:

- The past three years has seen above average rains across most of Victoria. However more recently (last 12 months) drier than average conditions have been experienced across the north.
- In relation to temperature there has been above average temperatures across large areas of the State for the last 12 months, this is particularly pronounced in the past month.
- Minimum temperatures have been close to average across much of the State in the last month with the exception being southern coastal areas.

In relation to SP AusNet's operational areas the CFA Regions expect:

- Spring grass growth continuing, better than in recent years including grass fuel loads abutting urban interface;
- Silage being cut, hay season is beginning;
- Good cropping growth however in some areas the growth delayed due to frosts;
- Most forest areas have good moisture recovery after effects of drought and will dry later in the season;
- Forest fuels are damp but with prolonged higher Fire Danger Index days will support intense fires under the right conditions;
- Coastal heath lands are prone to fire even early in the fire season, a number of fires have already occurred in these areas;

In consideration of the above indicators the CFA has concluded that:

- The next three months are expected to have average rainfall and a slightly elevated chance of exceeding average maximum and minimum temperatures;
- Coastal areas of Gippsland have been drier and warmer than average resulting in a number of fires already, this is expected to continue throughout the summer period;
- Key risk for this summer will be short fast running grassfires possibly beginning in the west of the State.

The implementation of the fire declaration dates is to be progressive across the State. These dates shall come into effect as the fire risk increases with the exception of the Colac Otway and Corangamite Shires, which commenced on the 1st November 2011. No indication was given when the remaining Shires are likely to declare but it is expected that it would progress from the North West through the State. At the time of the audit no Shire had been declared in SP AusNet's operational area.

# 2. GENERAL MATTERS

## *2.1 Management Operational Organisation Structure*

SP AusNet's BFM Plan discusses management of the bushfire mitigation obligations through the Networks Safety Management Committee (NSMC).

The principle objective and role of the NSMC is to understand and manage the safety and bushfire risks in planning, designing, constructing, operating, maintaining and decommissioning its supply networks to minimise in so far as is practicable

a) the hazards and risks to the safety of any person arising from the supply network;
b) the hazards and risks of damage to the property of any person arising from the supply network; and
c) if that network is an at-risk supply network, the bushfire danger arising from that network.

Accordingly, the Charter for the NSMC is to guide development, implementation, and monitoring of network asset management strategies and programs with the objective of minimising risks and hazards to persons and property as low as reasonably practicable (ALARP). The committee, whose membership consists of senior personnel from various business streams, provides the operational leadership and coordination of resources engaged in the development and implementation of bushfire mitigation, vegetation management and asset safety programs designed to achieve this objective.

The NSMC utilise a range of performance indicators to monitor implementation of the Plan which are provided in a monthly Network Safety Report. The key indicators are:

- *Bushfire Mitigation Index* – monitors implementation of inspection, maintenance, and replacement activities contained within the General Maintenance program. Maintaining a 'zero index' is a key performance objective during the declared fire season; and
- *Enhanced Safety Program reports* – monitors implementation of individual Enhanced Network Safety programs.

The NSMC Charter includes member titles, roles, and responsibilities.

- *Group General Manager, Networks Strategy & Development*
- *GM Operations and Services Integrated Network Services – leads and directs the operations and services team to safely deliver the approved programs to work within time and cost budgets, while managing risks to ensure total asset service performance and HSE targets are met;*
- *GM Select Solutions* – responsible for establishing and managing a stand alone business unit to increase business value for SP AusNet through growth and provision of excellent service to customers;
- *Director Network Engineering* – responsible for the delivery of the Asset Management Plan for NSD through transforming Asset Management Strategies into short and long term plans to maximise network performance in order to generate value from networks and assets for the benefit of the community, customer, and security holders;
- *Director, Regulation and Network Strategy* – is responsible for optimising regulatory outcomes and revenue and aligning Regulatory and Network Strategies to maximise performance; and
- *Manager Network Safety* – is responsible for the implementation of the policies and strategies for ensuring that SP AusNet manages the Network Safety risks associated with designing, operating, maintaining and constructing a safe, high performing and sustainable electricity transmission and distribution assets to fulfil regulatory obligations, business drivers and risk exposure for SP AusNet, its customers and the general public.

A detailed organisational hierarchy is available on their Intranet (InSite), which illustrates the respective reporting hierarchy of NSMC members.

*Depot Audit Comment:*

SP AusNet's personnel structure for field activities are as follows:

- Eastern Region Manager is accountable to manage the field and office based service teams in delivering construction, maintenance, fault response, design, and customer negotiations and to be carried out within approved programs of work, within time and cost budgets, while managing risk.
- Site Manager is responsible for establishment of the work sites. The ongoing oversight of all HSE&Q on site for the duration of the project and feedback of issues to the project leader;
- Works Manager is responsible to ensure the effective delivery of the Network Services Group works program on budget, on time with compliance to quality, environmental and safety standards;
- Planner is accountable for the scheduling, co-ordination and facilitation of planning outages of the Electricity network
- Crew Leader provides operational leadership to meet schedule, quality and cost target while ensuring company safety and environmental policies and procedures are applied and adhered to by all team members.
- Worksite Leader is to lead and manage a work crew to ensure the completion of activities in a timely and cost effective manner whilst working within Company OH&S policies and procedures and using efficient work practices.
- Truck Leader – Position description was requested but not supplied
- Glove & Barrier Linesman is to install and maintain electrical network assets supplying domestic, industrial and commercial customers in accordance to SP AusNet's standards and procedures. Conduct day to day operations according to SP AusNet values of Safety, Passion, Teamwork, Integrity, and Excellence ensuring company safety and environmental policies and procedures are applied and adhered to by all team members.
- Apprentice Electrical Line Workers undertake a four year program to be trained in the installation, repair and maintenance of overhead lines and cables carrying electricity to domestic, commercial and industrial users

## *2.2 BFM Plan – Monitoring & Auditing*

The bushfire mitigation program is monitored in accordance with the requirements of the Bushfire Mitigation manual and reported via the Network Safety Report (NSR) with the following sections providing the monitoring reports:

- Network Performance KPIs which include the Bushfire Mitigation Index and F-factor performance;
- A summary of progress against the Enhanced Network Safety programs; and
- A summary of progress against operational programs that includes vegetation management.

Auditing of works is monitored and reported through section 8 of the NSR. Audits include a broad range of auditing performed under the quality management system:

- Asset Inspector Work Quality;
- Metering Quality of Work;
- Quality of Work;
- EWP Audit;
- Maintenance; and
- Servicing and Metering Worksite.

The Technical Compliance Audit Strategy covers each of the major asset class and three major phases of the asset life cycle have been considered. The phases and assets are tabulated into life cycle phases of:

- Design Components;
- Construction Components; and
- Maintenance Components.

*Identify Deficiencies* - Deficiencies of the plan are identified and reported through the NSR reports to the NSMC. These deviations are noted in the NSMC minutes and assigned appropriate persons to implement remedial actions to bring the plan on target. The NSMC monitors progress of the remedial actions.

*Monitor and Audit* - The effectiveness of inspections carried out under the plan is via:

- Monitoring of the inspection program is achieved by reporting provided in the NSR by measuring delivery against seasonalised targets, and Network performance KPI's
- Audit of the effectiveness is monitored directly through the NSR. Audit of asset inspector's work is undertaken in accordance with SP AusNet's procedure. The audit results are represented via the scorecard

*Plan Improvement* - Improving the Plan's implementation is derived through the iterative process of monitoring network performance KPIs, program implementation KPIs, and auditing provided through the NSR, and managed through the NSMC, and Network Safety Group.

The Network Safety Management Committee has 2 agenda items that directly relate to the identification of improvements / initiatives and emerging risks. Examples in the September minutes are:

- Wires Down Alert;
- Service Disconnect Device;
- HV ABC Failures; and
- Conductor Failure.

## *2.3 Major Step Changes*

SP AusNet has implemented the following step changes in the last 12 months:

1. SP AusNet has established the Network Safety group within the Network Strategy & Development division with a focus to manage network safety outcomes for the three networks (Transmission, Distribution, and Gas). As such, this group is also responsible for the management of the regulatory obligations under the Electricity Safety Act 1998 and are therefore the primary point of liaison with ESV.

   Within the Network Safety group is a Bushfire Mitigation Manager to oversee the development and implementation of the bushfire mitigation policies, procedures, and programs. The Bushfire Taskforce Manager is responsible for the monitoring and implementation of the Victorian Bushfire Royal Commission and Power lines Bushfire Safety Taskforce recommendations.

- Reporting to the Manager Network Safety (new position) are:
  - Bushfire Mitigation Manager;
  - Network Risk & Performance Manager; and
  - Bushfire Taskforce Implementation Manager.

2. SP AusNet has established the Networks Safety Management Committee with a Charter;
3. The Network Safety group has developed and implemented a monthly Network Safety Report that enables the NSMC to monitor network performance KPIs, implementation of operational programs and auditing of works under these programs; and
4. Since last fire season SP AusNet has progressed with the replacement of SWER OCR's with remote control ACR's in the areas identified by ESV's 2011/12 Fire Loss Consequence Model as having the highest 80% loss consequence. SP AusNet anticipates these ACR's, together with multi-phase ACR's/CB's controlling networks within these areas, to be capable of remote control for the 2012/13 declared fire season. The list of devices is provided to ESV in accordance with the BFM Plan as the list is updated.

*Depot Audit Comment:*

Step changes that have been introduced into the Seymour/Leongatha depot during the last 12 months are:

- Smart phones – for faults and communications;
- IPads - Direct access to emails and some systems;
- Issue of laptops to new connections staff to enable reprogramming of smart meters for solar installations;
- Sharing of work between capital and maintenance to maintain skills;
- Small jobs used as training for apprentices;
- Combining crews over large shutdown areas into specialist groups;
- Balancing of internal and contract crews by the employment of additional SP AusNet Line workers;
- Introduction of a training program for A grade electricians to convert to Line Workers. (4 in East, 4 in North & SP AusNet are looking for other DB's to make up class size – 15 in total), with the aim of future employment in the faults and new connections as inspectors;
- Worker input into fleet management and design of new equipment;
- Modified work methods to achieve access and job completion; and
- Training of personnel in heavy vehicle recovery.

## *2.4 Additional Initiatives Implemented to Mitigate Fires in the Past 12 Months*

SP AusNet has implemented the following additional initiatives to mitigate fires in the past 12 months;

- A rapid earth fault current limiter (REFCL) at Woori Yallock zone substation trial has commenced and is currently at the design stage. As a consequence of the 2009 Victorian Bushfires Royal Commission, the Powerlines Bushfire Safety Taskforce (PBST) was established to undertake investigation into more complex technical solutions that may be applied within Victoria's electrical distribution networks to mitigate the risk of fire ignition from network faults. The PBST identified an opportunity, through the application of REFCL's, to reduce the risk of fire ignition by 70% for network related faults.

  Accordingly, a key driver for establishing a trial REFCL within SP AusNet's network is to determine the suitability and effectiveness of this technology as a means of mitigating the risk of fire ignition associated with faults on complex rural distribution networks.

  Details of this trial are discussed in the Enhanced Network Safety Strategy accepted by ESV;
- A trial of approximately 1km of Hendrix covered cable has been established at Coldstream to determine its effectiveness as an alternative to bare conductors in the highest bushfire risk areas. The trial is not complete at this time;
- A revision to the enhanced Network Safety strategy has been accepted by ESV for:
  - Additional EDO's – 9,514;
  - Revised scope to 3ph ACR controller program;
  - Zone substation protection relay replacements – 114 replacements & 107 upgrades;
  - Trial rapid earth fault current limiter (REFCL) at Woori Yallock zone substation;
  - Aerial spaces – 10,242 spans to be surveyed and rectified; and
  - Vibration dampers and armour rods – approx. 59,600 poles by 2016

Progress on Previous Initiatives/step Changes During the Past 12 Months

SP AusNet's progress on previous commenced initiatives / step changes during the last 12 months:

- Mid cycle inspection: Now adopted and integrated within the asset management system as part of the cyclic inspection program to achieve compliance with the prescribed requirement to inspect <37 month intervals. The transition to compliance is scheduled for completion by 31 December 2012 in accordance with the exemption provided by ESV - *On track to complete prior to the transitional plan target date;* and
- Priority Codes**:** Implemented within the BFM Plan – *Completed.*

In addition the following initiatives have been implemented to mitigate fires in the past 12 months:

- EDO Fuse replacement - *Program is ahead of schedule and is reported quarterly to ESV;*
- Conductor replacement - *Program is progressing to schedule and is reported quarterly to ESV;*
- Neutral Screen Service cable replacement – *Program is ahead of schedule and is reported quarterly to ESV*; and
- HV Insulator replacement program - *Program is ahead of schedule and is reported quarterly to ESV;*
- Bird & animal proofing – *Program is ahead of schedule and is reported quarterly to ESV;*
- Accelerated crossarm replacement program – *Program is slightly below target and is reported quarterly to ESV;*
- Hazard tree removal program – *Program is ahead of schedule and is reported quarterly to ESV; and*
- Ground based Asset Inspection - *Completed.*

## *2.5 Analysis of Faults for Potential Causes of Fire*

The Network Safety Report illustrates the number of asset related fires for 2011 and 2012 YTD against the five year benchmark (2006-2010) established by the AER for reporting against the F-factor incentive mechanism. This mechanism is designed to reduce the number of fires incidents associated with network assets.

Ground Fire Starts from Electrical Distribution

SP AusNet has had 51 ground fire starts from distribution assets in the last 18 months (March 2011 – September 2012).

| FIRE YTD (18 months) to September 2012 | | | |
|---|---|---|---|
| **Cause** | **Ground** | **Asset** | **Total** |
| Tree | 15 | 12 | 27 |
| FOLCB/Isolators | 6 | 11 | 17 |
| HV Fuses | 6 | 145 | 151 |
| Animal / Bird | 6 | 2 | 8 |
| Conductor | 3 | 7 | 10 |
| Tx / Surge diverter | 6 | 5 | 11 |
| Cable | 3 | 3 | 6 |
| Vehicles | 4 | 1 | 5 |
| Crossarm | 1 | 6 | 7 |
| Pole fire | 1 | 13 | 14 |
| Street light | 0 | 24 | 24 |

Pole Top Fires

The March Network Safety Report (NSR) indicates 125 asset fires out of a total 160 for the 12 months to March 2012. The September 2012 NSR indicates 93 asset fires out of a total 108 for the six months to September 2012. Note: Trees have been excluded from the pole top fire count.

Review of Analysis of Faults for Potential Causes of Fire and Asset Failures

EDO fuse hang-ups are the predominant cause of asset fires. SP AusNet has prepared a plan to increase the volume of EDO replacement with Boric Acid through to the end of 2015. The replacement program is prioritised in accordance with the Fire Loss Consequence Model.

The Enhanced Network Safety strategy provides detail of the program that has been accepted by ESV. Other programs included within the enhanced network safety program include conductor, crossarm, and insulator and service cable programs together with a hazard tree removal program. Progress of these programs is provided monthly in the Network Safety Report to the Network Safety Management Committee and quarterly reporting to ESV.

Risk Analysis of Potential Fire Starts in LBRA fringing HBRA

SP AusNet has performed analysis of reported ground fire incidents in LBRA's for 2012. All incidents have been contained with the LBRA. The largest fire incident was an area of 115$m^2$. This incident was due to an excavator making contact with overhead high voltage conductors on a commercial property. The remaining incidents averaged 10$m^2$.

Analysis of ground fire incidents over the same period in the HBRA's indicated an average fire size of 700$m^2$ with the largest being 10,000$m^2$.

The CFA's assessment criterion for an LBRA is that it is not capable of carrying a fire into HBRA's. These results, together with experience gained in undertaking fire hazard mapping with the CFA, indicate the CFA's assessment criteria is consistent with LBRA's not being capable of carrying fire into HBRA's.

- 2012 LBRA Ground Fire Incidents = 8
- 2012 HBRA Ground Fire Incidents = 25

Actions Arisen from the Analysis

SP AusNet's Enhanced Network Safety Strategy is focused toward the mitigation of fire and electric shock risks across the Network. This involves detailed analysis being carried out of Network incidents and the monitoring of trends in Network asset class failure. An example of this is the introduction of an EDO replacement program.

SP AusNet maintains the fire control authority's ratings within its geographical information system (GIS) for its assets. The Bushfire Mitigation Plan provides details of the GIS that delineate HBRA's and LBRA's and the activities in relation to the fire hazard rating of an area.

## *2.6 Preparation for the Fire Danger Period*

The status of the List of Works that are to be undertaken in readiness for the next fire season is as follows:

- Monthly monitoring through the Network Safety Management Committee and reported via the Network Safety Report:
  - Prepare list of outstanding critical maintenance items;
  - Prepare summary of Fire Reports and issue to NSMC;
  - Prepare Bushfire Mitigation Report and issue summarised report to NSMC;
  - Provide NSMC with Bushfire Mitigation Status Report;
  - Review Bushfire Mitigation Reports and initiate action as required;
  - Resolve queries & initiate action on matters requiring attention from summarised Bushfire Mitigation Report;
  - Include summary of Bushfire Mitigation Report in the Network Safety Report; and
  - Arrange meetings of NSMC.
- Prepare SP AusNet's Vegetation Management Plan - *Complete;*
- Approve SP AusNet's Vegetation Management Plan – *Complete;*
- Submit Vegetation Management Plan to the ESV for approval by 28 February – *Complete;*
- Finalise Fire & General Liability Insurance Renewal Underwriting Submission – *In Progress;*
- Finalise Bushfire Mitigation Plan and submit to NSMC for endorsement – *Complete;*
- Submit Bushfire Mitigation Plan to ESV for approval by 1 July – *Complete;*
- Decide on advertising for summer period – *Complete*;
- Commence monthly BFM reporting to ESV upon declaration until end of the fire danger period (BFM Index) – *Pending Declaration;*
- Issue letter and information brochures to Overhead Private Electric Line customers - *In progress;*
- Request permits to work on days of Total Fire Ban from MFB, CFA and DSE – *Completed;*
- Coordinate senior management review visit programs – *In Progress;*
- Post on the Intranet copies of permits to work on Days of Total Fire Ban – *In Progress;*
- Perform Senior Management Reviews – *November & December;*

- Target date for submission of Operational Contingency Plan (if required) - *Pending Declaration;*
- Complete all BFM works - *Pending Declaration;*
- Complete all vegetation works in HBRA areas - *Pending Declaration; and*
- Complete all BFM obligations - *Pending Declaration.*

Changes Implemented to the List of Works in the last 12 months

SP AusNet is currently in the process of updating their Calendar of Events. The main change that has occurred is the removal of specific dates with reference to Declaration.

Deadlines Not Achieved Prior to the Fire Danger Period

The Bushfire Mitigation Manual contains the process for establishing contingency planning in the event bushfire mitigation works are not complete. The Network Safety Management Committee is responsible for initiating the establishment and meeting frequency of sub-working group/s, if required, to develop and implement network contingency plans to ensure the management of outstanding bushfire mitigation risks or hazards that have not been addressed through normal business processes.

If required, an Operational Contingency Plan is to be prepared to identify transmission and distribution lines on which fire prevention work is incomplete and for which disconnection may be appropriate on Total Fire Ban and Code Red days.

Disconnection of the electricity supply to an area on Total Fire Ban or Code Red days has serious implications for the community in terms of disruption to communications, water supply pumps and general fire-fighting services, and must only be considered as a last resort action when the local weather conditions become extreme.

Outstanding Works to be Completed Prior to the Fire Danger Period

SP AusNet uses the Bushfire Mitigation Index to monitor all outstanding Bushfire Mitigation works. At the date of the audit the following items were outstanding in HBRA:

| **Maintenance Activity** | **Current @ 29th September 2012** | **Look Ahead @ 31st December 2012** |
|---|---|---|
| Cyclic Pole Inspections | 9,292 | 9,980 |
| POEL Inspections (# poles) | 14 | 128 |
| Pre-summer vegetation Inspections | 0 | 0 |
| US & Limited Life poles | 75 | 522 |
| Spans not cleared of vegetation | 5,852 | 5,852 |
| Attachments outstanding | 347 | 1,124 |
| Conductor outstanding | 7 | 13 |
| Unacceptable surge diverters | 15 | 36 |
| Bird covers outstanding | 36 | 262 |

SP AusNet has stated that they have the resources in place to complete outstanding works.

- The September Network Safety Report provides forward resource planning for bushfire mitigation (maintenance) works for the North and East Regions and balance resources between other network activities to ensure the bushfire mitigation works are completed within the required timeframes;
- The Central Region, where the work is contracted to Tenix, is monitored in a similar fashion to North & East regions via their contractual arrangements. Tenix manage and plan the necessary resourcing levels to meet Bushfire Mitigation obligations; and

- All Bushfire Mitigation works for North, East & Central are monitored by the Integrated Network Service (INS) works management group to coordinate all construction resources. This may mean that internal or other service provider resources are moved into Central Region to support the Tenix contract.

## *2.7 Fire Season Operational Plans*

SP AusNet has a procedure that requires the business to ensure compliance during the declared fire season:

- Prior to the declaration of the fire season SP AusNet is to obtain annual fire season permits from the MFB, CFA and DSE enabling the use of fire in the open air on Total Fire Ban days.
- Copies of the permits to be placed on SP AusNet's networks Intranet site.
- Field managers to ensure that relevant personnel within their organisation, including contractors, are advised of the permits. Should restricted activities such as welding, gas cutting, and grinding, using a blow lamp or gas torch are to be undertaken on days of Total Fire Ban, a current copy of the appropriate permit must be held on site. All conditions on the permits must be adhered to.
- SP AusNet personnel are to ensure that contractors under their control adhere strictly to the conditions of the permits.
- Field crews shall ascertain Total Fire Ban status prior to commencement of any work in fire hazard areas.
- Work on easements on Total Fire Ban days in fire hazard areas must be suspended, unless otherwise specifically approved by the responsible SP AusNet officer. Before work can commence a risk assessment and approval is to be carried out by the responsible officers.
- If a Total Fire Ban day occurs prior to the declaration date for a region, priority outstanding maintenance items, including vegetation management items, shall be managed so that they are fire safe. Where a risk has been identified, courses of action may include fuel reduction within close proximity of assets with outstanding urgent maintenance items or de-energisation of the assets.

CFA Restrictions for the Declared Fire Danger Period procedure requires personnel engaged in network activities within the open air to have the necessary fire fighting equipment aboard their vehicles, vehicle exhaust checks are performed prior to the fire season, and for compliance with fire authority requirements for naked flames and grinding equipment.

The Bushfire Mitigation Plan addresses the treatment of private overhead electric lines with urgent defects and network protection and control management.

Operational Plans followed in the Event of a Fire.

The BFM Manual refers to procedures that set out the process to be followed when SP AusNet personnel or their contractors attend a fire. The fault crew is to immediately call Customer Energy and Operations Team (CEOT) and inform them of:

- any isolation required;
- the size of the fire;
- the requirement for the CFA/MFB to attend; and
- another crew is required to assist.

The fault crew assesses the immediate public risk and isolates the fault if appropriate. The fault crew is to remain on site until the fire is out or SP AusNet Networks or contractor personnel have relieved them.

The site is not to be left until a thorough inspection of the affected assets has been performed and the assets confirmed as good. That is, leaving the assets permanently or temporarily repaired so that the appropriate standards are maintained. This is to be carried out in conjunction with the CFA (or MFB if appropriate) to ensure no poles/cross arms continue to burn.

SP AusNet had several minor fires (grass and pole top) during the Fire Danger Period 2011/12 of which the process above was instigated and this proved to be effective. The Operations Procedures When A Fire Occurs procedure allows for escalation should it be required associated with the size of the fire.

Access under the Municipal Emergency Co-ordination Centre (MECC)

When a fire or disaster occurs and is established by a MECC Coordinator, the authorised Electrical Operator is not to proceed into the defined Fire Disaster Zone either through road blocks or other access routes.

Operational Plans Adopted in the Past 12 Months

SP AusNet's fire incidents are reported through IMS and demonstrate a structured approach toward the investigation, cause assessment, and corrective measures taken to restore supply or asset security. Information includes fire size, damage and whether emergency services attended.

An example of the Operation Contingency Plan being implemented in the last 12 months is where SP AusNet suppressed the auto reclose feature on the automatic circuit reclosers on days of TFB.

### *2.8 Protection Settings*

SP AusNet's BFM Plan describes the suppression requirements of automatic circuit reclosing devices on days of Total Fire Ban and Code Red. The Company has a register of units to be suppressed which is held by the Customer Energy & Operation Team (CEOT/ control room). This register is kept up to date and is provided to ESV during the declared fire season.

Protection Settings on SWER OCR's / Automatic Circuit Reclosers (ACR)'s for Total Fire Ban and Code Red days

SP AusNet has established their protection settings, for the highest consequence areas, in line with the Powerlines Bushfire Safety Taskforce recommendation 2 for Code Red and TFB days.

| Area | Total Fire Ban Day | Code Red Day |
|---|---|---|
| Rural powerlines in the worst areas (approximately 20 per cent of rural powerlines) | Two fast protection operations | One fast protection operation |

## 3. ASSET INSPECTION AND MAINTENANCE PROGRAM

### *3.1 General*

Meeting Policy Timeframes in the HBRA

SP AusNet's Network Strategy and Development Division (NSD) have a Service Level Agreement with Select Solutions Division that state the periods from inspection to work order completion. A priority target is a measure of calendar days. They are:

- PT1 - 1 Calendar Day
- PT 7 - 7 Calendar Days
- PT14 - 14 Calendar Days
- PT30 - 30 Calendar Days (1 month);
- PT90 - 90 Calendar Days (3 months);
- PT180 - 180 Calendar Days (6 months);
- PT365 - 365 Calendar Days (1 year); and
- PT912 - 912 Calendar Days (2.5 years)

As at the date of the audit SP AusNet is meeting their policy timeframes in the HBRA.

The Company has 9,292 distribution poles in the HBRA outside the 37 month inspection cycle as at 29th October 2012 which are covered by the transition period in the ESV exemption. In addition there are presently 27 poles on 6 private electric lines in the HBRA reported as outside the 37 month inspection cycle due to access issues.

## *3.2 Briefing Employees and Contractors on Policy/Procedures*

SP AusNet's policies and procedures are administered by the Health Safety Environment and Quality Team within People and Safety. This team coordinates development, review and distribution of these policies and procedures to employees and contractors via the SP AusNet Intranet (InSIte) or CD to contractors. Updates to contractors may be via email between CD distributions. Notification of updates to policies and procedures is distributed via email.

SP AusNet has several methods for the dissemination of information to employees and contractors:

- Quarterly management briefings;
- Monthly work group meetings;
- Formal presentations (by subject matter experts);
- Daily pre-start meetings;
- Pride Newsletter
- Safety grams;
- Technical bulletins;
- Presentation packs (to be used by stakeholders);
- Weekly newsletter (Connect);
- Quarterly magazine (Energise)

*Depot Audit Comment:*

SP AusNet communicates changes to policies, procedures, and programs with its field personnel via:

- Morning brief/tool box meeting(all site personnel attend)
- Bimonthly Work group meeting
- Email with links to Intranet item
- Crew briefing weekly (Safety grams, Operational issues, Policy, procedures changes, and HR, organisational changes, and work related feedback.
- Information displayed on notice board (changed out minimum weekly & retained for personnel on extended leave);
- Regional H & S meeting;
- Quarterly Employee briefings conducted by senior management;
- Quality Monthly performance report; and
- Quality briefing to Quarterly and bi-monthly regional management meetings.

Check of Understanding

SP AusNet employees training and competency is maintained in accordance with the requirements of the VESI training and competency requirements. The understanding is confirmed via:

- Annual refresher training of employees;
- Pre start meetings to share information with work groups;
- Bi Monthly work group meetings to share information;
- Policy and Procedure revisions are shared with work groups;
- Auditing and compliance programs;
- Mission Zero conversations;
- Competency Check of Understanding at end of formal training sessions; and
- Questions and answers.

*Depot Audit Comment*

Depot sites managers confirm through questions and answers involving the crew in the presentations and safety conversations in the field during site visits. The site manager has a target of 100 safety conversations annually to be achieved. In addition the following is part of normal field practice:

- Crew Leader / Truck Leader carries out a quality check per the listing of the work completed against scope of works;
- Review of program to ensure that it incorporates the change of policy / procedure;
- Continual check of job in line with the scope;
- Attendance List required to be signed that personnel attended and understood information presented;
- Safety conversation (which may include work method);
- External audits; and
- Bushfire Mitigation audits against scope of works.

HS&EQ support the field personnel by appointing external auditors to monitor the quality of the work and compliance with HS&E:

- PPE;
- Public/worksite management including traffic management;
- Environmental management;
- Task undertaken in line with policy and procedures; and
- Correction actions are then implemented should it be required.

Method used to Issue and Monitor Work.

Work packages are issued to Planners from the Maintenance Group. Work schedules are developed by the Depot Planner (4 to 6 week work packages). Planners schedule their work to be completed by the priority allocation and / or declaration date to ensure that the BFM index is zero from declaration date.

The maintenance activities are planned and allocated via the Q4 workbench with weekly monitoring tools. e.g. The hit list, is used to monitor completion by due priorities.

SP AusNet is currently reviewing the enterprise asset management platform with the view of migrating from Q4 to an alternative system with enhanced integrated capabilities.

Compliance to the Scope of Work

Compliance with scope requirements are verified by:

- Work packages include the work scopes;
- Maintenance manuals provide standards for work;
- Details of work completed are recorded in the work package file;
- Photos of work completed are included in work package file;
- The work pack has the facility to highlight incomplete work.
- The crew / truck leader signs off the completed job and is to the required standard
- External Audits of work quality; and
- Safety Conversations with work groups.

## *3.3 Asset Inspection*

The Bushfire Mitigation Plan confirms SP AusNet's inspection standard is to ensure compliance with the prescribed inspection interval of <37 months in the HBRA. SP AusNet achieves compliance through a combination of two inspection cycles:

- One ground based test and inspect; and
- Aerial / ground inspection of above ground assets.

These two inspection programs are set to a five years interval but are offset by 2.5 years to one another to achieve an effective inspection interval of 30 months.

Asset inspection is forecast to achieve transition exemption expiry date of 31 December 2012 for compliance with the <37 month inspection interval for HBRA overhead electric lines.

SP AusNet has targets for Asset Inspection and progress against targets is reported to the NSMC. The targets and actual at September 2012 is:

- HBRA Inspection Target – 96% complete against a target of 99.6% (on schedule to complete prior to 31 December 2012).

SP AusNet has, in total, 9,292 distribution poles outside the 37 month inspection cycle which are covered by the transition period in the ESV exemption. In addition there are presently 6 POEL's with 27 poles reported as outside the 37 month inspection cycle due to access issues.

## *3.4 Training Qualifications and Auditing*

SP AusNet has recruited one Asset Inspector in the past 12 months who had previously successfully completed his Certificate II in Asset Inspection while working on a different network. The Company has overseen the training and qualification of six (6) Asset Inspectors in the past 12 months that were recruited as Trainee Inspectors. These Trainees successfully completed the Certificate II in Asset Inspection through the Gippsland Institute of TAFE and were deemed competent prior to commencing work on the network.

The 6 Trainee Inspectors worked under supervision during the training period until deemed competent.

Asset Inspectors Refresher Training

All Asset Inspector refresher training is in line with both Business and VESI requirements and detailed in the Training Matrix.

Formal refresher training

- Traffic Management (Traffic Control/Traffic Guidance Schemes)
- Entry to Enclosures
- ESI Safety rules
- VESI Safety Framework
- VESI Environmental Framework
- Manual Handling
- Working Safely in the Construction Industry (white card)
- Safe to Approach SWER
- Safe to Approach Distances
- Provide First Aid in an ESI Environment
- Perform CPR

Processes and Procedures to Monitor, Audit and Assess Asset Inspections

SP AusNet monitors competency of persons by audits using in-house and external independent auditors to determine quality of work and competency of the inspector.

- Whilst carrying out inspection activities on site. This includes vehicle, equipment, skills, H & S, works practices, and compliance with asset inspection manuals;
- Post inspection audits of quality and adherence to requirements of the inspection manual.

Where it is identified that an Inspector's quality of work is suffering the Inspector skill level is reviewed and the following actions may be applicable:

- Downgrade level and increase auditing;
- Retrain and increase auditing;
- Increase auditing;
- Reinspection.

Once any of the above points have been identified the Company initiates an appropriate reinspection program or review of work since the Inspector's last competency audit.

ESV conducted an audit of SP AusNet's training and competency processes in April 2012. The report is still to be finalised by ESV.

## *3.5 Armour Rods & Vibration Dampers*

SP AusNet's standard for the installation of armour rods and vibration dampers has not changed from what was originally established by the SECV. The standard is specified on drawings EVX9/7037 & EVX9/7037/1. The application is based on tensions, length of span and type of conductor independent of HBRA or LBRA.

In June 2012 SP AusNet issued further instructions to the field by way of a Bulletin to install armour rods on all nominated types of conductors regardless of tension and to install vibration dampers on specified conductors regardless of tensions with the exception of slack spans.

Program for the Installation of Armour Rods and Vibration Dampers under Agreement with ESV

SP AusNet's plan for fitting armour rods and vibration dampers was approved by ESV on 28 March 2012. The plan is summarised in SP AusNet's AMS - Enhanced Network Safety. Program performance is reported to the NSMC.

Annual Installation Alignment with Agreed ESV Targets – The program has only just begun for the installation of armour rods and vibration dampers and initially addresses spans greater than 300m in HBRA's. The program includes the installation of approximately 60,000 armour rod and vibration dampers on distribution pole top structures up to 2015 and a further 188,000 sites by 2020. The program includes a target project that begun in July 2012 and the fitting of this equipment under BAU. The volumes being recorded are structures that are compliant as per Technical Bulletin 86-2012 and ESV directive dated 4th January 2011.

The program agreed with ESV covering the installation of Armour rods and Vibration dampers in the HBRA is:

- December 2012 – Installed 1,300;
- March 2013 – Installed 1,882;
- March 2014 – Installed 18,000;
- March 2015 – Installed 3,900;
- December 2015 – Installed 59,645.

As at the end of September there have been 760 Vibration Dampers and Armour Rods fitted against the December 2012 target of 1300. The Company is slightly ahead of target at the date of the audit.

The program agreed with ESV covering Armour rods and Vibration dampers in the LBRA is a further 188,000 sets to be installed between December 2015 and December 2020

Additional Items added since the Program – The plan was based on a statistically significant sample of 60,000 pole top structures identifying the application of armour rods and vibration dampers. Results of this sample were used to estimate the armour rod / vibration damper program. On 29 May 2012 SP AusNet submitted to ESV proposed volumes of works for the Safety Improvement program that SP AusNet would be undertaking for each of the remaining years of the current period.

Changed from Original Targets - At this point in time SP AusNet has not identified any variances to this program. The Company is confident they can meet the agreed program timeframes.

*Depot Audit Comment:*

Across all worksites where access to the HV system is available the line workers are asked to fit armour rods and vibration dampers to specifications where appropriate, irrespective to the scope of works. The specification for Armour Rods and Vibration Dampers includes the conductor, stringing, and span length.

The installation of armour rods and vibration dampers are carried out via 2 programs. Internal resources are fitting them in relation to existing work and a contractor has been engaged to target the installation on a feeder basis.

## *3.6 Conductor*

SP AusNet's Conductor Replacement Strategy details a high level conductor replacement plan and the Enhance Network Safety document nominates conductor replacement quantities for the period 2011-2015. A targeted program to replace approximately 1,771km of galvanised steel conductor and 284km of copper conductor up to the end of the 2015/16 financial year is established.

Program for the Replacement of Conductors and Agreement with ESV

The Company have an agreement with ESV for the replacement of Copper (CU) and steel Gz/St conductor, although ESV's Monitoring Safety Program indicates targets of:

- December 2012 – CU 72 km and Gz/St 95 km;
- March 2013 – CU 72 km and Gz/St 418 km;
- March 2014 – CU 165 km and Gz/St 836 km;
- March 2015 – CU 235 km and Gz/St 1304 km; and
- December 2015 – CU 284 km and Gz/St 1770 km.

Annual Installation Alignment with Agreed ESV Targets – SP AusNet has an agreed program with ESV for the replacement of steel (1771km) and copper conductor (284km) by end of December 2015.

SP AusNet stated that the copper program is slightly behind schedule but will be back on target at end of financial year.

- ESV Copper Conductor Replacement Target = 52 kilometres – YTD (September) = 47 – *behind target; and*
- ESV Steel Conductor Replacement Target = 210 kilometres – YTD (September) = 228 – *ahead of target.*

Additional Items added - The final target volumes have not changed but the yearly forecast budgets have altered from the original AER submission due to start up and design time required. The target modification has been agreed with ESV.

Changed from Original Targets - As of the 30th September 2012 all programs are forecast to meet the end of program timelines.

*Depot Audit Comment:*

Field personnel are aware of the program being implemented to match the ESMS program for the replacement of corroded steel and copper conductor. They are encouraged to report defective or deteriorated conductor and where possible provide photographic evidence / samples. Where conductor fails under fault conditions like for like is installed or temporary repairs are carried out.

The actual reconductoring is carried out once a design check is completed and issued as a capital project issued.

## *3.7 SWER Conversion*

SP AusNet augments its network in accordance with the Distribution Network Planning Guideline. This requires an engineering approach to provide cost effective design of augmentation. Accordingly, there is no specific policy to replace SWER with 22kV and no program/targets in place to replace or convert SWER to 22kV.

*Depot Audit Comment:*

Field personnel understanding of SWER conversion is:

- Loading may require the splitting of a system and the installation of a second ISO or the conversion of part of or all of the system to single or 3 phase supply.
- Supply request for single or 3 phase

SWER conversion is carried out once a design is completed and project issued as a Capital project.

## *3.8 Crossarms*

SP AusNet replaces crossarms in accordance with the Crossarm Replacement Strategy which is summarised in the Enhanced Network Safety Strategy. LV crossarms are replaced like for like whereas HV crossarms are replaced with steel.

Program for Replacement of Crossarms and Agreement with ESV

As part of the Enhanced Safety program SP AusNet is aiming to replace 46,785 crossarms by the end of December 2015. This program has been agreed with ESV:

- December 2012 – 19,725 Crossarms;
- March 2013 – 21,225 Crossarms;
- March 2014 – 30,582 Crossarms;
- March 2015 – 38,939 Crossarms; and
- December 2015 – 49,785 Crossarms.

In the auditor's opinion and observations in the field this program is paramount to risk reduction of fire starts in the HBRA and supply reliability in the LBRA

Annual Installation Alignment with Agreed ESV Targets – ESV Crossarm Replacement Target is 18,125 YTD (September) and SP AusNet has achieved 21,074 – *Ahead of target*

Additional Items added – There have been no additional items added since the program was established.

Changed from Original Targets - The Enhanced Network Safety crossarm replacement program is well advanced on achieving the ESV end of year target.

*Depot Audit Comment:*

Crossarms are traditionally replaced due to deterioration caused by age, weather, fruiting fungal, and beetle attack. The work is issued through the Maintenance packages with all HV arms replaced with steel and LV with wood.

## *3.9 HV Fuse Replacement*

SP AusNet's HV Fuse replacement policy is detailed in their Enhance Network safety document approved by ESV. The key focus of the EDO strategy is to:

- Replace 20,314 EDO units with Boric Acid, or equivalent, in areas of high fire loss consequence identified through the PBST fire loss consequence model by 2016;
- Replace 11,246 EDO tubes in areas of high fire loss consequence identified through the PBST fire loss consequence model by 2016;
- Replace double vented EDO's;
- Replace brown and black fuse carriers;
- Maintain condition based replacements (i.e. Corrosion, cracked insulators);
- Replace EDO's with BA or equivalent where fault current exceed 1,800 amps; and
- Fault crews replace all EDO fuse carriers when attending EDO fuse hang-up.

Program for HV Fuse Replacement and Agreement with ESV

The MV Fuse Asset Management strategy has forecast the replacement of 10,825 expulsion dropout (EDO) fuse units by 2015/16. This program has been agreed with ESV:

- December 2012 – 6,516 Fuse units;
- March 2013 – 6,715 Fuse units;
- March 2014 – 8,165 Fuse units;
- March 2015 – 9,615 Fuse units; and
- December 2015 – 10,825 Fuse units.

EDO fuse hang-ups are the predominant cause of asset fires. SP AusNet has prepared a plan to increase the volume of EDO replacement with Boric Acid through to the end of 2015. The replacement program is prioritised in accordance with the Fire Lose Consequence Model.

The Network Safety report fires year to date statistics shows 52 HV fuse fire starts across ground and assets therefore this item is the major contributor of the 119 YTD fire starts recorded.

Priority for HV fuse Replacements in their BFM Program

SP AusNet has identified HV fuse units as potential sources of fire ignition. Targeted replacement programs for high pollution areas enhance the routine replacement outlined in the MV Fuse Switch Disconnectors strategy and summarised in the Enhanced Network Safety strategy. Monitoring of fire incident data has indicated bird and animal flashovers to earthed EDO brackets on concrete poles together with 'candling'/'hang-ups' of EDO fuse tubes as key sources of fire ignition requiring targeted replacement with Boric Acid. The replacement program targets the highest consequence areas in accordance with the Fire Loss Consequence Model (FLCM).

Annual Installation Alignment with Agreed ESV Targets – ESV Fuse Replacement Target is 6,523 YTD (September) and SP AusNet has achieved 6,977 – *Ahead of target*

Additional Items added – At the date of the audit no additional items have been added to the original program however agreement has been reached with ESV for additional EDO replacements which SP AusNet are in the process of including in its program. The additional units identified are to address the highest consequence areas in accordance with the Fire Loss Consequence Model.

Changed from Original Targets - The Enhanced Network Safety fused replacement program is well advanced on the ESV end of year target.

*Depot Audit Comment:*

HV fuse units (EDO's and powder filled) are being replaced with Boric Acid units. There was a bulk change program carried out in 2011 where 600 units were changed out. Unit replacement is now carried out under a scope of works as per the Asset Engineering instruction except under fault conditions.

## *3.10 SWER OCR/ACR Replacement*

SP AusNet's Enhanced Network Safety procedure outlines the OCR/ACR replacement policy on their SWER network. The driver for the replacement of the existing SWER protection scheme with digital protection and SCADA control and targeted 3 phase ACR's is the community benefit offered through reducing the risk of fire starts on high bushfire risk days by altering the reclose function or settings on reclosers in HBRA's during the fire season either at the start of each fire season or by changing it on high fire risk days.

Program for SWER OCR/ACR Replacement and Agreement with ESV

SP AusNet has an agreed program with ESV for the replacement of 525 existing SWER OCR's with ACR's by end of December 2015. This program has been agreed with ESV:

- December 2012 – 120 ACR unit/controllers installed;
- March 2013 – 135 ACR unit/controllers installed;
- March 2014 – 250 ACR unit/controllers installed;

- March 2015 – 381 ACR unit/controllers installed; and
- December 2015 – 525 ACR unit/controllers installed.

Annual Installation Alignment with Agreed ESV Targets – ESV SWER OCR/ACR Replacement Target is 95 YTD (September) and SP AusNet has achieved 131 – *Ahead of target*

Additional Items added – There has been no additional items added since the program was established.

Changed from Original Targets - As of the 30th September the program to date target has been exceeded and year-end target remains on track. SP AusNet is on track meet the end of program target schedule.

*Depot Audit Comment:*

Field personnel are aware that SP AusNet is moving to the replacement of SWER OCR with ACR control units in their high consequence area. These upgrades are being carried out in 2 stages with the field crews installing and wiring and Meter and Test personnel commissioning the units.

### *3.11 3-Phase ACR controllers*

SP AusNet's Enhanced Network Safety procedure outlines the 3 phase ACR replacement policy in their 22kV network. Achievement of ESV Directives and PBST recommendations will be through the replacement, upgrade of 234 ACR control boxes and replacement of 170 zone substation relays by 2015/16.

Program for 3-Phase ACR controllers and Agreement with ESV

SP AusNet has an agreed program with ESV for the replacement of 234 existing 3-Phase ACR's by the end of December 2015.

- December 2012 – 52 Replace/upgrade of 3 phase ACR controllers;
- March 2013 – 65 Replace/upgrade of 3 phase ACR controllers;
- March 2014 – 114 Replace/upgrade of 3 phase ACR controllers;
- March 2015 – 173 Replace/upgrade of 3 phase ACR controllers; and
- December 2015 – 225 Replace/upgrade of 3 phase ACR controllers.

Annual Installation Alignment with Agreed ESV Targets – ESV Replace/upgrade of 3 phase ACR controllers Target is 32 YTD (September) and SP AusNet has achieved 103 – *Ahead of target*

Additional Items added – There has been no additional items added since the program was established.

Changed from Original Targets - SP AusNet has applied for a variation to the Scope of Works of which ESV has accepted. Although the volume remains constant the mix of activities has changed across the program:

- Modify 3ph ACR controller – 158 units;
- Replace 3ph ACR controller – 39 units; and
- Replace 3ph ACR - 37 units.

As of the 30th September the program to date target has been exceeded and year-end target remains on track. The end of program target is scheduled to be met.

*Depot Audit Comment*

Field personnel are aware that SP AusNet is moving to the upgrade of 3-phase ACR's to include auto control in the high consequence areas. This work is being carried out with internal resources and an additional contract with Jemena. They are not aware of the completion date for this work.

# 4. VEGETATION MANAGEMENT

## *4.1 Vegetation Management Organisation Structure*

The following management structure outlines SP AusNet's positions responsible for the preparation, approval, resourcing, submission and deployment of their Plan and positions responsible for carrying out the Plan;

- Group General Manager Network Strategy & Development
- Director Network Engineering
- Manager Networks Safety
- Bushfire Mitigation Manager is responsible for developing and managing activities associated with environmental and bushfire strategies, plans and business solutions to ensure SP AusNet meets its safety and environmental responsibilities in delivering a safe, high performing and sustainable electricity transmission and distribution network.
- The Group Manager Utility Solutions is responsible for leading and managing the field and office based vegetation, easement, & asset inspection management teams in developing and delivering the distribution and transmission vegetation easement and asset inspection programs.
- Vegetation & Easement Manager – Position description requested but not supplied.
- Vegetation and Easements Central Area Manager Utility Services leads the group of the central V&E group as a business operation within Utility Services to manage network assets relations obligations for SP AusNet/Jemena and drive the growth of unregulated income.
- Vegetation & Easements Area Manager – Central (Select Solutions) is responsible for leading and managing the field and office based central vegetation and easement management team in developing the distribution vegetation management easement programs

*Depot Audit Comment:*

Vegetation activities for SP AusNet are managed by Select Solutions (a division of SP AusNet).

- Vegetation Program Leaders
- Field Officers
- Northern Region Assessment Officer (Internal) / Contracted in other 2 regions

The Company has contracted 4 service providers to cover the field cutting work across the regions.

## *4.2 Measures Adopted to Assess Performance*

As part of its Environmental Management System, SP AusNet has developed a set of Key Performance Indicators (KPIs), to monitor its overall environmental performances. KPI targets are set each year and monitored and reported to Senior Management and the Board on a quarterly basis. The Bushfire Mitigation Index is reported to and monitored by Senior Management and the Network Safety Committee monthly. The KPIs related to vegetation bushfire mitigation aspects together with the 2012/2013 measures and targets are detailed below;

- Bushfire Mitigation Index *Declaration Period - 0%*
- F-factor regulatory performance incentive scheme (fire incidents) < 257
- Hazard tree removal program (per annum removals) - 5,000

Compliance with the Electric Line Clearance Regulation Code

The accountability for auditing of the Vegetation Management Group rests primarily with the Manager Network Safety, Network Strategy and Development who is responsible for the regular auditing of the Vegetation Management Group to ensure that it complies with the requirements of the VMC.

This includes:

- Internal audits prior to the commencement of the fire season to validate the completion of all bushfire mitigation obligations prior to the commencement of the fire season.
- As part of the Senior Management Bushfire Mitigation Review Program, reviews of all facets of the Bushfire Mitigation Program are undertaken by managers at General Management level to validate the efficacy of SP AusNet's management process, program compliance, and program relevance. These audits are undertaken during December of each year.
- Audits are undertaken during the fire season to check that vegetation clearances are being maintained.
- SP AusNet's internal auditor undertakes audits of the Bushfire Mitigation Management system.
- Annual audits conducted by Energy Safe Victoria.

SP AusNet or its nominated representative conducts a sample audit of the contractor's work (without any limitation), procedures, and practices, in order to determine their compliance with the relevant Standards and Codes of Practice.

The V&E group field officer/representative then undertakes a compliance audit based on but not limited to the following criteria;

| Assessment | Cutting |
|---|---|
| – Correct priority coding of all spans; | – Clearance achieved; |
| – Identification of all assets; | – Appropriate cutting techniques used; |
| – Correct property owner identification; | – Site tidiness; |
| – Correct identification of voltages; and | – Correct herbicide application; and |
| – Correct identification of fire zones. | – Slashing requirements met. |

## *4.3 Vegetation Management Programs and Cycles*

The Vegetation Management Company, Select Solutions inspects the clearance space in accordance with the following cycles:

- all spans are assessed at least annually in the hazardous bushfire risk area to allow for any clearing to be undertaken to maintain compliance to the regulations; and
- all spans are assessed at least biennially in the low bushfire risk area, however during the transition period the cycle is progressively reducing to achieve a 1 year cycle.

In determining the location where work is required to maintain the clearance space one or more of the following inspection programs are undertaken:

- cyclic work programs;
- pre-summer inspection in hazardous bushfire risk areas; and
- reports from asset inspections.

The above are supplemented by reports from the public on areas of concern.

At each location the most appropriate method of maintaining the clearance between powerlines and vegetation shall be determined.

*Depot Audit Comment:*

SP AusNet carries out annual inspection between March and August for cutting in the HBRA and have suspended cyclic cutting. The inspection component varies from year to year depending on access.

East

The company carries out cyclic slashing of easements.

SP AusNet has a tentative date of 31st October or declaration, whichever is sooner, for all priorities up to 365 to be completed. Where it is not possible to achieve these target dates the Company instigates a reinspection and monitoring program until the works are completed.

South Coast

In HBRA all spans are inspected annually which is carried out by ground based inspectors.

In LBRA all spans are inspected biennially transitioning to annually. The South Coast area of SP AusNet commenced the transition in 2012.

Cutting/Removal Cycle for Bare and Covered Conductors

If cutting and/or removal is deemed the most appropriate method then the cutting/removal cycle shall be determined at each locality. In specific locations and from time to time the maintenance cycle may be varied as per the following:

- Rural Areas – 6 months to 3 years as appropriate; and
- Urban Areas – 6 months to 2 years as appropriate.

The process used to determine the Maintenance Cycle at specific locations takes into consideration the following factors:

- Regulator clearance requirements;
- Financial and budgetary constraints;
- Community impacts;
- Environmental and conservation issues;
- Tree species & regrowth characteristics;
- Line voltage & configuration; and
- Area fire rating.

Areas Cyclic Cut in 2012

SP AusNet uses a Vegetation Management Program to detail the priority of the feeders to be inspected and actioned in accordance with their procedure:

- At the start of the year the LBRA program was a continuation of their existing 2 year plan with a move to the transitional plan commencing in July 2012; and
- The HBRA program has been established to show the pre-summer inspection and cutting by feeders with the aim that all works are completed by a nominal date of 31st October.

SP AusNet's Assessing Program is complete and the Cutting Program is on target for completion on the 30th November. It is anticipated that approximately 500 priority spans may remain at the end of October. These consist of "wet spans" where Select Solutions are waiting for dryer weather to get machinery into spans, with a small number of ESR customers to finalise. Pre-summer cutting works should be complete prior to the November target date or the declaration of the bushfire period.

SP AusNet is on target to meet its LBRA biennial inspection and cutting program however during the transition period the cycle is progressively reducing to achieve a 1 year cycle. A KPI report was produced that shows 2,700 spans have been assessed against a target of 24,715 spans completion against program. The works program is slightly behind target owing to resources being utilised on the HBRA program due to a slight increase in find rates and wet weather.

Default Times Set for Vegetation Classified as Requiring Attention

SP AusNet classifies vegetation as requiring attention as:

- PT1 (55's) - On the day of inspection vegetation has been recently contacting the conductor due to sag or sway or environmental conditions, but is not physically in contact on the day required to be cut or removed within 24 hours;
- PT30 (56's) - On the day of inspection vegetation is within the clearance space as defined in the Electricity Safety (Electric Line Clearance) Regulations 2010 but is not in contact with open wire conductors or un-insulated assets required to be cleared within 4 weeks;
- PT 365 - Vegetation is outside the clearance space, but is 'highly likely' to encroach upon it prior the end of the declared Fire Danger Period in the current assessment year;
- RE - Vegetation is outside the clearance space however there is some uncertainty whether or not it may encroach upon it prior to the next assessment cycle;
- PT 720 - Vegetation is outside the clearance space, and will not encroach upon it between a period commencing not less than 365 days up to a maximum of 720 days;
- CC - The predominant vegetation characteristics observed throughout the span have historically not required any action to maintain the clearance space;
- PTM - Phantom Code – The PTM code shall be assigned to indicate the following:
  - Public Light not supplied by an overhead cable;
  - An abandoned line;
  - A POEL; or
  - When there is a duplicate Tree Record.

Deadlines not Achieved Prior to the Fire Danger Period

SP AusNet has a number of mature processes in place to monitor the performance of the contractor company responsible for their operational area to ensure the Fire Danger Period deadline is always achieved and therefore has not needed to put corrective actions in place.

- Monthly contractor meetings;
- Regular field inspections;
- Regular Network Safety Management Committee meetings; and
- Tracking via the BFM Index.

Rectification Requirements for Transitioned Spans

SP AusNet has an agreed program for the transition to compliance and this aligns with the conditions of the exemption granted by ESV on 24th January 2011:

- Cyclic Clearing Aerial Bundled Cable or Insulated Cable all areas – *Target: 100% to be completed by 31 December 2013;*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable LBRA – *Target: 100% to be completed by 31 December 2013;*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable HBRA – *Target: 100% to be completed by 31 December 2013; and*
- Overhanging Trees – power lines other than Aerial Bundled Cable or Insulated Cable HBRA – *Target 2,058 by 29 June 2015.*

Annual Installation Alignment with Agreed ESV Targets - SP AusNet has an established program for the transition to compliance and this aligns with the conditions of the exemption granted by ESV on 24th January 2011:

- Cyclic Clearing Aerial Bundled Cable or Insulated Cable all areas – *Target: 31 December 2013 – Currently 49% compliant to code against 50% - slightly behind target*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable LBRA – *Target: 31 December 2013 – Currently 51% compliant to code against 63% - behind target*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable HBRA – *Target: 30 June 2013 – Currently 94% compliant to code against 97% - slightly behind target*
- Overhanging Trees – power lines other than Aerial Bundled Cable or Insulated Cable HBRA – *Target 2,058 by 29 June 2015 – Currently 539 spans compliant to code against 339 – ahead of target*

Additional Items Added – The original targets for the transitional plan were established on a percentage of the Network to be completed in line with schedule of dates. There has been an additional 58 included in the program.

Changed from Original Targets – The change was due to the rezoning of LBRA boundaries with schedule of dates. There has been no change to the original area from the agreement.

*Depot Audit Comment:*

Field personnel have a solid understanding of the transitional program covering open and covered conductors in both HBRA and LBRA.

## *4.4 Clearance Space for Electric Lines*

Program for Removal of Overhanging Vegetation in the HBRA and Agreement with ESV

SP AusNet's Vegetation Management Plan objectives require compliance with the Electricity Safety (Electric Line Clearance) Regulations 2010 including compliance with the transition plan agreed with ESV.

The agreed transition plan for overhanging trees on power lines other than Aerial Bundled Cable or Insulated Cable in the HBRA is:

- 31st December 2011 – 120 spans;
- 31st December 2012 – 219 spans;
- 31st December 2013 – 340 spans;
- 31st December 2014 – 560 spans and;
- 29th June 2015 – 761 spans;

Number of Agreed Annual Trees/Spans - SP AusNet has an established transition program for the removal of all overhanging vegetation in the HBRA which aligns with the conditions of the exemption granted by ESV on 24th January 2011. Their program is to replace 2000 spans bare LV and HV conductors that involve 56M removal.

Changes from Original Targets - During the 3 yearly CFA reviews of the fire ratings, in certain areas some spans that were originally LBRA and have been changed to HBRA which has caused an increase in the number of 56Ms on the network with 58 spans being added to the program. All of these have been picked up during this year's cyclic assessment and have been assessed by an Arborist. This is an ongoing issue.

Meeting Agreed Program Timeframes – The Company is confident that they can meet the agreed program timeframes, as they are ahead of target at the date of the audit.

*Depot Audit Comment:*

In the North and East any new overhanging vegetation found is coded as a PT30 and arrangements made for cutting in accordance with the priority allocation. In addition, the Company is managing the 56M database where all known overhanging vegetation is registered. The aim is to progressively reduce the sites by either cutting or augmentation.

In Central there is a greater emphasis on alternate construction due to a number of ecological issues.

All 56M's on the database are annually assessed by a qualified Arborist. Should the Arborist determine that a particular 56M requires immediate action the 56M procedure is invoked and vegetation actioned accordingly.

## *4.5 Hazard Trees*

SP AusNet has a procedure for the management of hazard trees which requires the assessor to carry out a visual inspection of the surrounding vegetation from the location they have positioned themself in to view the "clearance space" to identify any obvious hazard trees. Typically these would be:

- Poor anchorage/instability (ie: root uplift, severed roots;
- Major stage of decline (ie: dead and dangerous limbs);
- Major decay / major cavities;
- Excessive imbalance towards electrical assets; and
- Obvious cracks / splits in trees.
- Other trees or limbs that may be unstable and could fall on the powerlines under the range of weather conditions that can be reasonably expected to prevail in the locality

The identification of trees that could become a hazard is included in routine inspections and is recorded on the Hazardous Tree database. This database is used to manage hazardous trees and was sighted and used by the auditor during the field audit.

Established Program for the Removal of Hazard Trees

SP AusNet has several means by which Hazard Trees are reported:

- Inspections undertaken as part of the formal hazardous tree program; and
- Information obtained from councils, public, other authorities, company personnel, contractors.

The company has identified 12,036 Hazard trees since 1st April 2011 and actioned 7,473.

The following steps outline what actions are to take place once a hazardous tree has been identified and reported to an Arborist for assessment:

- If the assessed tree is likely to fail at any moment then the Arborist must report this to the Program Leader for immediate action; or
- If the tree is not likely to fail at any moment the Tree Assessment - Hazard Tree or 56M Span form is to be completed and submitted (electronically) to the Program Leader.

The Program Leader prioritises works according to the hazard rating of the tree or:

- Allocates work to the relevant contractor for cutting;
- Allocates to an Arborist for re-assessment if the tree is not to be actioned prior to the declared bushfire period.

The Program Leader is responsible for ensuring that random audits are conducted on a sample of completed works and updating and maintaining the Hazard Tree Database.

Number of Outstanding Hazard Trees - SP AusNet has 4,563 outstanding trees with a rating of 2, 3 or 4 in the database since 1st April 2011.

The Company has made a commitment to clear 5,000 hazard trees annually (Financial year April to March). As at end of September 2,646 trees have been cleared against a target of 2497 YTD – *slightly ahead target*.

*Depot Audit Comment:*

During the easement inspection the Assessment Officer is required to determine imminent threat from hazard trees. The Assessment Officer prioritises the hazard tree and notifies the Program Leader of the threat. Arrangements are then made for a specialist Arborist to conduct a detailed assessment and recommend appropriate action.

In addition, SP AusNet runs a detailed Hazard Tree program where a Level 4 Arborist systematically evaluates and prioritises existing Hazard trees.

## *4.6 Alternatives to Tree Clearing*

SP AusNet has a procedure for alternative methods to be considered to avoid tree pruning consisting of the following considerations:

- Alternative methods for distribution powerlines such as re-routing or placing underground;
- Alternative methods available for maintaining clearance spaces include vegetation removal, replacement, and pruning. Vegetation is managed either by clearing or in special cases pruning where a landowner/occupier or affected person objects to the methods proposed by the Vegetation Management Group. The Vegetation Management Group may provide suitable replacement plants to the affected person where clearing has taken place. In consultation with the affected person, the Vegetation Management Group may negotiate phased vegetation replacement with compatible plants where inappropriate vegetation has been identified along an easement;
- While removal of all trees may be appropriate in some circumstances, other circumstances may require a management plan to provide for controlled retention of compatible vegetation without unreasonably increasing risk. Vegetation management plans provide for a layered approach, which address a range of situations; and
- Consideration of alternative methods is subject to agreement negotiated for recovery of implementation costs.

Established Program for Alternatives to Tree Clearing

The Company has an established transition program for the removal of all overhanging vegetation in the HBRA which aligns with the conditions of the exemption granted by ESV on 24th January 2011. This program is mainly aimed at the alternative to cutting 56M's sites.

SP AusNet is confident that they can meet the agreed program timeframes, as they are ahead of target at the date of the audit.

*Depot Audit comment:*

The Vegetation Management group do not have a direct budget for relocation of lines. The field officers are encouraged to recommend relocation where it is the most cost effective and best option to achieve code clearances. This program is managed through the Hazard Tree Program Leader.

A specialist team in SP AusNet has been established to manage the relocations required in the central area due to the 56M program.

## *4.7 Company Specific Questions*

Select Solutions field officers utilise Tru Pulse Laser Rangefinders to determine span lengths and assist in challenges to contractors work quality. The assessors do not utilise these devices for cyclic audits as it is impractical due to the time taken to take a reading for each tree.

*Depot Audit Comment:*

Support systems available in the depots are:

- Q4 (select personnel full access allowing updating);
- AM/FM;
- Spatial Analysis Mapping Systems (SAMS) – Google Earth with AM/FM overlaid;
- IMS (Incident management);
- MAXIMO (select personnel full access allowing updating);
- Workbench - Planning Tool (full access allowing updating);
- OAS;
- Intranet;
- Intranet – available via the IPad is the construction manuals;
- Mobile phones;
- TMR;
- Portable radios;
- NEMS (Operational) (select personnel full access allowing updating); and
- Field manuals (online or hard copy).

Support systems available in the Field are read only:

- Smart phones;
- Tablet / laptop;
- Tom Tom GPS;
- Hard copy field service manuals; and
- TMR / portable radios.

# 5. FIELD AUDITS AND DATABASE VERIFICATION

## *5.1 Asset Field Audit*

The field audit included a detailed check of SP AusNet's assets and vegetation at 474 sites (HBRA 329 & LBRA 145) after downloading pole details and asset defects from the Company's database. Asset sites were visited with a Company representative where the information taken from the database records were crosschecked against the actual condition of the assets in the field. Were an asset defect/anomaly existed and was not recorded by the Company or the vegetation clearances at the site did not meet the new Electricity Safety (Electric Line Clearance) Regulations 2010, it was noted.

The asset areas audited in the HBRA were between Seymour and Yea in the Northern Region, and Gelliondal and Hedley in Gippsland. They were all within the 37 month inspection requirement. The assets were in good condition and complied with the Company's Bushfire Mitigation Plan.

The assets were in a poorer condition in the LBRA declared townships of Seymour and Leongatha than in the HBRA. The Seymour, Yea, and Toora townships were all inspected within the 5 year inspection period for wood poles and 10 years for concrete (under the transitional agreement). Some assets that are showing signs of deterioration may require additional assessment before the next cyclic inspection.

In association with the 266 asset sites audited the vegetation clearances were checked which highlighted that the vegetation clearances across network that are the responsibility of SP AusNet both LBRA and HBRA have been cleared to Code. The line clearances for covered conductors (services), being the responsibility of the customer, were not being cleared but in most cases they had been issued a defect notice requesting that the work be carried out.

Vegetation Line Clearance Audit

208 sites were audited covering:

- 134 sites in the HBRA (Northern and Gippsland Regions) inspected and cut this year as part of the pre-summer speed cut. This audit showed that the Company was inspecting and cutting in line with their policy and the area audited would, in the auditors opinion, remain clear of the clearance space for the 12 month period;
- 33 sites in the LBRA non-declared (Yea) that were inspected and cut in 2011. This showed that Company were achieving a two year clearance on the open mains but still need to work at clearances on covered conductor relating to services customer responsibility. There was a vast improvement on previous years for services where SP AusNet has the responsibility to maintain the clearance.
- 41 sites in the LBRA non-declared (Toora in Gippsland) that were inspected and cut in 2012. This showed that the Company had code cleared this year to a high standard but again still needs to work at clearances on covered conductor relating to customer responsibility services.

## *5.2 Results of Field Audit / Database Check*

| | |
|---|---|
| Total Sites Audited in the Field – (HBRA x 329 & LBRA x 145) | 474 |
| Defective/Missing Asset Items Not Matching Database – (HBRA x 10 & LBRA x 6) | 16 |
| Asset Audit Sites - Vegetation Spans Non Compliant with the Regulations - (HBRA x 195 + LBRA x 71 Sites Audited) – SP AusNet's Responsibility - (HBRA x 0 & LBRA x 2) | 2 |
| Asset Audit Sites - Vegetation Spans Non Compliant with the Regulations - (HBRA x 195 + LBRA x 71 Sites Audited) - Other Responsible Persons - (HBRA x 2 & LBRA x 30) | 32 |
| Vegetation Spans Audit - LBRA 2011 Inspected & Cut - (33 Sites Audited)<br>– Vegetation Spans Non Compliant with the Regulations - SP AusNet's Responsibility (0)<br>– Vegetation Spans Non Compliant with the Regulations - Other Responsibility (12) | 12 |
| Vegetation Spans Non Compliant with the Regulations - Following Pre-summer HBRA Cut<br>– SP AusNet - (134 Sites Audited ) | 0 |

The Toora LBRA cut was carried out in 2012 so the results are not included above

| | |
|---|---|
| Sites audited - Toora Township LBRA: | 41 |
| – Vegetation Spans Non Compliant with the Regulations - SP AusNet's Responsibility; | 3 |
| – Vegetation Spans Non Compliant with the Regulations - Other Responsibility; | 8 |
| – Trees Not Matching Database; | 8 |

## *5.3 Construction Scheduling and Scope of Works*

The scope of work being used by SP AusNet is issued by the Maintenance Coordinator in a work package that includes:

- Maintenance Project File Cover Sheet;
- Scope of Works (Work order module) or Work Order which details all items to be addressed and timeframes;
- SAMS ViewPort Overlay which highlights the type of inspection carried out. Eg. Aerial or ground;
- File feedback;

- JSA;
- Fusing Changes;
- Specific items to be addressed downloaded from Asset Inspectors program;
- AM/FM printout with locations highlighted;
- Application for Access permit;
- Access permit schematics detailing shutdown area; and
- Job File Contents Checklist.

The audit included visiting 10 Bushfire Mitigation work sites taken at random from SP AusNet's work schedule with the aim of confirming that the work in the field was being completed in line with the Company's policies, procedures, and compliance to the construction manuals. The 10 sites selected for audit were:

Northern Region - Seymour Depot

- NSMR – W2391728 Replace existing black bird covers with new barrier/glove as required by 3 paddock access – Completed as per construction manual (Photo 20) *Completed;*
- NSMR – W2391733, Replace existing damaged 5 shed insulator with new 9 shed insulator x 2, aluminium ties required Completed as per construction manual (Photo 21) – Completed;
- NSMR – W2476002, Remove existing HV fuses and fit new boric acid fuse units and fit stand off insulators, fully insulated leads, new surge diverters to tank, Raychem caps to surge diverters, bushings and fit HV covers covering to surge diverter leads - Completed as per construction manual (Photo 18) – *Completed*;
- NSMR – W2417933, Surge diverter remove 3 x unacceptable - Completed as per construction manual (Photo 23) – *Completed;*
- NSMR – W23301159, Replace existing HV inter xarm with new LW20 xarm and fit 3 x 9 shed insulators - Completed as per construction manual (Photo 19) – *Completed;*

Gippsland region - Leongatha Depot

- LGA023-1-HP–LEO154SSR, LGA014A9 - LEO330MIN, Replace HV24 with LS22 Ampact Bail's 6K B/A units, fit vibration dampers, fit L/A's to Pole, fit Raychem & Stringer covering. Replace wrap on D loops with Ampact Bail's , fit vibration dampers (Photo 34) – *Completed;*
- LGA011H9 – LEO150HVX - LEO330MIN, Replace rusty broken tie, fit vibration dampers, fit pole cap, fit 2 L/A's to Tx, fit Raychem & stinger(Photos 25, 26,27,& 28) – *Completed;*
- LGA001G22 – LEO330MIN, Fit L/A's to pole, fit vibration dampers, fit Pole Cap (Photo 31 &32) *Completed;*
- LGA001G22 – LEO330MIN, Fit disc cover to 5 shed insulator, re tie broken tie & remove, blown L/A (Photo 29 & 30) - *Completed;*
- LGA023-OUTTRIM – Replace Poles, Replace Pole, Fit vibration dampers, 3 ph inter s/stn, ampact Bail's, vibration dampers (Photo 33) – *Completed;*

All work was completed in line with the work scopes which aligned to with the Company's policies, and procedures.

*Depot Audit Comment*

Select Solutions issues the work package to the Planner who determines the delivery dates, manpower, and equipment, which is then issued to a crew or truck leader who then refines the work scope to suit the environment and reality of making it work in the field. Once finalized it is included in the daily work sheet and issued at the job start meeting.

The Work Site Leader has the authority and responsibility to review the job for conformance against the construction manual and scope of work prior to energisation. On completion the Maintenance package is returned to the Scheduler to confirm that the work has been carried out. The Scheduler has the responsibility to arrange for approximately 5% of the maintenance packages to be audited through an external auditing company.

The Site Manager monitors the weekly program and reports to the Delivery Manager / Regional Manager / Works Coordinator on the delivery across the region on planned verses actual.

Should any activity be missed the Planner reschedules the work to match the delivery date.

To confirm the quality of work SP AusNet uses a Quality of Work Audit checklist of which the Work Site Leader or his delegate is obliged to confirm each item has been completed prior to closing out the job. Any items that are not fully completed are noted in the File Feedback sheet.

## 6. OBSERVATIONS

There are 6 general and 15 field audit Company specific observations made during the audit relating to SP AusNet's Bushfire Mitigation Program:

- The Bushfire Mitigation Committee has been replaced by the Network Safety Management Committee which provides a holistic approach to network safety and maintenance management across the electrical Transmission, Distribution, and Gas business. The Company sees a direct alignment of Bushfire Mitigation and Network Safety;
- The Network Safety report is new (Introduced in March 2012) and is a comprehensive document providing an excellent means of monthly snapshots across all programs of the business;
- The change of focus on Network Safety has changed the way SP AusNet is managing their bushfire risk across the Network. There is a greater focus on removal of risk for deteriorating assets;
- It was a refreshing change to audit the Company when dealing with personnel who have the knowledge, experience and attitude to drive change across the network Bushfire Mitigation and maintenance programs;
- Across most of the Network safety programs where targets are agreed with ESV, SP AusNet is achieving the target or delivering results greater than agreed;
- The Network Safety report for the year to date statistics shows 52 HV fuse fire starts across ground and assets therefore this item is the major contributor of the 119 YTD fire starts recorded. In the Auditors opinion the program should be escalated and the completion date bought forward to match the risk profile of this item;
- In the Auditor's opinion and observations in the field showed crossarm replacement program currently in progress is paramount to the Company's risk reduction of fire starts in the HBRA and supply reliability in the LBRA;
- The Company is issuing defect notices to the customers for services that were in breach of the Code but there is no follow-up action being carried out and it appears that in most cases the customer is not complying with the notices;
- SP AusNet is removing black bird covers as they have proven to be unreliable with birds nesting in them;
- There is definite evidence in the audited areas that the annual cut is being carried out with line clearances achieved that would remain clear for the next 12 months in the HBRA;

- In the majority of cases where the Asset Inspector noted a wooden crossarm to be monitored (P9 or P10) in the HBRA the Auditor did not agree and would have allocated a priority that would have required the crossarm to be replaced;
- In the opinion of the auditor a 5 year LBRA inspection period is too long for an accurate life assessment for wooden crossarms. The inspectors need to take a more conservative approach when allocating priorities;
- A high percentage of wooden crossarms in the LBRA are in poor condition and are likely to be a major workload for the near future;
- The asset database was accurate with only minor differences occurring due to the lag in updating items that have been completed in the field;
- Assets within the HBRA areas audited were in a reasonable condition to enter the fire danger period;
- After auditing the Northern and Gippsland regions the focus for future maintenance needs to be on Gippsland as the assets are not to the same standard as the North Region;
- The vegetation database information provided can be difficult to interpret due to poor area location descriptions in both the HBRA and LBRA;
- The Company is not able to achieve clearances on other responsible persons covered conductors (services) but are clearing services that are their responsibility;
- In some cases service vegetation line clearance (SP AusNet responsibility) is not being cut hard enough to achieve 12 month Code clearance and the Company may need to return during the 12 month period;
- In the LBRA the mains clearances achieved in the 2011 cut were to an extent to ensure clearance remains for the 2 year inspection period;
- Leongatha is a declared area but the Leongatha Council is not carrying out its responsibility to maintain Code clearance.

# 7. CONCLUSIONS

SP AusNet's Bushfire Mitigation Management personnel were well prepared and co-operative during the audit and provided information that clearly demonstrates their bushfire mitigation preparedness for the forthcoming fire danger period. The Bushfire Mitigation Plan was reviewed and rewritten this year and provides a fresh approach to an established document. The Vegetation Management Plan is a well prepared document that is easy to follow. These two documents form the basis of the Company's BFM activities and are supported by a comprehensive set of mature policies, strategies, and procedures.

The Company has established and gained agreement with ESV for a transitional period with established target dates and clearance percentages to comply with the Electricity Safety (Electric Line Clearance) Regulations 2010. These arrangements provide for full compliance by June 2015. During the transitional period they are therefore operating outside the new/changed obligations imposed under the 2010 Regulations.

In addition the Company has established programs to meet agreed timeframes for the items covered under ESV directives. They are, at the time of the audit, in the majority ahead or on target across the range of activities being undertaken.

The depot audits demonstrated that SP AusNet is disseminating their policies, procedures, and maintenance programs to their employees and contractors and that employees and contractors have an understanding of the Bushfire Mitigation program targets and timeframes that must achieved. The Company has processes in place to confirm understanding and monitor the Company's obligations to meet agreed timeframes and targets.

There were ten bushfire mitigation project scopes of works chosen at random from the Company's September/October work schedule. All work had been completed in line with the scope of works and to required standard laid down in the construction manual, policies, and procedures. There are sites across the network where access is still an issue.

The field audit highlighted that the Company's assets and vegetation line clearances in the HBRA were in good condition however asset maintenance and vegetation clearances on service conductors in the LBRA were not to the same standard.

SP AusNet is targeting all their Bushfire Mitigation work to be completed by 30 November 2012 and they consider they are on target to achieve this aim. The Company is confident they have the programs and resources in place to complete their Bushfire Mitigation commitments before the start of the Fire Danger Period and are well positioned to maintain a zero index throughout the period.

In the Auditor's opinion after auditing SP AusNet's programs and checking the condition of assets in the field that they are is in a position to achieve their bushfire preparedness in line with their Bushfire Mitigation and Vegetation Management Plans, and should be fire safe prior to the progressive introduction of the 2012/13 fire danger period.

## 8. RECOMMENDATIONS

It is recommended that:

- SP AusNet escalate the fuse replacement program to reduce their fire start risk;
- SP AusNet conduct a closer inspection of all items found during the field audit and arrange corrective action; and
- SP AusNet implements a follow-up procedure for service clearances where customers have been given a defect notice and not carried out the line clearance work required to maintain code clearances.

**Auditor's Signature:** **Date:** 25th November 2012

Ian J McDonald

# Bushfire Mitigation Audit SP AusNet (D)

## Final Audit Report 2013

**IJM Consulting Pty Ltd**

Consultants to the Gas & Electricity Industry

In preparing this report, IJM Consulting has relied upon data, reports and other information provided by third parties including but not exclusively jurisdictional regulators, as referred to in the report. Except as otherwise stated in the report, IJM Consulting has not verified the accuracy or completeness of the information. To the extent that the information, those conclusions are contingent upon the and completeness of the information provided.

IJM Consulting will not be liable in relation to incorrect conclusions should any information be incorrect or have been concealed, withheld, misrepresented or otherwise not fully disclosed to IJM Consulting personnel. The assessment and conclusions are indicative of the situation at the time of preparing the report.

Within the limitations imposed by the scope of services and the assessment of the data, the preparation of this report has been undertaken and performed in a professional manner, in accordance with generally accepted practices and using a degree of skill and care ordinarily exercised by reputable consultants under similar circumstances. No other warranty, expressed or implied, is made.

# Table of Contents

# 1 Audit Scope and Approach

The audit was conducted on SP AusNet (Distribution) in accordance with the agreement with Energy Safe Victoria (ESV) Bushfire Mitigation Audits 2013/2014 Scope of Works, and in conjunction with the Electricity Safety Regulations and other subordinate legislation. Particular emphasis was placed on the policies, procedures, and practices adopted in the Electricity Supplier's plans that mitigate the potential for bushfire starts. The SP AusNet (Distribution) Bushfire Mitigation Plan 2013-2014 and the SP AusNet (Distribution) Vegetation Management Plan have been used as the base reference documents to outline the Company's standard of performance, and activities undertaken to comply with the intent of the Regulations.

The audit was conducted in four stages, between 6th and 11th November 2013 which included an assessment of the Electricity Supplier's assets and vegetation line clearance in the field. SP AusNet was given approximately 2 weeks' notice on the aspects of the audit to be undertaken.

As part of this implementation the following was conducted:

- A desktop assessment of the Company's policies, procedures and work programs in relation to their bushfire mitigation (BFM) and vegetation management plans, including deviations from past practices to determine the effectiveness of the programs over the past 12 months, including a detailed audit of the statistics supplied to ESV and assessment of the Company's ability to meet agreed targets;
- A discussion with the main vegetation field contractor (at their office/depot) to determine their understanding of SP AusNet's bushfire mitigation and works scheduling programs.
- A field audit including a detailed check of selected sites after downloading the pole details and asset notifications (defects) from the Company's database. The sites were visited with a Company representative where the data records were crosschecked against actual assets in the field.
- A visit to 15 sites in the High Bushfire Risk Area (HBRA) and Low Bushfire Risk areas (LBRA) after obtaining vegetation work-scopes from the vegetation subcontractor's database showing both pre-summer inspection and cutting complete. An assessment was made from this sample on the subcontractors quality of work and their ability to achieve code clearance and meet regulatory requirements for the Fire Danger Period;

The field audits were carried out within the Electricity Supplier's licensed boundaries in accordance with the areas specified by ESV Executive Manager Electrical Infrastructure Safety. The level of the Company's compliance was determined from the selections.

## *1.1 Bushfire Mitigation Plan (BMP)*

SP AusNet (D) submitted their revised Bushfire Mitigation Plan 2013-2014 to Energy Safe Victoria on 17th June 2013, and a received a letter of acknowledged receipt of the plan on 24 June 2013.

ESV requested 4 minor amendments / points of clarification to the original Distribution BFM Plan. The Company provided related information and amended Sections 8.2.1 & 13.6.1 of the BFM Plan (v18) as requested:

- *5A(i) Please provide the BMI definition used by SP AusNet;*
- *5A(j) Section 8.2.1 Page 17, 2nd paragraph – reference to exemption till 21 December 2012. As we are now past this date this section needs to be rewritten;*
- *5A(n)(v) 13.6.1 Asset Inspection Training Course – The training courses for SP AusNet's asset inspectors and assessors are approved by Energy Safe Victoria as required by the Electricity Safety (Bushfire Mitigation) Regulations. Refer Appendix 6. Should say Appendix 5, please amend;*
- *10 Prescribed form of notice not included in plan. Please include the prescribed form of notice.*

The BFM Plan was subsequently approved by ESV on 23rd October 2013.

The key objectives of SP AusNet's Bushfire Mitigation Plan are to:

- Describe the strategies and programs implemented to mitigate the risk of fire ignition from supply network assets;
- Describe the processes and procedures for monitoring the implementation and effectiveness of the bushfire mitigation strategies and programs;
- Describe the corrective action processes and procedures for ensuring effectiveness of the bushfire mitigation program;
- Describe the processes and procedures that apply to operation and maintenance of the supply network during the fire season period and total fire ban and code red days;
- Nominate persons responsible for preparation and implementation of the Plan and their contact details;
- Provide contact details in the event of an emergency; and
- Demonstrate compliance with the Electricity Safety (Bushfire Mitigation) Regulations 2013.

SP AusNet's Bushfire Mitigation Plan 2013-2014 is a detailed and well laid out document that is easy to read and understand.

### *1.2 Vegetation Management Plan (VMP)*

SP AusNet (D) submitted their Vegetation Management Plan on 28th March 2013 and was requested to clarify the following points prior to approval:

- *9(3)g(i) the location of areas containing trees which may need to be cut or removed to ensure compliance with the Code What information will be recorded for exemption trees? Does this include ORP trees?*
- *9(3)g(iii) trees of cultural or environmental significance.- Does consultation with Council include trees that are 'amenity' trees i.e. significant to the Council but not listed in planning schemes but improve the 'streetscape' of the area? Are these listed in SP AusNet record systems?*
- *9(3)i(ii) maintaining the clearance space, required by the Code, between electric lines and trees - The plan specifies an annual assessment for trees in the HBRA (p 10 of 39) – is this completed prior to the Declared Fire Season?*
- *9(3)(j) The management plan requires a description of the measures that must be used to assess the performance of the responsible person under the management plan - The plan specifies KPIs that relate to Bushfire Mitigation and do not appear to relate to specific measures related to vegetation clearance. Review of KPI's required.*
- *9(3)(k) The management plan requires details of the audit processes that must be used to determine the responsible person's compliance with the Code - Is there auditor specific training for the auditors e.g. How to carry out an audit? Who provides the audit training?*
- *2(3) A responsible person must, as far as practicable, restrict cutting or removal of native trees or trees of cultural or environmental significance to the minimum extent necessary to ensure compliance - VEM 20-07 specifies restriction of urgent cutting to 1m:*
- *How does SP restrict the cutting or removal of native trees or trees of cultural or environmental significance?*
- *How is cutting restricted of 'amenity' trees to preserve 'streetscapes'?*

SP AusNet (D) received approval of their Vegetation Management Plan from Energy Safe Victoria on 15th October 2013.

The objectives of SP AusNet's Vegetation Management Plan 2013-2014 are to describe:

- To demonstrate SP AusNet's compliance with the Electricity Safety (Electric Line Clearance) Regulations 2010 (the Regulations) and the Schedule - Code of Practice for Electric Line Clearance (the Code) for the preparation of a management plan;
- To provide a framework to ensure the prescribed clearances are maintained between vegetation and electric lines;
- To provide for safe and reliable operation of distribution lines;
- To attain self-managing easements by removing inappropriate species, limiting existing vegetation height to an acceptable level at any position along a span and encouraging low growing appropriate species;
- To develop easements in the long term which are more sustainable, are subject to minimal disturbance to significant vegetation and provide amenity for the community;
- To provide guidance to SP AusNet personnel and contractors for vegetation management practices associated with the Code; and
- Implement the Plan in accordance with exemptions.

SP AusNet's VMP is detailed and well laid out making it easy to read and understand.

### *1.3 DSE/CFA Expectations for 2013/14*

The CFA conducted a briefing on 23th October 2013, which covered the expected risk and severity of fire conditions, weather, and projected anticipated commencement of the Victorian declaration periods. The climate indicators are:

- In the past 12 months there has been average rainfall for the North East and Gippsland, and below average rainfall across the remainder of Victoria;
- Dry conditions have emerged in South and East Gippsland over the past three months; and
- Marginally wetter conditions approaching the Shipwreck Coast and Western Otway's.

Grass fuel conditions

- Grass and crop growth has been prolific across most of the State resulting in high fuel levels;
- Curing has already commenced in the North-West of the State with some areas around 80-100% cured and this is expected to extend south and west over the coming weeks;
- Crop harvesting operations have already begun in the North-West of the State, beginning a period of increased risk of fire ignitions; and
- If forecast warmer conditions are experienced then curing can be expected to advance rapidly particularly if coupled with windy conditions.

Forest Fuel and Fire Activity

- Recent synoptic patterns have caused very warm to near-record temperatures, which may continue to have an adverse effect on fuel condition;
- Winter rain has likely only moistened the top layer of soil profiles, which may evaporate rapidly during spring and early summer;
- There will be abundant of dead elevated and near-surface fuels from last year's extreme heat events enhancing forest flammability;
- Areas expected to see activity first are the Mallee, and East Gippsland in November on current strong drying trends; North East, and South West in late December, depending on October rainfall (healthy, open forest types will respond to drying sooner); and
- Higher flammability is expected around Wombat forest, Goldfields, Grampians, and Eastern Otway's due to the greater abundance of residual dead elevated and near-surface fuels from last summer's severe heat episodes.

The implementation of the fire declaration dates is to be progressive across the State. These dates shall come into effect as the fire risk increases with the exception of the Colac Otway and Corangamite Shires, which is to commence on the 1st December 2013. No indication was given when the remaining Shires are likely to declare but it is expected that the North West and East Gippsland will go first and then it will progress through the State. This will result in the 2013-2014 fire season likely to be average, to above average risk in much of Victoria.

# 2 General Matters

## *2.1 Bushfire Mitigation Plan – Monitoring and Auditing*

The bushfire mitigation program is monitored in accordance with the requirements of the Bushfire Mitigation Manual and reported via the Network Safety Report (NSR) with the following sections providing the monitoring reports:

- Network Performance KPI's which include the Bushfire Mitigation Index and F-factor performance.
- A summary of progress against the Enhanced Network Safety programs.
- A summary of progress against operational programs that includes vegetation management.

Auditing of works is monitored and reported through section 8 of the NSR. Audits include a broad range of auditing performed under the quality management system.

- Asset Inspector Work Quality;
- Metering Quality of Work;
- Quality of Work;
- EWP Audit;
- Maintenance; and
- Servicing and Metering Worksite.

The Technical Compliance Audit Strategy covers each of the major asset class and three major phases of the asset life cycle have been considered. The phases and assets are tabulated into life cycle phases of:

- Design Components;
- Construction Components; and
- Maintenance Components.

The works practice, overhead works, underground and civil works outlines what is to be looked for during a technical compliance audit. The observations are categorised into:

- Observation;
- A minor nonconformance; and
- A major nonconformance.

In addition, a specific procedure has been developed to prescribe the process for conducting an audit of an Asset Inspector's inspection quality and process compliance, i.e. that the Asset Inspector is not only following the procedure but that the inspector is identifying all the required maintenance for a particular asset. The procedure is used to assess performance as well as the reporting and follow-up action. It applies to audits, both internal and external, of all asset inspectors who carry out work on assets belonging to SP AusNet.

The Indicative Work Package indicates the schedule of audits to be undertaken and the various categories.

Identify Deficiencies in the BMP Implementation

Deficiencies of the Plan are identified and reported through the NSR reports to the Networks Safety Management Committee (NSMC). These deviations are noted in the NSMC minutes and assigned appropriate persons to implement remedial actions to bring the plan on target. The NSMC monitors progress of the remedial actions.

Improving the Plan's implementation is derived through the iterative process of monitoring network performance KPI's, program implementation KPI's, and auditing provided through the NSR, and managed through the NSMC, and Network Safety Group.

- Distribution BFM Index;
- Fire Risk Incidents;
- Fire Ignition Risk Indicator; and
- F-Factor (calendar year).

The Network Safety Management Committee has 2 agenda items that directly relate to the identification of improvements / initiatives and emerging risks. Examples in the September minutes are:

- Linkage between fire events & AMI data (under development); and
- Non Standard Bird / Animal Covers (replace with standard covers).

Monitor and Audit the Effectiveness of Inspections Carried Out Under the Plan

The effectiveness of inspections carried out under the plan is via:

- Monitoring of the inspection program is achieved by reporting provided in the NSR by measuring delivery against seasonalised targets, and Network performance KPI's; and
- Audit of the effectiveness is monitored directly through the NSR. Audit of asset inspector's work is undertaken in accordance with SP AusNet procedure. The audit results are represented via the scorecard.

### *2.2 Management Operational Organisation Structure*

SP AusNet (D) BMP discusses management of the bushfire mitigation obligations through the Networks Safety Management Committee (NSMC).

The principle objective and role of the NSMC is to understand and manage the safety and bushfire risks in planning, designing, constructing, operating, maintaining and decommissioning its supply networks to minimise in so far as is practicable:

- the hazards and risks to the safety of any person arising from the supply network;
- the hazards and risks of damage to the property of any person arising from the supply network; and
- if that network is an at-risk supply network, the bushfire danger arising from that network.

The Charter for the NSMC is to guide development, implementation and monitoring of network asset management strategies and programs with the objective of minimising risks and hazards to persons and property as low as reasonably practicable (ALARP). The committee, whose membership consists of senior personnel from various business streams, provides the operational leadership and coordination of resources engaged in the development and implementation of bushfire mitigation, vegetation management and asset safety programs designed to achieve this objective.

The NSMC utilise a range of performance indicators to monitor implementation of the Plan which are provided in a monthly Network Safety Report. Among key indicators are;

- *Bushfire Mitigation Index* – monitors implementation of inspection, maintenance, and replacement activities contained within the General Maintenance program. Maintaining a 'zero index' is a key performance objective during the declared fire season; and

- *Enhanced Safety Program reports* – monitors implementation of individual Enhanced Network Safety programs.

The NSMC Charter includes member titles, roles, and responsibilities.

- General Manager, Asset Management - Chairman and Sponsor of the committee responsible to ensure the committee executes its role and responsibilities effectively while ensuring behaviours by committee member's accord with the policy on committee operations. The position is to provide guidance to committee relating to Network Safety and BFM to meet all governance, legislative & regulatory obligations and has overall accountability to ELT for the decisions of the Committee;
- General Manager, Service Delivery – leads and directs the Service Delivery team to safely deliver the approved programs to work within time and cost budgets, while managing risks to ensure total asset service performance and HSE targets are met;
- General Manager Select Solutions - Responsible for Management of Asset Inspection & Vegetation Management responsibilities relative to network safety (electricity) & bushfire mitigation activities. The position is to provide executive support to committee relating to Network Safety and BFM to meet all governance, legislative & regulatory obligations and to be decision maker for the committee;
- Manager Asset Engineering - Responsible for Management of Network Engineering strategies, policies, standards & portfolio of works relating to network safety and bushfire mitigation, and to be a decision maker for the committee;
- Manager Regulation & Network Strategy – is responsible for optimising regulatory outcomes and revenue and aligning Regulatory and Network Strategies to maximise performance;
- Manager Network Programs – responsible for the delivery of the Asset Management Plan for Asset Management through transforming Asset Management Strategies into short and long term plans to maximise network performance in order to generate value from networks and assets for the benefit of the community, customer and security holders;
- Network Safety Manager – is responsible for the implementation of the policies and strategies for ensuring that SP AusNet manages the Network Safety risks associated with, designing, operating, maintaining and constructing a safe, high performing and sustainable electricity transmission and distribution assets to fulfil regulatory obligations, business drivers and risk exposure for SP AusNet, its customers and the general public.
- Regional Business Manager, North, Central & East - Responsible for Field work procedures, policies, practices, resource planning, field leadership and reporting related to preparedness and progress of electricity transmission and distribution network safety and bushfire mitigation works.
- Manager Customer & Energy Operations Team – Responsible to provide network operation input to the Committee;
- Group Manager Utility Solutions Select Solutions – Responsible for Development of vegetation management plans and procedures and reporting of progress and preparedness. The role is to include asset ground & aerial inspection program progress reporting and quality assurance.;
- Asset Portfolio Manager - Responsible for management of maintenance and inspection plans, ensure compliance with maintenance planning & business rules and reporting on progress reports associated with network safety & bushfire mitigation for the electricity transmission and distribution networks;
- Network Strategy & Planning Manager - Responsible for developing of Asset Management Strategy, 5 year Asset Management Plans;
- Network Risk & Safety Manager - Responsible for managing the development and compliance with ESM's for the electricity transmission and distribution networks, including electrical incidents reporting & compliance. The role is to manage risk compliance and reporting relating to network electricity safety and bushfire and report any overdue tasks and changes in the risk to the Committee;

- Bushfire Mitigation Manager - Responsible for managing development and implementation of the Bushfire Mitigation Plan compliance & reporting. The role is to prepare Committee Agendas & Minutes and circulate additional papers as required; and
- Lead Engineer Lines – Responsible for monitoring line assets safety performance. The development of asset management strategies for individual asset classes to maintain or enhance electricity networks safety.

A detailed organisational hierarchy is available on InSite, which illustrates the respective reporting hierarchy of NSMC members.

### *2.3 Major Step Changes*

SP AusNet has implemented the following step changes in the last 12 months:

1. LBRA – Vegetation Clearance Exemption

Energy Safe Victoria has granted SP AusNet an exemption from the requirement to maintain the regulated clearance spaces around insulated services and cables in low bushfire risk areas (urban areas). This exemption allows light vegetation matter to enter the clearance space on the condition that SP AusNet's cyclic vegetation inspection program ensures insulation is not being damaged. This provides considerable aesthetic value and cost benefits to customers and SP AusNet.

2. Modelling F-Factor Data

Geospatial modelling of historical F-Factor data is in development and is due to go into production on the 9th of December. Using the geospatial software, users will be able to display F-factor fire data for any particular occurrence,

3. F-Factor Audit for 2012 Calendar Year

In accordance with a Regulatory Information Notice (RIN) issued by the Australian Energy Regulator, Parsons Brinckerhoff audited the information prepared by SP AusNet in respect to the Victorian *F-Factor Scheme Order 2011* for the period 1 January 2012 to 31 December 2012.

For the 2012 audit period, SP AusNet's reported F-Factor Scheme information has been found to comply with the F-Factor Scheme Order and reporting requirement of the F-Factor RIN.

4. Powerline Replacement Fund

SP AusNet prepared 16 high level design & cost estimates that were presented to the Government's Assessment Advisory Panel (AAP) in early July. From this, the Government has requested the detailed design & firm costs for 6 proposals, with construction anticipated to begin in March. The government have allocated funds in their budget over the next 3 financial years (2013-2014 - $10m; 2014-2015 - $16.5m; & 2015-2016 - $32m), with a plan to commence the initial tranche of construction works in the SP AusNet network at the north west feet of Mount Dandenong in January 2014.

Progress on Any Previous Commenced Initiatives / Step Changes

The progress on previous commenced initiatives / step changes from the 2012 /13 seasons are as follows:

- A trial rapid earth fault current limiter Rapid Earth Fault Current Limiter (REFCL) / (GFN) at Woori Yallock zone substation is ongoing and is currently at the design / construction stage.

  As a consequence of the 2009 Victorian Bushfires Royal Commission, the Powerlines Bushfire Safety Taskforce (PBST) was established to undertake investigation into more complex technical solutions that may be applied within Victoria's electrical distribution networks to mitigate the risk of fire ignition from network faults. The PBST identified an opportunity, through the application of REFCL's, to reduce the risk of fire ignition by 70% for network related faults.

  Accordingly, a key driver for establishing a trial REFCL within SP AusNet's network is to determine the suitability and effectiveness of this technology as a means of mitigating the risk of fire ignition associated with faults on complex rural distribution networks.

  Details of this trial are discussed in the Enhanced Network Safety Strategy accepted by ESV.

- A trial of approximately 1km of the Spacer Cable System was conducted at Coldstream to determine its effectiveness as an alternative to bare conductors in the highest bushfire risk areas. The trial was completed successfully in November 2012.

  The Spacer Cable System is now beginning to be used more widely in the business, with a vast amount of work being designed presently under the Powerline Replacement Fund.

- Following the successful pass through application the following programs are being implemented across the business:
  - Additional EDO's being replaced with Boric Acid fuses – 9,514;
  - Revised scope to 3ph ACR controller program;
  - Zone substation protection relay replacements – 114 replacements & 107 upgrades;
  - Trial rapid earth fault current limiter (REFCL) at Woori Yallock zone substation;
  - Aerial spacers – 10,242 spans to be surveyed and rectified; and
  - Vibration dampers & armour rods – approx. 59,600 poles by 2016

### 2.4 *Risk Analysis of Potential Causes of Fires*

The Network Safety Report illustrates the number of asset related fires for 2012 and 2013 YTD against the five year benchmark (2006-2010) established by the AER for reporting against the F-factor incentive mechanism. This mechanism is designed to reduce the number of fires incidents associated with network assets.

SP AusNet is currently tracking below the F-Factor 5 year benchmark (257 per annum) with an estimated forecast of 212 fire starts for the calendar year.

Ground & Asset fire information is detailed below:

| FIRE YTD SEP'13 | | | |
|---|---|---|---|
| Cause | Ground | Asset | Total |
| Animal/Bird | 14 | 6 | 20 |
| Conductor | 11 | 1 | 12 |
| Crossarm | 2 | 7 | 9 |
| FOLCB/isolators | 2 | 3 | 5 |
| HV Fuses | 3 | 36 | 39 |
| LV cable | 8 | 2 | 10 |
| Other | 1 | | 1 |
| Pole fire | 2 | 5 | 7 |
| Street light | | 17 | 17 |
| Surge Diverter | 1 | 1 | 2 |
| Transformer | 2 | 3 | 5 |
| Tree | 13 | 1 | 14 |
| Vehicles | 3 | | 3 |
| Total | 62 | 82 | 144 |

*Above: Ground & Asset Fires Jan 13-Sep 13*

| Cause | Ground | Asset | Grand Total |
|---|---|---|---|
| Animal/Bird | 6 | 4 | 10 |
| Conductor | 11 | 2 | 13 |
| Crossarm | | 1 | 1 |
| FOLCB/isolators | 3 | 2 | 5 |
| HV Fuses | 3 | 75 | 78 |
| LV cable | 2 | | 2 |
| Other | 4 | | 4 |
| Pole fire | 1 | 6 | 7 |
| Street light | | 25 | 25 |
| Surge Diverter | 3 | | 3 |
| Transformer | 2 | 1 | 3 |
| Tree | 17 | 5 | 22 |
| Vehicles | 4 | 1 | 5 |
| Grand Total | 56 | 122 | 178 |

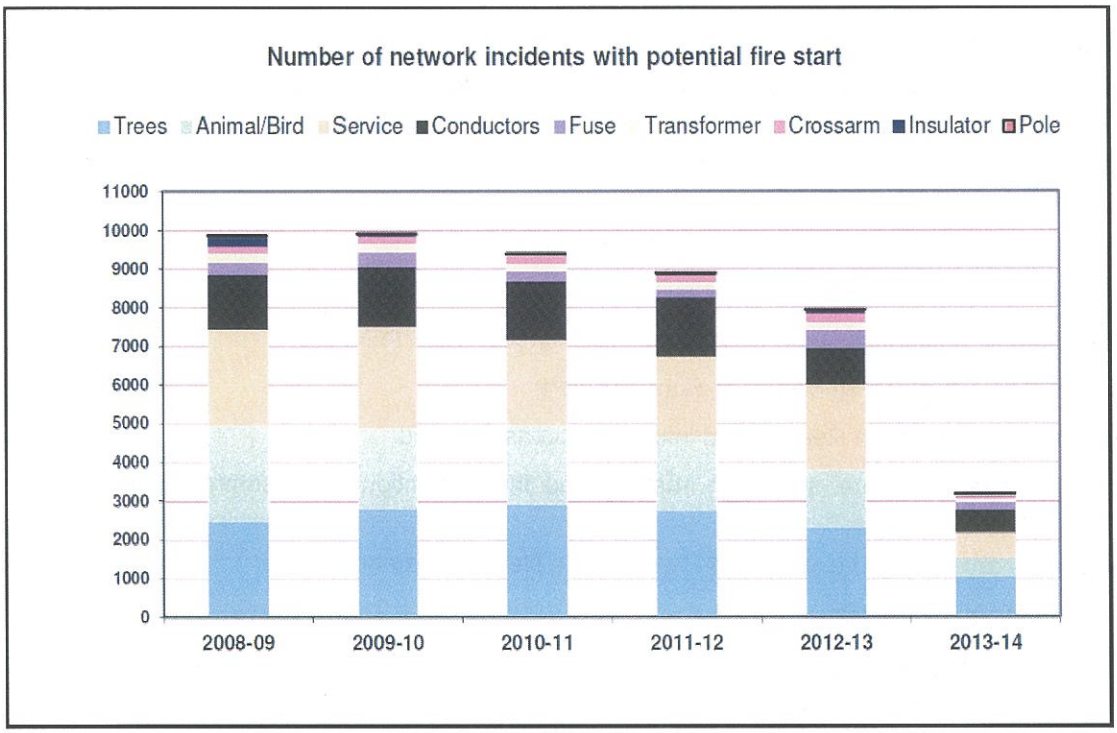
*Above: Ground & Asset Fires Jan 12- Dec 12*

EDO fuse hang-ups are the predominant cause of asset fires on the network. SP AusNet (D) has prepared a plan to increase the volume of EDO replacement with Boric Acid through to the end of 2015. The replacement program is prioritised in accordance with the Fire Loss Consequence Model.

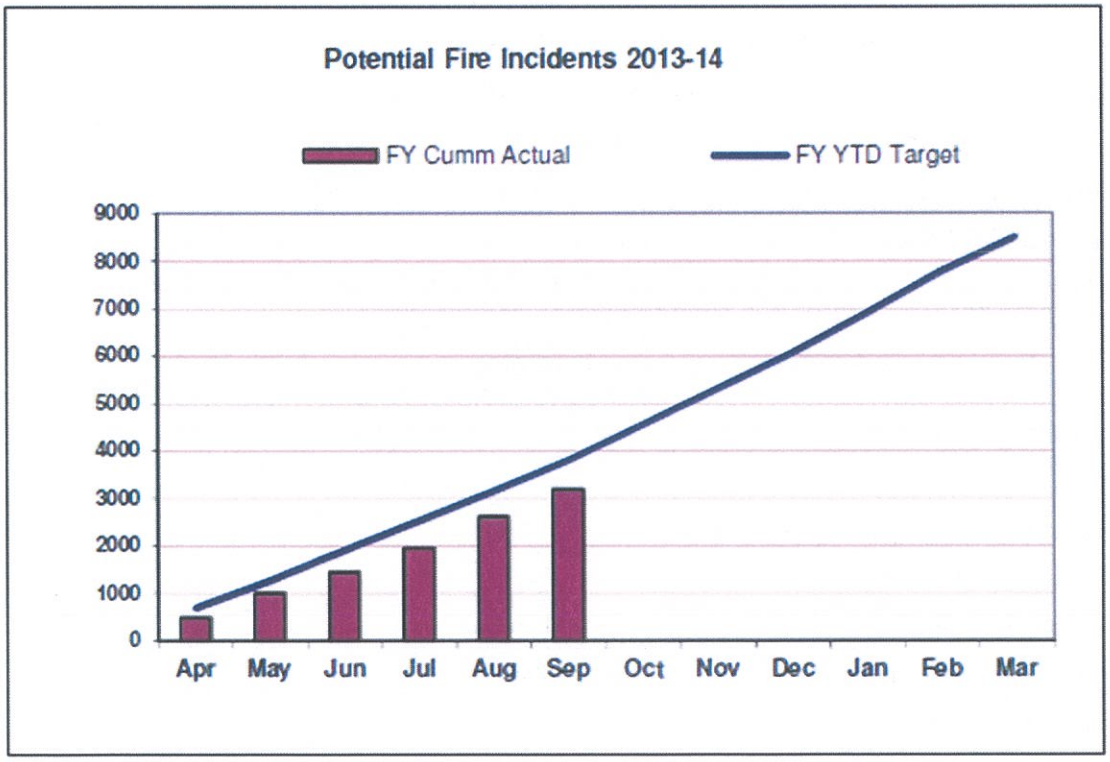
The Enhanced Network Safety strategy provides detail of the program that has been accepted by ESV. Other programs included within the enhanced network safety program include conductor, crossarm and insulator and service cable programs together with a hazard tree removal program. Progress of these programs is provided monthly in the Network Safety Report to the Network Safety Management Committee and quarterly reporting to ESV.

Analysis of Faults for Potential Causes of Fire

Potential fire starts are tracked and recorded monthly as part of Section 3.1.3 of the Network Safety Report. The key causes of potential fire starts are targeted as part of the overall Enhanced Safety Program. The Company's enhanced network safety program aligns with the key causes identified as potential fire starts.




Network Safety Report – September 2013 Figure 3.1.8 Potential HBRA Incidents Financial Years




Network Safety Report – September 2013 Figure 3.1.9 Potential HBRA Incidents 2013 YTD

## 2.5 *Preparation of the Fire Danger Period*

SP AusNet (D) has updated their Calendar of Events and modified 2 items:

- Reflected changes to Bushfire Mitigation Manual review; and
- Updated responsible persons reflecting business re-structure.

Outstanding Works from the Program of Activities

The status of the Calendar of Important Events that is yet to be undertaken in readiness for the next fire season is as follows:

- Monthly monitoring through the Network Safety Management Committee and reported via the Network Safety Report – *ongoing;*
- Prepare list of outstanding critical maintenance items;
- Prepare summary of Fire Reports and issue to NSMC;
- Prepare Bushfire Mitigation Report and issue summarised report to NSMC ;
- Provide NSMC with Bushfire Mitigation Status Report;
- Review Bushfire Mitigation Reports and initiate action as required
- Resolve queries & initiate action on matters requiring attention from summarised Bushfire Mitigation Report;
- Include summary of Bushfire Mitigation Report in the Network Safety Report;
- Arrange meetings of NSMC;
- Commence monthly BFM reporting to ESV upon declaration until end of the fire danger period (BFM Index) – *Pending Declaration;*
- Issue letter and information brochures to Overhead Private Electric Line customers - *In progress;*
- Post on the Intranet copies of permits to work on Days of Total Fire Ban – *In Progress;*
- Perform Senior Management Reviews – *November & December;*
- Target date for submission of Operational Contingency Plan (if required) - *Pending Declaration;*
- Complete all BFM works - *Pending Declaration;*
- Complete all vegetation works in HBRA areas - *Pending Declaration; and*
- Complete all BFM obligations - *Pending Declaration.*

SP AusNet Distribution uses the Bushfire Mitigation Index to monitor all outstanding Bushfire Mitigation works. The following items were outstanding in the HBRA:

| Maintenance Activity | Current @ 5th November 2013 | Look Ahead @ 31st December 2013 |
|---|---|---|
| Cyclic Pole Inspections | 32 | 1926 |
| POEL Inspections (# poles) | 7 | 94 |
| Pre-summer vegetation Inspections | 9 | 9 |
| US & Limited Life poles | 211 | 529 |
| Spans not cleared of vegetation | 118 | 118 |
| Attachments outstanding | 393 | 1906 |
| Conductor outstanding | 11 | 35 |
| Unacceptable surge diverters | 1 | 4 |
| Bird covers outstanding | 91 | 378 |

The Bushfire Mitigation Index is significantly reduced compared to an equivalent time last year. At the date of the audit SP AusNet is currently tracking with a Bushfire Mitigation index of 4.46 comparable to end of October 2012 of approximately 23.

Resources to Complete any Outstanding Works

The Company is confident they have the resources in place to complete outstanding works in relation to the Bushfire Mitigation program.

The September Network Safety Report provides forward resource planning for bushfire mitigation (maintenance) works for the North, East & Central Regions that balance resources between other network activities to ensure the bushfire mitigation works are completed within the required timeframes.

Where deadlines are not achieved prior to the Fire Danger Period

The Bushfire Mitigation Manual contains the process for establishing contingency planning in the event bushfire mitigation works are not complete. The Network Safety Management Committee is responsible for initiating the establishment and meeting frequency of sub-working group/s, if required, to develop and implement network contingency plans to ensure the management of outstanding bushfire mitigation risks or hazards that have not been addressed through normal business processes.

If required, an Operational Contingency Plan is prepared to identify transmission and distribution lines on which fire prevention work is incomplete and for which disconnection may be appropriate on Total Fire Ban and Code Red days.

Disconnection of the electricity supply to an area on Total Fire Ban or Code Red days has serious implications for the community in terms of disruption to communications, water supply pumps and general fire-fighting services, and must only be considered as a last resort action when the local weather conditions become extreme.

Fire Danger Period / Days of Total Fire Ban

During the declared fire season, the business must ensure compliance with;

- CFA Restrictions for the Declared Fire Danger Period procedure requires personnel engaged in network activities within the open air to have the necessary fire fighting equipment aboard their vehicles. Vehicle exhaust checks are performed prior to the fire season and for compliance with fire authority requirements for naked flames and grinding equipment: and
- The Bushfire Mitigation Plan addresses the treatment of private overhead electric lines with urgent defects and network protection and control management.

The Customer Energy and Operations Team (CEOT) is to arrange the disconnection of any outstanding urgent defective Private Overhead Electric Lines (POEL's). This includes:

- Arranging field crews to disconnect any urgent defective POEL's;
- Contacting owners of urgent defective POEL's to advise them of the disconnection; and
- Arranging field crews to reconnect any disconnected POEL's when Total Fire Ban has ended.

### *2.6 Fire Season Operational Plans Following a Fire*

The BFM Manual refers to procedures that set out the process to be followed when SP AusNet Distribution personnel or their contractors attend a fire. The fault crew is to immediately call the CEOT and inform them of:

- any isolation required;
- the size of the fire;
- the requirement for the CFA/MFB to attend; and
- another crew is required to assist.

The fault crew assesses the immediate public risk and isolates the fault if appropriate. The fault crew is to remain on site until the fire is out or SP AusNet Networks or contractor personnel have relieved them.

The site is not to be left until a thorough inspection of the affected assets has been performed and the assets confirmed as serviceable. That is, leaving the assets permanently or temporarily repaired so that the appropriate standards are maintained. This is to be carried out in conjunction with the CFA (or MFB if appropriate) to ensure no poles/cross arms continue to burn.

SP AusNet had several minor fires (grass and pole top) during the Fire Danger Period 2011/12 of which the process above was put in place and this proved to be effective. The Operations Procedures When a Fire Occurs procedure allows for escalation if required associated with the size of the fire.

Access under the Municipal Emergency Co-ordination Centre (MECC)

When a fire or disaster occurs and is established by a MECC Coordinator, the authorised Electrical Operator is not to proceed into the defined Fire Disaster Zone either through road blocks or other access routes.

Operational Plans Adopted in the Past 12 Months

Fire incidents are reported through IMS and demonstrate a structured approach toward the investigation, cause assessment, and corrective measures taken to restore supply or asset security. Information includes fire size, damage and whether emergency services attended.

An example of the operation contingency plan being implemented is where SP AusNet (D) suppressed the auto reclose feature on the automatic circuit reclosers on days of TFB.

# 3 Asset Inspection and Maintenance Programs

## *3.1 General*

SP AusNet's service level agreement between SP AusNet (D) and Select Solutions identifies the length of time from inspection to the completion of assessment/issuing of work orders as:

- PT30 < 7 days;
- PT90 < 28 days; and
- PT180 < 42 days.

SP AusNet Network Strategy and Development Division (NSD) have a Service Level Agreement with Select Solutions Division that state the periods from inspection to work order completion. A priority target is a measure of calendar days. They are:

| | |
|---|---|
| PT1 | 1 Calendar Day |
| PT7 | 7 Calendar Days |
| PT14 | 14 Calendar Days |
| PT30 | 30 Calendar Days (1 month) |
| PT90 | 90 Calendar Days (3 months) |
| PT180 | 180 Calendar Days (6 months) |
| PT365 | 365 Calendar Days (1 year) |
| PT912 | 912 Calendar Days (2.5 years) |

Meeting Policy Timeframes

SP AusNet maintains compliance with the priority codes during the declared fire danger period in the HBRA only. This is monitored through the BMI.

| HBRA & LBRA |
|---|
| Pole Inspection Outstanding |
| Cyclic PEL Inspections Outstanding |
| Pre-summer vegetation Inspections |
| US & Limited Life poles |
| Spans not cleared of vegetation |
| Attachments outstanding |
| Conductor outstanding |
| Unacceptable surge diverters |
| Bird covers |

The Network Safety committee monitors the LBRA outstanding work orders to ensure work is addressed in a prioritised manner.

### *3.2 Asset Inspection*

The Bushfire Mitigation Plan confirms SP AusNet's inspection standard is to ensure compliance with the prescribed inspection interval of <37 months in the HBRA. SP AusNet achieves compliance through a combination of two inspection cycles:

- one ground based test and inspect; and
- aerial / ground inspection of above ground assets.

These two inspection programs are set to a five year interval but are offset by 2.5 years to one another to achieve an effective inspection interval of 30 months.

*ESV Granted Exemption - Asset Inspection Program* - SP AusNet was granted an exemption from ESV in relation to its asset inspection program. The exemption covered the period through to December 2012 for their asset inspection transition program to align with the 37 months. This target was achieved.

At the date of the ESV Audit SP AusNet is ahead of programmed targets for Asset Inspection and is forecasting full achievement of the 2013/14 Inspection Program. There are presently 32 poles outside the 37 month inspection cycle due to site access, water and vegetation issues. These sites have all been visited prior to reaching the inspection due date and are to be revisited to complete the inspection as soon as access is available.

### *3.3 Armour Rods & Vibration Dampers*

SP AusNet's standard on installation of armour rods & vibration dampers has not changed from what was the SECV standard as specified in EVX9/7037 & EVX9/7037/1. The application is based on tensions and type of conductor independent of HBRA or LBRA.

In June 2012 SP AusNet issued further instructions to the field by way of a Bulletin to install Protective Rods (Armour Rods) on all High Voltage AAC, ACSR, SG/GZ and SC/AC conductor types at the insulator position for all conductors regardless of tension or insulator type except on slack spans.

- Install Vibration Dampers on all High Voltage conductors regardless of tension;
- The number of dampers required per span;
- Slack spans of any type of conductor are exempt and do not require dampers to be installed; and

- Slack Spans – A Span length ≤ 30m that has conductor sag ≥ 2% of the span length at ambient temperature.

*Note: Armour tape is to be installed on 19/4.75 AAC and 37/3.75 AAC*

For maintenance work, install on either side of the pole being worked on if no other damper is in the span. The number of dampers to be installed is determined with design standards.

*Number of Annual Installation Targets* - SP AusNet's plan for fitting armour rods and vibration dampers was approved by ESV on 28 March 2012. The plan is summarised in the SP AusNet's AMS - Enhanced Network Safety approved by ESV. Program performance is reported to the NSMC under the Network Safety Management Report.

2013 Cumulative ESV Armour Rods & Vibration Dampers Replacement Target = 15,009 – 11,050 completed LTD – *ahead of target*

*Meeting Agreed Installation Targets* - The Company is confident they can meet the agreed program timeframe as they have contracted external resources to complete the program within the timeframe.

### *3.4 Conductor*

SP AusNet's Conductor Replacement Strategy details a high level conductor replacement plan and the Enhanced Network Safety document nominates conductor replacement quantities for the period 2011-2015.

*Number of Annual Installation Targets* - SP AusNet has an agreed program with ESV for the replacement of steel (1771km) and copper conductor (284km) by end of December 2015.

- 2013 Cumulative ESV Steel Conductor Replacement Target = 793 – LTD (September) = 542 – *behind schedule presently, expected to recover prior to end of the year; and*
- 2013 Cumulative ESV Copper Conductor Replacement Target = 112 – LTD (September) = 117 – *program remains ahead of schedule.*

There has been no additional span/km added since the program was established.

*Meeting Agreed Installation Targets* - The Company is confident they can meet the agreed program timeframe as they have contracted external resources to complete the program within the timeframe.

### *3.5 Crossarms*

SP AusNet replaces crossarms in accordance with the Crossarm Replacement Strategy which is summarised in the Enhanced Network Safety Strategy. LV crossarms are replaced like for like whereas HV crossarms are replaced with steel.

*Number of Annual Installation Targets* -As part of the Enhanced Safety program SP AusNet is replacing 46,785 crossarms by end of December 2015. 2013 Cumulative ESV Crossarm Replacement Target = 29,659 – LTD (September) = 32,535 – *program well ahead of target.*

There have been no additional items added since the program was established.

*Meeting Agreed Installation Targets* - The Company is confident they can meet the agreed program timeframe as they have contracted external resources to complete the program within the timeframe.

### *3.6 SWER Conversion*

SP AusNet augments its network in accordance with the Distribution Network Planning Guideline. This requires an engineering approach to provide cost effective design of augmentation of the network. Accordingly, there is no specific policy to replace SWER with 22kV.

There is no agreed program in place with ESV to replace or convert SWER to 22kV.

### 3.7 SWER OCR Replacement

SP AusNet's Enhanced Network Safety procedure outlines the OCR/ACR replacement policy on their SWER network. The driver for the replacement of the existing SWER protection scheme with digital protection and SCADA control and targeted 3 phase ACR's is the community benefit offered through reducing the risk of fire starts on high bushfire risk days by altering the reclose function or settings on reclosers in HBRA's during the fire season either at the start of each fire season or by changing it on high fire risk days.

*Annual Installation Targets Align with ESV Targets* - SP AusNet has an agreed program with ESV for the replacement of 525 existing SWER OCR's with ACR's by end of December 2015.

The number of annual installation targets of SWER OCR's is 2013 Cumulative ESV SWER OCR Replacement Target = 250 – LTD (September) = 248 – *program ahead of LTD target.*

There have been no additional items added in the last 12 months.

*Meeting Agreed Installation Targets* - It is anticipated that the Enhanced Network Safety OCR replacement program shall exceed the ESV end of year target.

### 3.8 HV Fuses

SP AusNet HV Fuse replacement policy is detailed in their Enhance Network safety document approved by ESV. The key focus of the EDO strategy is to:

- Replace 20,339 EDO units with Boric Acid, or equivalent, in areas of high fire loss consequence identified through the PBST fire loss consequence model by 2016;
- Replace 11,246 EDO tubes in areas of high fire loss consequence identified through the PBST fire loss consequence model by 2016;
- Replace double vented EDOs;
- Replace brown and black fuse carriers;
- Maintain condition based replacements (ie. Corrosion, cracked insulators);
- Replace EDO's with BA or equivalent where fault current exceed 1,800 amps; and
- Fault crews replace all EDO fuse carriers when attending EDO fuse hang-up.

*Alignment with Agreed ESV Annual Targets* – As part of the Enhanced Safety program SP AusNet is replacing 20,339 EDO's & 11,246 EDO Fuse Units by the end of December 2015.

- 2013 Cumulative ESV EDO Units Replacement Target = 10,820 – LTD (September) = 10,620 – *program ahead of target*
- 2013 Cumulative ESV EDO Fuse Tube Replacement Target = 3380 – LTD (September) = 507 – *program behind target presently.*

There have been no additional items added in the last 12 months.

*Ability to Achieve the Completion of the Program within the Agreed Timeframe* – The Enhanced Network Safety EDO Unit replacement program is well advanced on the ESV end of year target. As of the 30th September 2013 the EDO Fuse Tube replacement program is at risk of meeting the annual target however it is forecast to meet the December 2015 target.

### 3.9 3 Phase ACR Controllers

SP AusNet's Enhanced Network Safety procedure outlines the 3 phase ACR replacement policy in their 22kV network.

*Alignment with Agreed ESV Annual Targets* – SP AusNet has an agreed program with ESV for the replacement of 234 existing 3-Phase ACR's by end of December 2015.

The number of annual installation targets of 3-Phase ACR's are:

- 2013 Cumulative ESV 3-Phase ACR's Replacement Target = 118 – LTD (September) = 234 – *program completed*

There have been no additional items added in the last 12 months.

*Ability to Achieve the Completion of the Program within the Agreed Timeframe* – Program completed.

# 4 Vegetation Management

## *4.1 SP AusNet Vegetation Management Organisation Structure*

The following management structure outlines SP AusNet's positions responsible for the preparation, approval, resourcing, submission and deployment of the SP AusNet (D) VMP and positions responsible for carrying out the Plan:

- Group Manager Utility Solutions - is responsible for leading and managing the field and office based vegetation, easement, & asset inspection management teams in developing and delivering the distribution and transmission vegetation easement and asset inspection programs;
- Vegetation & Easement Manager - is responsible for managing the field and office based vegetation & easement management teams in developing and delivering the distribution and transmission vegetation easement programs;
- Vegetation & Easements Area Manager – Rural (Select Solutions) is responsible for leading and managing the field and office based central vegetation and easement management team in developing the distribution vegetation management easement programs;
- Vegetation & Easements Area Manager – Urban (Select Solutions) is responsible for leading and managing the field and office based central vegetation and easement management team in developing the distribution vegetation management easement programs;
- Vegetation & Easements Field Officer – ORP negotiator is responsible for providing efficient and effective field and office based support to the Vegetation & easement Management group in achieving its business objectives;
- Vegetation & Easements Assessor - is responsible for providing efficient and effective field and support to the Vegetation & easement Management group in achieving its business objectives; and
- Vegetation & Easements Program Leader - is responsible for leading a team in providing efficient and effective support to the Vegetation & Easement Management group in achieving its business objectives concerning delivering the "In Windows" work program. In particular, in the areas of contractor management & audits, customer negotiations, assessment patrols and in gathering data, monitoring and reporting the financial performance of the project.

## *4.2 Assess the Performance of the VMP*

As part of its Environmental Management System, SP AusNet has developed a set of Key Performance Indicators (KPI's), to monitor its overall environmental performances. KPI targets are set each year and monitored and reported to Senior Management and the Board on a quarterly basis. The Bushfire Mitigation Index is reported to and monitored by Senior Management and the Network Safety Committee monthly. The KPI's related to bushfire mitigation aspects together with the 2013/2014 measures and targets are detailed below:

- Bushfire Mitigation Index - *Declaration Period - 0%*
- F-factor regulatory performance incentive scheme (fire incidents) < 258
- Hazard tree removal program (Per annum removals) - 5,000

### 4.3 *Safety Audit Processes Used to Determine Compliance with the ELC Regulation Code*

The accountability for auditing of the Vegetation Management Group rests primarily with the Network Safety Manager, Network Strategy and Development who is responsible for the regular auditing of the Vegetation Management Group to ensure that it complies with the requirements of this plan. This includes:

- Internal audits prior to the commencement of the fire season to validate the completion of all bushfire mitigation obligations prior to the commencement of the fire season;
- As part of the Senior Management Bushfire Mitigation Review Program, reviews of all facets of the Bushfire Mitigation Program are undertaken by managers at General Management level to validate the efficacy of SP AusNet's management process, program compliance, and program relevance. These audits are undertaken during December of each year;
- Audits are undertaken during the fire season to check that vegetation clearances are being maintained; and
- The SP AusNet Internal Auditor undertakes audits of the Bushfire Mitigation Management system.
- Annual audits conducted by Energy Safe Victoria.

SP AusNet or its nominated representative conducts a sample audit of the contractor's work (without any limitation), procedures, and practices, in order to determine their compliance with the relevant Standards and Codes of Practice.

The V&E group field officer/representative then undertakes a compliance audit based on but not limited to the following criteria;

Assessment

- Correct priority coding of all spans;
- Identification of all assets;
- Correct property owner identification;
- Correct identification of voltages; and
- Correct identification of fire zones.

Cutting

- Clearance achieved;
- Appropriate cutting techniques used;
- Site tidiness;
- Correct herbicide application; and
- Slashing requirements met.

### 4.4 *Major Step Changes to Vegetation Practises*

The following operational changes have been implemented over the past 12 months;

- Select Solutions (SS) have employed in-house assessors for the SMR, BEN, WOD and BFD area giving SS greater control over workloads, improved quality and reducing the requirement for carrying out compliance audits on assessing.
- Select Solutions service providers have introduced a number of new pieces of specialist plant such as; Track Mounted Jarraff, Track Mounted EWP, Hedger mounted on an Articulated Loader, The Batt (Remote Controlled Moveable Cutting Head on a telescopic boom). This equipment is more efficient than traditional methods and reduces the amount of climbing hours required annually therefore improving safety whilst adhering to Falls Prevention legislation.

- The previous Hazard tree removal program commenced in the 2012 /13 season – *Program is ahead of schedule and is reported quarterly to ESV*

### *4.5 Vegetation Management Programs & Cycles*

The Vegetation Management Company, Select Solutions (a division of SP AusNet) inspects the clearance space in accordance with the following cycles:

- all spans are assessed at least annually in the hazardous bushfire risk area to allow for any clearing to be undertaken to maintain compliance to the regulations; and
- all spans are assessed at least biennially in the low bushfire risk area, however during the transition period the cycle is progressively reducing to achieve a 1 year cycle.

In determining the location where work is required to maintain the clearance space one or more of the following inspection programs are undertaken:

- cyclic work programs;
- pre-summer inspection in hazardous bushfire risk areas; and
- reports from asset inspections.

The above are supplemented by reports from the public on areas of concern.

If cutting and/or removal is deemed the most appropriate method then the cutting/removal cycle shall be determined at each locality. In specific locations and from time to time the maintenance cycle may be varied as per the following:

- Rural Areas – 6 months to 3 years as appropriate; and
- Urban Areas – 6 months to 2 years as appropriate

The process used to determine the Maintenance Cycle at specific locations takes into consideration the following factors:

- Compliance with statutory clearance spaces;
- Climatic conditions;
- Soil types;
- Topography; and
- Competition of other vegetation and animals.

Maintenance cycles may be varied by:

- Accepted use of herbicide;
- Slashing / rolling;
- Powerline augmentation;
- Tree relocation/replanting; and
- Increased frequency for significant vegetation as determined by the responsible person.

<u>Operational Network Cyclic Cut in 2013</u>

SP AusNet uses a Vegetation Management Program to detail the priority of the feeders to be inspected and actioned in accordance with their procedure.

- At the start of the year the LBRA program was a continuation of their existing 2 year plan with a move to the transitional plan commencing in July 2012; and
- The HBRA program has been established to show the pre-summer inspection and cutting by feeders with the aim that all works are completed by a nominal date of 30th November.

SP AusNet (D) Assessing Program is complete and the Cutting Program is on target for completion on the 30th November. A total of 118 priority spans remain outstanding as at 5th November 2013; these consist of "wet spans" where they are waiting for dryer weather to get machinery into spans, with a small number of ESR customers to finalise. Pre-summer cutting works should be complete prior to the November target date (30 Nov) or the declaration of the Fire Danger Period.

The Company is on target to meet its LBRA biennial inspection and cutting program however during the transition period the cycle is progressively reducing to achieve a 1 year cycle. A KPI report was produced that shows 15,698 spans have been assessed against a target of 17,133 spans completion against program. The works program is slightly behind target but expected to be back on target by December.

### *4.6 Default Times Set for Vegetation Requiring Attention*

SP AusNet Distribution classifies vegetation as requiring attention as:

- PT1 (55's) – At the time of assessment Vegetation is contacting HV ABC or Bare Wire conductor/s or Uninsulated Apparatus or There is evidence that vegetation has been contacting Bare Wire conductor/s or Uninsulated Apparatus;
- PT30 (56's) - At the time of assessment Vegetation is within the minimum clearance space but not contacting any Bare Wire or HV ABC conductor/s or Uninsulated Apparatus;
- PT 180 - At the time of assessment [Standalone CS and LVABC 'Mains Span' only] or [Clearing only identified on a Crossover CS] - Vegetation is within the minimum clearance space or Clearing identified that only relates to 'Other Asset Clearance Requirements' and where no other clearing is required in the span] Where the relevant vegetation criteria is met as detailed in section: 'Other Asset Clearance Requirements';
- PT 365 - At the time of assessment vegetation is outside the minimum clearance space from any Bare Wire, ABC conductor/s or Uninsulated Apparatus but is 'highly likely' to encroach upon it prior to the end of the declared FDP in the current assessment year;
- PT 720 - At time of assessment vegetation is outside the minimum clearance space, and will not encroach upon it between a period commencing not less than 365 days up to a maximum of 720 days;
- RE - At time of assessment vegetation is outside the minimum clearance space to Bare Wire, ABC, CS conductor/s or Uninsulated Apparatus however there is some uncertainty whether or not it may encroach upon it prior to the next assessment cycle;
- CC - At time of assessment the predominant vegetation characteristics observed throughout the span have historically not required any action to maintain the clearance space. Examples of a CC coded span are:
  - A grass paddock;
  - A managed vineyard; and
  - Native grass or shrub land.
- PTM - Phantom Code – The PTM code shall be assigned to indicate the following:
  - Public Light not supplied by an overhead cable;
  - An abandoned line;
  - A POEL; or
  - When there is a duplicate Tree Record.

Transition to Compliance Exemption

SP AusNet has an agreed program for the transition to compliance and this aligns with the conditions of the exemption granted by ESV on 24th January 2011 and has not been modified in the past 12 months.

- Cyclic Clearing Aerial Bundled Cable or Insulated Cable all areas – Target: 100% to be completed by 31 December 2013;
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable LBRA – Target: 100% to be completed by 31 December 2013;
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable HBRA – Target: 100% to be completed by 30 June 2013 ; and
- Overhanging Trees – power lines other than Aerial Bundled Cable or Insulated Cable HBRA – Target 2,058 by 29 June 2015

*Alignment with Agreed ESV Annual Targets* – The Company has an established program for the transition to compliance and this aligns with the conditions of the exemption granted by ESV on 24th January 2011:

- Cyclic Clearing Aerial Bundled Cable or Insulated Cable all areas – Target: 31 December 2013 – *Currently 97% compliant to code against 93% - slightly ahead of target;*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable LBRA – Target: 31 December 2013 – *Currently 95% compliant to code against 93% - slightly ahead of target;*
- Cyclic Clearing Powerlines other than Aerial Bundled Cable or Insulated Cable HBRA – Target: 30 June 2013 – *Currently 100% compliant to code against 100% - Completed ahead of target; and*
- Overhanging Trees – power lines other than Aerial Bundled Cable or Insulated Cable HBRA – Target 2,058 by 29 June 2015 – *Currently 1,098 spans compliant to code against a target of 1,406 – well ahead of target*

The original targets for the transitional plan were established on a percentage of the Network to be completed in line with schedule of dates. There has been an additional 58 spans included in the program due to the rezoning of LBRA's.

*Ability to Achieve the Completion of the Program within the Agreed Timeframe* – The Company is confident that they can meet the agreed program timeframes for cyclic clearing and overhanging spans, as they are ahead of target at the date of the audit.

### *4.7 Overhanging Vegetation*

SP AusNet has a procedure for Hazardous Tree and 56M Management. The procedure describes the processes by which hazardous trees and 56Ms within the SP AusNet Network are identified, inspected, and managed by SP AusNet Vegetation and Easement (V&E) staff and contractors. The Vegetation Management Plan objectives require compliance with the Electricity Safety (Electric Line Clearance) Regulations 2010 including compliance with the transition plan agreed with ESV as outlined in Appendix 13.1 of the Plan.

*Alignment with Agreed ESV Annual Targets* – The Company has an established transition program for the removal of all overhanging vegetation in the HBRA which aligns with the conditions of the exemption granted by ESV on 24th January 2011. The program is to replace 2000 spans bare LV and HV conductors that involve 56M removal.

### *4.8 Hazard Trees*

SP AusNet has a procedure for the management of hazard trees. The assessor is required to carry out a visual inspection of the surrounding vegetation from the location they have positioned themself in to view the "clearance space" to identify any obvious hazard trees.

Typically these would be:

- Poor anchorage/instability (ie: root uplift, severed roots;
- Major stage of decline (ie: dead and dangerous limbs);
- Major decay / major cavities;
- Excessive imbalance towards electrical assets;
- Obvious cracks / splits in trees; and
- Other trees or limbs that may be unstable and could fall on the powerlines under the range of weather conditions that can be reasonably expected to prevail in the locality.

SP AusNet (D) has several means by which Hazard Trees are reported:

- Inspections undertaken as part of the formal hazardous tree program; and
- Information obtained from councils, public, other authorities, company personnel, contractors.

The identification of trees that could become a hazard is included in routine inspections and is recorded in the Hazardous Tree database.

The following steps outline what actions are to take place once a hazardous tree has been identified and reported to an Arborist for assessment:

- If the assessed tree is likely to fail at any moment then the Arborist must report this to the Program Leader for immediate action: and
- If the tree is not likely to fail at any moment the Tree Assessment - Hazard Tree or 56M Span form is to be completed and submitted (electronically) to the Program Leader.

The Program Leader prioritises works according to the hazard rating of the tree or;

- Allocates work to the relevant contractor for cutting;
- Allocates to an Arborist for Re-Assessment if the tree is not to be actioned prior to the declared bushfire period;

The Program Leader is responsible for:

- Ensuring that random audits are conducted on a sample of completed works; and
- Updating the Hazard Tree Database.

*Alignment with Agreed ESV Annual Targets* – There is an agreement in place with the AER for the removal of 25,000 hazard trees over 5 years (2011 – 2016). *Actioned to date is 13,889 against a target of 12,500 – ahead of target.*

SP AusNet (D) has identified 16,936 Hazard trees since 1st April 2011 and actioned 13,889 and SP AusNet is confident they shall meet the 2016 target.

### *4.9 Alternatives to Tree Clearing*

SP AusNet (D) has a procedure for alternative methods to be considered to avoid tree pruning consisting of the following considerations;

- Alternative methods for distribution powerlines such as re-routing or placing underground;
- Alternative methods available for maintaining clearance spaces include vegetation removal, replacement, and pruning. Vegetation is managed either by clearing or in special cases pruning where a landowner/occupier or affected person objects to the methods proposed by the Vegetation Management Group. The Vegetation Management Group may provide suitable replacement plants to the affected person where clearing has taken place. In consultation with the affected person, the Vegetation Management Group may negotiate phased vegetation replacement with compatible plants where inappropriate vegetation has been identified along an easement;

- While removal of all trees may be appropriate in some circumstances, other circumstances may require a management plan to provide for controlled retention of compatible vegetation without unreasonably increasing risk. Vegetation management plans provide for a layered approach, which address a range of situations; and
- Consideration of alternative methods is subject to agreement negotiated for recovery of implementation costs.

*Alignment with Agreed ESV Annual Targets* – SP AusNet (D) has an established transition program for alternatives to prevent or reduce tree cutting (removal of all overhanging vegetation) in the HBRA which aligns with the conditions of the exemption granted by ESV on 24th January 2011.

SP AusNet (D) has an agreed number of overhanging spans to be augmented; the yearly targets are as follows;

| | |
|---|---|
| 31st December 2011 | – 120 spans augmented |
| 31st December 2012 | – 219 spans augmented |
| 31st December 2013 | – 340 spans augmented |
| 31st December 2014 | – 560 spans augmented |
| 29th June 2015 | – 761 spans augmented |
| Total Spans | = 2000 |

Actioned LTD to date is 902 against a target of 978 – *behind target.*

SP AusNet (D) is confident that they can meet the agreed timeframe for alternatives to prevent or reduce tree cutting (removal of all overhanging vegetation).

### *4.10 Work Programming and Scheduling*

Select Solutions uses Microsoft Project as the planning program for vegetation easement management, and this is reviewed approximately fortnightly. This program is presented to the cutting contractor at the commencement of the calendar year and is used for the basis for allocating work throughout the year in priority order.

The relevant Select Solutions service provider is responsible for the preparation of the work program and scheduling on a weekly basis. This program is prepared and monitored in conjunction with the relevant Select Solutions Program Leader Contingency Planning. On the completion of vegetation inspection the priority works are assigned to the service provider via a work order which is created in Select Solutions Vegetation Management system (VMS)

Monitoring the Work Schedule

The schedule is monitored for quality of work by carrying out assessing and cutting compliance audits for planned vegetation maintenance. This includes the frequency and standards to which vegetation is to be maintained. To ensure the maintenance works are carried out in accordance with the regulations and that which meets the appropriate standards, compliance audits are conducted following completion of assessment and cutting work orders (WO).

Select Solutions conducts a sample audit of the service provider's work (without any limitation), procedures, and practices, in order to determine their compliance with the relevant Standards and Codes of Practice.

The compliance audit process is split into two stages:

The service provider requests either an assessing or cutting WO. The service provider completes the works and submits the WO to the Vegetation and Easement (V&E) group for auditing. The V&E group field officer/representative then undertakes a compliance audit based on but not limited to the following criteria:

- Assessment; and
- Cutting

The verification of works prior to payment is carried out by:

- Service provider completing work in field per the scope;
- Updating the VMS by the service provider;
- SS runs a monthly work order (cuts & assessments) report & sends to service provider for them to develop their invoice;
- SS extracts data from VMS and carries out a cut audit; and
- SS issues remedial work where required.

SS holds approximately 6 weeks payments which secure any remedial work to be completed to the required standard.

Occupation, Health, and Safety and Environmental audits are tracked through Select Solutions monthly report and at the time of the audit there were 3 x HS&E incidents during September and the service provider hours worked for the month were 36,242. In addition, there were 54 x HS&E audits carried out with 4 major non-conformances being identified.

Contingency Planning Incorporated into Work Schedule

The Select Solutions service agreement between Select Solutions and their service providers gives Select Solutions the scope to engage other resources in the case that a service provider falls behind in a particular area. The Company uses a number of service providers on their hazard tree program that can be utilised if a service provider is behind on the cyclic program. It is not anticipated that extra resources shall be required for 2013.

Select Solutions has engaged the following contractors per region; (ETS) to perform vegetation clearing works on their Lilydale contract, ETS in turn engage the following sub-contractors;

- LDL - Eastern Tree Services;
- BFD "A" – Asplundh Tree Experts;
- BFD "B" - Eastern Tree Services;
- SMG – Active Tree Services;
- TGN – BJ & BJ Murphy;
- LGA - BJ & BJ Murphy;
- BDL - Eastern Tree Services;
- SMR - Eastern Tree Services;
- BEN - Eastern Tree Services; and
- WOD – Eagle Travel Towers.

Management of Remedial Work

SP AusNet or its nominated representative conducts a sample audit of the contractor's work (without any limitation), procedures, and practices, in order to determine their compliance with the relevant Standards and Codes of Practice.

The contractor requests either an assessing or cutting WO (Work Order). The contractor completes the works and submits the WO to the V&E group for auditing. The V&E group field officer/representative then undertakes a compliance audit as per the following process:

- V&E Admin Officer creates Assessing/Cutting Work Order;
- Assessor/ Cutter carries out the required works in accordance with the VMP and advises V&E Program Leader (PL) of completion; and
- PL assigns WO to V&E Field Officer to carry out a compliance audit.
- The result of the audit is determined by the following:
  - Assessment audits receiving a result >90% but <95% is reported as a 'Fail' but does not require reassessment;
  - Assessment audits receiving a result <90% is reported as a 'Fail' and requires reassessment and resubmission;

- Cut audits receiving a result >90% but <95% is reported as a Fail. Remedial work as noted must be actioned and other works to be re-checked and the V&E group to be advised when completed;
- Cut audits receiving a result <90% is reported as a 'Fail' and requires review, rework, and resubmission; and
- Following re-submission, a subsequent audit is to be conducted.

The auditor viewed the Work Order Schedule at the Eastern Tree Services office and obtained an extract to enable the 10 cut packs sites to be extracted for a field audit on quality of work and a determination if the contractor is cutting to code with an allowance for growth, sag and sway.

# 5 Contractor Vegetation Management and Performance

## *5.1 General Matters*

The roles and responsibilities for the Eastern Tree Services (ETS) tree clearing activities within the Lilydale (LDL) operational area are as follows;

General Manager – Southern Operations - Manage the regional area(s) to ensure the achievement of sustained competitive advantage and business growth for Eastern Tree Service (ETS).

Operations Manager Manage - The field operations for Eastern Tree Service (ETS) through planning, work scheduling, client service, people management, fleet management, cost management, invoicing and workplace safety.

Crew Supervisor, Scoper, Assessor (LDL) - Oversee the running of the crews carrying out vegetation management works for Eastern Tree Services (ETS) under the direction of the local Operations Manager.

Eastern Tree Services engage 7 full-time subcontractors working on LDL:

- Digging Deep
- Batt Brothers
- Timberline
- All Trees & Stumps
- TreeScene
- ATTTS
- Arbor Aspect

*Note: ETS uses contract specifications supplied by Select Solutions to cover the subcontractors.*

## *5.2 Contractor Step Changes to Vegetation Practises*

Eastern Tree Services (ETS) has introduced the Track Mounted Jarraff, Track Mounted EWP and a Tractor Mounted Hedger for cutting works, this equipment has increased efficiency and reduced the amount of climbing hours needed on the network.

Confirm Understating of Changes to Policies, Procedures and Programs

ETS confirms understanding of changes to policies, procedures and programs with its field personnel at a "Tool Box" meeting bi-monthly or as required, with the employee signing an attendance sheet. Should an employee miss a training session the company has a process to ensure follow-up training is received.

ETS monitors accuracy of changes to policies, procedures, and programs with field personnel via an audit process.

### 5.3 *Vegetation Management Programs*

Select Solutions has provided all the relevant plans and procedures to enable the ETS to deliver the required outcomes safely and efficiently.

Eastern Tree Services has completed inspections of vegetation and preparation of data across the code cut and pre-summer cut in the HBRA. In the LBRA they conduct biennial inspections, transitioning to an annual inspection. From these programs ETS is issued the work orders. The cut packages are then prepared by ETS who issue each span to be cleared in accordance with the cutting procedure. This is done electronically via the STEpps system.

Overhanging Vegetation

During the inspection of the feeder the Eastern Tree Services Assessor confirms the coding on his PDA of overhanging vegetation (56M) as per the SP AusNet Assessment Procedure. ETS understands that SP AusNet has a program to re-augment 56M spans on the network.

Removal of Hazard Trees

Eastern Tree Services identifies hazard trees within their work packages however should hazard trees be identified during the cutting/clearing works they are required to notify Select Solutions and where there is urgency remain on site until the hazard is removed. Where it is not urgent a "Tree Assessment - Hazard Span or 56M Span" form is completed and forwarded to Select Solutions. Depending on resources this hazard may or may not be issued to ETS.

Augmentation of Lines to Prevent or Reduce Tree Cutting

ETS has a clear understanding that alternate construction is available via the Capex program. Where code is not able to be achieved on particular spans or service wires ETS can raise a Capex detailing the reason and options available. This was communicated to all Assessors at the Select Solutions assessor training 2013.

### 5.4 *Contractors Work Scheduling*

Type of Scope of Work Being Used by the Contractor

During the induction period a new employee is introduced to the ETS Handbook and SP AusNet Cutting Procedure which becomes the Scope of Works for all ETS vegetation activities. (A soft copy of these documents is kept in the STEpps system which is available in all vehicles). In addition, other relevant procedures are also included in the STEpps system.

- Tree Cutting & Pruning;
- Scoping Procedures;
- Limits of Approach;
- Working with Suppression.

In support of this ETS issue cut packs which detail the individual locations that are to be actioned.

Issue of Scope of Work and Monitoring

ETS Supervisor, Scoper, Assessor (SSA) issues the cut work packages to the field crews working on LDL. Crews update actions taken on all spans via STEpps. This is real live data and is fed back to the "Crew Manager" which can be viewed by the "SSA Manager" which can be viewed by the SSA.

Confirmation of Quality of Completed Work

The SSA then closes each job off in "Crew Manager" or assigns it to the appropriate crew to complete. ETS crew SSA's are on the job site regularly performing quality & OH&S checks to confirm the quality of work completed and that it has been carried out in line with the Scope of Work. ETS aims to check 100% of all works carried out using the Crew Manager

### 5.5 *Contractor Worksite Safety and Compliance Auditing*

Select Solutions Field Officers meet ETS crews at the worksite at least 2 times per week and speak to ETS supervisors on a daily basis.

Select Solutions - The following types of Improvement Requests (IR's) were issued to ETS personnel such as - safety observer not in place, missing PPE, working without suppression which was not documented on JSA, JSA filled out incorrectly, missing workman ahead signs, empty knapsack, and earth chain not lowered.

The Company has carried out 134 audits year to date of which there was 17 major non-conformances and 39 minor non-conformances found.

Eastern Tree Services - The 17 major non-conformances issued to the service provider following HSE inspections of crews YT were managed through the Select Solutions Improvement Request (IR) database which asks for a response from the service provider and the PL to sign the IR off when satisfied with the actions taken. This is a 5 step process;

- Select Solutions PL raises an IR and sends it to the contractor;
- Contractor Provides the initial response;
- Contract supervisor advises what action has been taken; and
- Contract manager reviews action taken.

If satisfied the Select Solutions PL closes off the IR.

Eastern Tree Services stated that they have completed 95 audits of which there were 17 actions raised with 3 still open. At the time of the audit ETS still had to present the crew manual update as personnel were away on leave. The training is programmed for their return.

### 5.6 *LBRA Vegetation Management Programs*

Eastern Tree Services understands that there is a transition to literal compliance in the LBRA by the end of 2013. For HBRA PT1 and PT30 spans are to be actioned within 30 days, not by the declaration date as in previous years. All service wires are now to be cleared when in code, not just when hard contact occurs.

### 5.7 *Contract Training & Qualifications*

The auditor crosschecked a sample of Eastern tree Services employee qualifications, proficiency and experience records against the Training Requirements as outlined in the VMP. All had current training modules for the roles they were currently fulfilling. The employees checked were:

- Michael Zappia – Elevating Work Platform Cutter (*Compliant*);
- Allen Thomas – Elevating Work Platform Cutter (*Compliant*);
- Jacob Chubb – Elevating Work Platform Cutter (*Compliant*);
- Russell Green – Elevating Work Platform Cutter (*Compliant*);
- Michael Holt – Elevating Work Platform Cutter (*Compliant*);
- Leigh Marshall – Elevating Work Platform Cutter (*Compliant*); and
- Mark Young – Elevating Work Platform Cutter (*Compliant*).

# 6 Field Audits and Data Base Verification

The field audit included a detailed check of 162 sites (104 in the HBRA & 58 in the LBRA) after downloading pole details and asset defects from the Company's database. The HBRA sites were visited with a Company representative where the information taken from the database records were crosschecked against the actual condition of the assets in the field. Where an asset defect/anomaly existed was not recorded, or the vegetation clearances at the site did not meet the new Electricity Safety (Electric Line Clearance) Regulations 2010, it was noted.

The information was then filtered to determine the:

- accuracy of the Asset Inspectors inspection and data capture;
- accuracy of the Vegetation assessment and data capture; and
- accuracy of the information contained in the company's database.

Results of Field Audit / Database Check

| | |
|---|---|
| Total Sites Audited in the Field | 162 |
| HBRA - Sites Audited in the Field | 104 |
| HBRA - Defective/Missing Asset Items Not Matching Database | 5 |
| HBRA - Vegetation Spans Non-Compliant with the Regulations<br>– Electricity Suppliers Responsibility | 0 |
| HBRA - Vegetation Spans Non-Compliant with the Regulations<br>– Other Responsible Person | 9 |
| LBRA - Sites Audited in the Field | 58 |
| LBRA - Defective/Missing Asset Items Not Matching Database | 7 |
| LBRA - Vegetation Spans Non-Compliant with the Regulations<br>– Electricity Suppliers Responsibility | 1 |
| LBRA - Vegetation Spans Non-Compliant with the Regulations<br>– Other Responsible Person | 6 |

HBRA

The 104 sites audited within the HBRA were chosen at random from sections of lines within the HBRA supplying the following areas:

- Bemm River - East Gippsland (28 - sites covering asset maintenance and vegetation);
- Mallacoota - East Gippsland (12 - sites covering asset maintenance and vegetation);
- Cann River - East Gippsland (13 - sites covering asset maintenance and vegetation);
- Mansfield - North East Victoria (25 - sites covering asset maintenance and vegetation);
- Warrandyte - Central Victoria (26 - sites covering asset maintenance and vegetation).

*Note: The auditor tried to cover a broad range of sites across the network owner's operational areas specified by ESV.*

The audit identified the following:

- 2 crossarms that were given a shorter priority repair rating and an additional 1 suspect crossarm that showed indications of deterioration that would need to be checked with a camera on a stick or from an EWP.
- 3 maintenance items (bird damage, broken spreader and loose earth wire possibly hit by tractor) that have sustained damage since the last inspection that the auditor and Asset Inspector agreed required a priority to be issued.

The accuracy of SP AusNet's asset database for the HBRA is of a well maintained standard in relation to the description of the network assets as they exist in the field.

LBRA

There were 58 sites audited within the LBRA that were chosen at random:

- Mallacoota - East Gippsland (28- sites covering asset maintenance and vegetation);
- Cann River - East Gippsland (2 - sites covering asset maintenance and vegetation); and
- Mansfield - North East Victoria (28 - sites covering asset maintenance and vegetation).

*Note: The LBRA areas audited were chosen due to their close proximity to the HBRA specified by ESV for audit.*

The audit identified the following:

- The assets in the Far East Gippsland towns have had extensive maintenance carried out recently and were in good condition.
- The vegetation within all LBRA were cut to a good standard with only isolated sites found requiring attention and these were on customer services;
- The auditor identified 7 crossarms (identified in SP AusNet's data as requiring monitoring) that were given a shorter priority repair rating, and an additional 2 suspect crossarms that showed indications of deterioration that would need to be checked with a camera on a stick or from a EWP vehicle.

The accuracy of SP AusNet's asset database for the LBRA is being maintained to a reasonable standard but where it is reaching the end of the cycle (5 Years) and due for inspection some wooden crossarm were showing sign of requiring early change. The use of the P9 & P10 priority codes enables the inspector to note the crossarm for future monitoring or for a reinspection mid cycle.

### *6.1 Vegetation Contractor Field Audit*

The auditor choose 10 work instructions from Eastern Tree Services completed work schedule and 5 work instructions that had been inspected but at the date of the audit had not been cut. The sites were visited with the contractor and a determination was made on the standard of clearance achieved or in the case of inspected, but not yet cut sites, if the requested work shown in the work instruction would achieve code clearance with the following results:

HBRA Lilydale, Work Instructions – Completed Works

1. Scope of Works - Pole ID 305388, (HBRA code cut clearance achieved) – Photo 1
2. Scope of Works - Pole ID 305396, (HBRA code cut clearance achieved) – Photo 2
3. Scope of Works - Pole ID 305473, (HBRA code cut clearance achieved) – Photo 3
4. Scope of Works - Pole ID 305472, (HBRA code cut clearance achieved) – Photo 4
5. Scope of Works - Pole ID 305474, (HBRA code cut clearance achieved, Hazard tree in span not identified) – Photos 5 & 6
6. Scope of Works - Pole ID 370884, (HBRA code cut clearance achieved) – Photo 7
7. Scope of Works - Pole ID 370883, (HBRA code cut clearance achieved) – Photo 8
8. Scope of Works - Pole ID 370815, (HBRA code cut clearance achieved) – Photo 9

9. Scope of Works - Pole ID 370817, (HBRA code cut clearance achieved) – Photo 10
10. Scope of Works - Pole ID 370820, (HBRA code cut clearance achieved) – Photos 11 &12

Good code clearance was achieved at the sites audited with only the one hazard tree not identified for removal, which is a threat to the line. (photo 6)

LBRA Croydon, Work Instructions – Inspected but not as yet cut

11. Scope of Works - Pole ID 126879, (LBRA - agreed with assessment) – Photo 13
12. Scope of Works - Pole ID 126860, (LBRA - agreed with assessment) – Photo 14
13. Scope of Works - Pole ID 126861, (LBRA - agreed with assessment) – Photo 15
14. Scope of Works - Pole ID 126862, (LBRA - agreed with assessment) – Photo 16
15. Scope of Works - Pole ID 126864, (LBRA - agreed with assessment) – Photo 17

The auditor agreed with Field Officer's assessment of the sites and work required to achieve code clearance.

# 7 Observations

There were 4 general and 18 Company specific observations made during the audit relating to SP AusNet's Bushfire Mitigation Program.

General Observations

- It is early days but the company is working on determining what additional benefits can be gained from Smart Meters that may support their BFM/maintenance or operating programs. In the auditor's opinion this has the possibility to deliver a range of operational benefits;
- Geospatial modelling and display F-factor fire data that is in development for SP AusNet in the auditor's opinion appears to be a significant analysis and monitoring tool;
- There has been a batch of wooden crossarms arrive with modified steel plates on the ends that have shortened pins which has necessitated the company to implement a practise that all plates are to be screwed until further notice. If the plate is not screwed it can drop off. There was evidence in the field that this practise was being carried out.
- The auditor was impressed by the Vegetation Management program that Eastern Tree services was using as it had the means of tracking the field crews, whilst providing an up to the minute situation report as all information is imputed by the field crews.

Company Specific Observations

- The field audit highlighted that the introduction of the new "Vegetation Requiring Clearing" brochure is having an effect, as it clearly indicated approximately 90% of Other Responsible Persons are clearing their services lines, and in most cases achieving good clearances. I am not sure how the company is to achieve the last 10% without a cost penalty;
- The percentage of concrete poles appears to be steadily growing in Gippsland although it does not as yet match the north east.

LBRA

- With the 5 year asset inspection cycle and the difficulty of assessing a crossarm life over that length of time the use of the P9 & P10 priority codes enables the inspector to note the crossarm for future monitoring or flag it for a reinspection mid cycle. (This matched in the field and enabled the inspector to take a conservative approach);

HBRA

- The Company has contracted external resources to ensure they meet the agreed delivery timeframes for their Network Safety programs;

- SP AusNet F-factor regulatory performance incentive scheme target for fire incidents is < 258 however they have an internal stretch benchmark target of 243 and they are ahead of target YTD;
- The new items of specialist plant that have been introduced during 2013 should deliver efficiencies and cost savings while enabling the work to be carried out with increased safely;
- At the time of the audit (early to mid-November) the company is significantly ahead with their maintenance preparations for the fire danger period compared to the same time last year. This is demonstrated on the index report supported by observations in the field;
- There was evidence in the areas audited that SP AusNet has commenced the installation program for Armour Rods and Vibration Dampers;
- At the time of the audit the company is ahead in 11 out 17 Network Safety Programs LTD targets (behind target in conductor replacement, vegetation overhang, Z/S/S relay replacement, aerial spacers and HBRA fuse holder replacement), although some are back ended and require ramping up to maintain target delivery over the remaining target period. (The auditor was assured by the company that external resources are contracted and budgets are in place to make this happen).

Company Specific - General

- It was very apparent from the audit entry meeting the company's complete focus on safety and communication;
- The new Network Safety Committee that were involved throughout the desktop review impressed the audit team including the inspector that accompanied the auditor in the field;
- It is acknowledge by the auditor that the work required to develop and maintain the Network Safety Report would be considerable but it gives an excellent snapshot in time across all bushfire mitigation and network indicators, and gives a clear picture of the company's risk profile each month;
- There is depth in the companies processors as the auditor chose items at random throughout the audit to drill down and the supporting material was available and easily/immediately provided;
- Following the success of SP AusNet's pass through application the company is embarking on an aggressive implementation program across the networks safety programs that is aimed at greatly reducing BFM risk;
- The auditor took particular notice of the items raised on the ABC radio - SP AusNet BFM Programs of replacing bare conductors with covered cables, animal proofing assets and installation of steel crossarm, while conducting the audit in the North East and there was evidence in the field that these programs were being implemented;
- The Asset Inspectors are making conservative calls with their judgement of wooden crossarms as they are allocating P9 (LBRA) and P10 (HBRA) ensuring crossarms are revisited within 2.5 years. In addition SP AusNet has requested that the asset inspectors take photos of all wooden crossarm in the LBRA with a camera on a stick to confirm serviceability. This process has been in practice for approximately 6 months. In the auditors opinion this is an excellent practice considering the age of some crossarms currently on the network;
- The tree clearing in the HBRA and LBRA areas audited was to a high standard with only minor code infringements being identified;
- A tree contractor had been stood down following a compliance audit during the last 12 months which clearly demonstrated to the audit team that their audit programs are working and have substance.

# 8 Conclusions

SP AusNet's Bushfire Mitigation Management personnel were well prepared for the audit with all required material available, which considerably reduced the time required to complete the desktop audit. This enabled additional time in the field and multiple sites to be visited within SP AusNet's operational areas. The Bushfire Mitigation Plan and Vegetation Management Plan are well prepared documents that are easy to follow. These two documents form the basis of the Company's BFM activities and are supported by a comprehensive set of mature policies, strategies, and procedures that are continually being modified to maintain relevance to the Network.

SP AusNet has gained an extension to the agreement with ESV to comply with the Electricity Safety (Electric Line Clearance) Regulations 2010 for a transitional period with established target dates and clearance percentages. These arrangements require progressive compliance through to 29th June 2015, at the date of the audit the company has meet or is on target to meet the agreed targets.

There was a focus on Vegetation Management throughout this year's audit.

The information within the Company's database was checked in detail onsite in the field, and the audit showed that the information contained in both the Asset and Vegetation databases could be trusted in the HBRA, and it could be relied upon for reporting an accurate snapshot in time to ESV.

The small sample of data audited in the LBRA database showed a marked improvement from previous years with the database matching and in line with what would be expected for assets coming up for inspection after 5 years.

The Vegetation Contractor audits demonstrated that SP AusNet, through their contract with Eastern Tree Services, has established policies and procedures in place ensuring that SP AusNet is achieving the appropriate Code clearances in the HBRA for the Fire Danger Period. The quality of recent cutting within the areas audited in both the HBRA and LBRA was of a high standard. The company's new brochure for notifying ORP's for the requirement to clear services is working.

There were 10 Bushfire Mitigation vegetation cutting work packs chosen at random from the Company's August work schedule. All were completed to the required scope of work and all achieved good Code clearance however one hazard tree within a cut span was not identified. In addition 5 sites were checked where the field officer had completed his assessment and the work packs prepared but not issued, and the auditor agreed with the assessment that once completed Code clearance would be achieved.

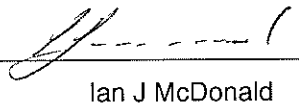
SP AusNet is targeting their Bushfire Mitigation work to be completed by the commencement of individual Fire Regions declaration dates and they consider they are on target to achieve this aim.

In the Auditor's opinion SP AusNet's preparedness for the forthcoming fire season is in line with their Bushfire Mitigation and Vegetation Management Plans. This audit was conducted in the final stages of the Company's preparation for the Fire Danger Period and the Company was confident that they would complete the outstanding work within the time remaining. This opinion was supported from observations in the field of the Company's assets and vegetation line clearances in the HBRA as they were in good condition.

# 9 Recommendations

It is recommended that:

- For future field audits SP AusNet download all data from the asset database by feeder for the areas chosen for audit as the reduced data given to the auditor and inspector this year created problems in the field finding where assets commenced.
- SP AusNet action the items found during the field audit in the HBRA in line with the priority allocated by the auditor and agreed with the Company representative on site before the commencement of the Fire Danger Period;
- SP AusNet action the items found in the LBRA during the field audit in line with the priority allocated by the auditor and agreed with the Company representative on site; and
- SP AusNet reassess the crossarms shown in the auditor's field audit report as deteriorating by either using a camera on stick or an EWP and allocate a priority accordingly.

**Auditor's Signature:**  **Date: 25th November 2013**

Ian J McDonald

# Table of Contents

## 1. Audit Scope, Objective and Criteria

The audit was conducted on AusNet Services (AS) in accordance with the agreement with Energy Safe Victoria (ESV) Bushfire Mitigation Audits July 2014 Scope of Works and Briefing Notes for Electric line Clearance Auditing presented to IJM Consulting on the 14 August 2014.

The Electricity Safety Regulations and other subordinate legislation, the Company's Electric Line Clearance (Vegetation) Management Plan and vegetation database were used as the base reference documents to outline the Company's standard of performance, and activities undertaken to comply with the intent of the Regulations.

AusNet Services was given approximately 3 weeks' notice on the aspects of the audit to be undertaken.

The audit was conducted taking into account the following:

- The pre fire season Electric Line Clearance (ELC) readiness and the compliance to the transitioned spans cleared;
- That it was carried out late in the preparation to this years fire danger period, and it was carried out concurrently with ESV's Asset and Safety Program Audits and while the Company was still progressing with their pre-summer cutting;
- That for statistical certainty quantities of sites audited must generally equal or exceed 400 spans;
- That the same approach is to be utilised for each of the five Companies; and
- That ESV provides the listing of sites/electric line/s to be audited to ensure an appropriate cross-section is achieved.

The auditor is to confirm:

- That the Electricity Company is programming the inspections in accordance with their process/procedures for vegetation inspections;
- That the inspections are conducted in accordance with their process/procedures for vegetation inspections;
- That the findings and cutting directions noted in the inspection data are correct;
- That the Company is achieving Electric Line Clearance (ELC) compliance; and
- That the notification process has been compliant.

## 2. Audit Methodology

The audit was conducted between 20th November and 24th November 2014, which included a detailed assessment of the vegetation line clearance in the field. Prior to the audit AusNet Services Contract Management, Select Solutions, provided an electronic copy of their vegetation database with the selected feeders to be audited as well as an iPad with AusNet Services asset locations. A full listing of the audited sites is provided in this report as attachment A.

This Bushfire Mitigation Line Clearance audit sampled sites on 6 feeders in the HBRA and 3 in the LBRA covering both declared and non-declared areas within AusNet Services operational area, which required a total of 1330Kms driven to achieve the aims of the audit.

A larger audit sample was taken than the minimum required by the audit scope to enable the Auditor to make a determination on the standard of clearance work being achieved across the HBRA (High Bushfire Risk Areas) of the network. The level of the Company's compliance was determined from the selection;

## *2.1 HBRA Sites Audit*

The auditor received HBRA data for 500 sites that represented inspected spans, spans cleared or spans yet to be cleared and the auditor was requested by ESV to audit a minimum of 350 of these spans.

| Area | Feeder | Sites Audited HBRA | Additional HBRA sites Audited |
|---|---|---|---|
| MJG11 | Merrijig | 73 | 3 |
| MDI11 | Murrindindi | 81 | |
| KLO24 | Kalkallo | 55 | |
| ELM15 | Eltham | 57 | 1 |
| BGE11 | Belgrave | 51 | 2 |
| WYK11 | Woori Yallock | 53 | |

There were a total of 374 spans audited in the HBRA. The 6 additional HBRA sites audited were locations where assets defect were sighted during the audit.

## *2.2 LBRA Sites Audit*

The auditor received the LBRA data for 120 sites that represented inspected spans, spans cleared or spans yet to be cleared and was requested by ESV to audit a minimum of 50 of these spans.

| Area | Feeder | Sites Audited LBRA | Additional LBRA sites Audited |
|---|---|---|---|
| KLO24 | Kalkallo | 37 | 0 |
| ELM15 | Eltham | 27 | 1 |
| BGE11 | Belgrave | 32 | 1 |

There were a total of 98 spans audited in the LBRA including the 2 additional LBRA sites audited where locations were defect assets were sighted during the audit.

The level of the Company’s compliance has been determined from these selections.

# 3. Summary of Identified Compliance Matters

## *3.1 High Bushfire Risk Area - MJG11 (Merrijig)*

76 locations were audited within AusNet Services HBRA (MJG11) and of these sites 8% had some form of non-conforming asset defect or vegetation clearance:

- Of the 76 locations audited 5% (4 non-conforming sites) related to asset defects (AusNet Services responsibility to correct);
- Of the 76 locations audited 7% (5 non-conforming sites) related to vegetation line clearances (AusNet Services responsibility to clear); and
- Of the 76 poles audited in the HBRA 1% of services audited (Customer responsibility) were non-conforming.

The mains in the Merrijig are code compliant but allowance for regrowth is marginal however you could identify the areas that have been cut this year and at these sites good clearances were achieved. There are a number of sites where the auditor identified hazard trees that should be removed as they are close to the edge of the bank above the Mt Buller line and in some cases the bank has started to collapse.

*Note: The asset defects identified were close to audited sites or at an audited site. The priority allocated was determined from viewing the item from the ground using binoculars.*

## *3.2 High Bushfire Risk Area - Murrindindi (MDI1)*

81 locations were audited within AusNet Services HBRA (MDI1) and of these sites 1% had some form of non-conforming asset defect or vegetation clearance:

- Of the 81 locations audited no non-conforming sites relating to asset defects were found (AusNet Services responsibility to correct);
- Of the 81 locations audited 1% (1 non-conforming site) related to vegetation line clearance (AusNet Services responsibility to clear); and
- Of the 81 poles audited no services were found that were non-conforming (Customer responsibility).

There was one site that will require cutting before the commencement of the fire danger period however the mains in the Murrindindi have good clearances and are code compliant with adequate allowance to cover for regrowth until the next pre-summer inspection and cut.

The auditor viewed the asset conditions at each of the audited sites and did not identify any asset that required attention before the commencement of fire danger period.

## *3.3 High& Low Bushfire Risk Area - Kalkallo (KLO24)*

There were 92 locations audited within AusNet Services HBRA & LBRA (KLO24) and of these sites 17% had some form of non-conforming asset defect or vegetation line clearance issue:

- Of the 92 locations audited 1% (1 non-conforming sites in the HBRA) related to asset defects (AusNet Services responsibility to correct);
- Of the 92 locations audited no non-conforming sites in the HBRA related to vegetation line clearance (AusNet Services responsibility to clear);
- Of the 92 locations audited 4% (4 non-conforming sites in the LBRA) related to vegetation line clearance (AusNet Services responsibility to clear); and

- Of the 92 poles audited 13% (12 Non-Conforming sites in the LBRA) of services audited (Customer responsibility) were non-conforming.

The HBRA & LBRA mains in the Kalkallo area are code compliant but services still remain an issue in the LBRA. There was evidence that work was being carried out on service clearances that are the responsibility of AusNet Services to cut in the HBRA.

### *3.4 High & Low Bushfire Risk Area - Eltham (ELM15)*

There were 86 locations audited within AusNet Services HBRA & LBRA (ELM15) and of these sites 13% had some form of non-conforming asset defect or vegetation clearance issue:

- Of the 86 locations audited 3% (2 non-conforming sites in the HBRA & LBRA) related to asset defects (AusNet Services responsibility to correct);
- Of the 86 locations audited in the HBRA no non-conforming sites were found relating to vegetation line clearance (AusNet Services responsibility to clear);
- Of the 86 locations audited 6% (5 non-conforming sites in the HBRA) related to vegetation line clearance (Customer responsibility to clear);
- Of the 86 locations audited 5% (4 non-conforming sites in the LBRA) related to vegetation line clearance (AusNet Services responsibility to clear); and
- Of the 86 locations audited 2% (2 Non-Conforming sites in the LBRA) related to services (Customer responsibility to clear).

Although there were no vegetation line clearance non-conformance sites found in the HBRA (AusNet Services responsibility), there is minimal clearance on services and mains in the Eltham, Research, Hurstbridge etc. area.

In the auditors opinion the fire danger rating for Howell Rd Plenty is incorrectly classified as LBRA. It is a heavily vegetation area with limited access and with high ground fuel content.

*Note: The level of priority allocated to asset defects was assigned without the benefit of an aerial view to determine the remaining life of the item.*

### *3.5 High & Low Bushfire Risk Area - Belgrave (BGE11)*

There were 84 locations audited within AusNet Services HBRA & LBRA (BGE11) and of these sites 44% had some form of non-conforming asset defect or vegetation clearance issue:

- Of the 84 locations audited 4% (3 non-conforming site in the HBRA) related to an asset defect (AusNet Services responsibility);
- Of the 84 locations audited 2% (2 non-conforming sites in the HBRA) related to vegetation line clearance (AusNet Services responsibility to clear);
- Of the 84 locations audited 21% (18 non-conforming sites in the HBRA) related to vegetation line clearance (Customer responsibility to clear);
- Of the 84 locations audited 1% (1 non-conforming sites in the LBRA) related to asset defects (AusNet Services responsibility to correct);
- Of the 84 locations audited 6% (5 non-conforming sites in the LBRA) related to vegetation line clearance (AusNet Services responsibility to clear); and
- Of the 84 Locations audited 10% (8 Non-Conforming sites in the LBRA) related to services (Other Person responsibility to clear).

The audit identified 2 sites where overhanging vegetation was present. These were not shown in the database provided as transitional spans;

*Note: There were 4 (P1) assets defects identified that will have to be addressed before the commencement of the Fire Danger Period.*

### *3.6 High Bushfire Risk Area - Woori Yallock (WYK11)*

There were 53 locations audited within AusNet Services HBRA (WYK11) and of these sites 26% had some form of non-conforming asset defect or vegetation clearance issue;

- Of the 53 locations audited 2% (1 non-conforming site in the HBRA) related to an asset defect (AusNet Services responsibility);
- Of the 53 locations audited 6% (3 non-conforming sites in the HBRA) related to vegetation line clearance (AusNet Services responsibility to clear); and
- Of the 53 locations audited 21% (11 non-conforming sites in the HBRA) related to vegetation line clearance (Customer responsibility to clear).

It appeared to the auditor that the AusNet Services were in the process of completing their presummer clearing in this area.

The data information supplied by Select Solutions / ESV for this area cannot not relied upon other than the Camm No., and any Comments that have been included from the Auditor.

*Note: There was 1 (P1) assets defect identified that will have to be addressed before the commencement of the Fire Danger Period.*

## 4. General Observations

Although the audit was conducted during the AusNet Services preparation for the 2014/2015 Fire Danger Period the vegetation line clearances in the HBRA where generally in good condition where they had completed all pre-season work:

- There is evidence that work has been carried out this season and contractors are accomplishing good work maintaining the easements in the HBRA;
- Select Solutions was still working on Woori Yallock - WYK11 feeder as that was the final area of work to be completed prior to the commencement of Fire Danger Period;
- There were considerable distances covered between audit sites and although the auditor never stopped at sites that were not allocated for auditing (within the database provided), particular attention was given to the general line clearances. It confirmed consistent code clearances were being achieved throughout the HBRA and the LBRA where it is AusNet Services responsibility to clear;
- There were exceptions with 56m clearances (within the HBRA) as several sites were identified but not shown on the database and were in reality above the line or within the 56M clearance space.
- Where cutting had been carried out on hedgerows (farm wind breaks) throughout the HBRA's audited excellent clearances had been achieved. The result was neat and well formed;
- The auditor photographed the non-compliant sites that were Code 55 (vegetation in contact with the conductors) and Code 56 (vegetation within the clearance space). All LV service non-conformances were only noted;

- Non-conforming Services (vegetation) that are the responsibility of the customer to cut remain an issue, as the process being used by AusNet Services to address this item is only producing results in some areas. The auditor confirmed with a number of customers that notices had been issued.
- The iPad provided with AusNet Services Asset locations installed was extremely accurate and very easy to use. It is a exceptionally good tool for this type of audit.
- Where 56M (overhanging vegetation) was not registered and determined by the auditor to be within the clearance space it is shown as a non-conforming site. There were no transitional sites shown in the data supplied to the auditor;
- The Auditor witnessed several tree clearing parties working on pre-summer clearing throughout AusNet Services operational area. Cutting had been completed with good clearances achieved although clean-up of vegetation remained;
- The Auditor made it a point to talk to the property owner at every opportunity and they confirmed notification was being given for vegetation clearance work on their property. However there were several property owners that were not happy with the lack of negotiation and wanted a say on what was to be done. In most cases it was that they would have preferred the tree removed instead of taking the side out of it and leaving it, in their view, unsafe and ugly;
- There is a distinct difference in the standard of cutting clearance between the HBRA and LBRA (AusNet Services responsibility) on mains as the allowance for regrowth was marginal in the LBRA;
- The issue of notices and follow-up on customers' services needs to be strongly enforced if regulated clearances are to be realised.

*Note: Although this segment of the ESV Bushfire Mitigation 2014/15 was aimed at line clearance the Auditor did have a general look at the assets in the HBRA at each site and considered they were generally in a good serviceable condition.*

## 5. Database

The iPad provided with AusNet Services asset locations installed was extremely accurate and very easy to use. Unfortunately there was one tab in the electronic vegetation database program (Woori Yallock - WYK11) where addresses/information did not marry up. Where the address was incorrect the majority of sites were updated by the auditor to assist with any follow-up work that maybe required;

Any asset defect found was photographed so the Auditor could make a determination on a priority allocation. All other non-conformances were only noted;

The auditor noted Code 55 services (vegetation in contact) but did not record Code 56 services (vegetation within the clearance space), as it would have involved recording most services where vegetation existed throughout the areas audited.

## 6. Conclusion

The specific objective of this audit was to determine whether or not AusNet Services is satisfactorily complying with the requirements of the Electricity Safety (Electric Line Clearance) Regulations 2010 S.R. No 47/2010, in particular with respect to inspection, vegetation clearances achieved and the ability of the electricity Company to complete all outstanding works prior to the commencement of the fire danger period.

As part of this Electric Line Clearance audit, AusNet services vegetation management (Select Solutions), provided ESV with an extensive electronic database covering the 6 feeders chosen by ESV to be audited. This was used as the base document to demonstrate the status at the chosen sites and the Company's intention for any future work.

The Auditor requested confirmation from AusNet Services that they intend to complete the pre-summer clearing by 1st December 2014 or prior to the declaration of the Fire Danger Period (estimated to be late December) but no reply was received. From the sites audited in the HBRA indications are that AusNet Services is nearing the end of their pre-summer cut and is achieving the regulatory requirements with good allowance for regrowth however the sample audited in the LBRA and LBRA Declared was not to the same standard as the spans were either marginally cleared, or require further work.

AusNet Services is achieving and maintaining clearance to the mains where it is responsibility. The clearances are in line with a 3-year cyclic cut.

The accuracy of Select Solutions' vegetation database for the HBRA is well maintained in relation to the description of the network assets and the clearances that exist in the field. It is also clear what spans have been inspected, cut and the work remaining to be completed. With the asset locations loaded onto the IPad along with the Camm Number supplied from the electronic database copy it allowed the auditor to easily find sites to be audited.

Services that were the responsibility of AusNet Services to clear were, in general, completed although with minimal clearances being achieved. You could establish that the vegetation had been cut back but it was not cut hard enough to maintain a 3-year code clearance. Limited work had been carried to clear services that were the responsibility of ORP's although from discussion with property occupiers they stated that they have received notices to clear.

In the Auditor's opinion AusNet Services vegetation preparedness for the forthcoming fire season is in line with their Electric Line Clearance Management Plans. The audit was carried out in the final stages of the lead up to the Fire Danger Period and the areas audited indicated that AusNet Services is well advanced with their pre-summer preparedness in the HBRA with good clearances being achieved. If the areas audited are representative of all AusNet Services operational area then they are in a good position for the commencement of the fire danger period.

## 7. Recommendations

It is recommended that:

- AusNet Services review the comments and notes contained in the attached audit result sheets and action the points raised by the Auditor, where appropriate;
- AusNet Services place more rigor in their program to achieve service clearances within their operational area;
- AusNet Services ensure their Vegetation Field Officers are taking into consideration the clearance space required for 56M / overhanging sites;
- AusNet Services consider reviewing their LV spreader policy as there are indications that the clips are starting to fail.

**Auditor's Signature:** *Ian J McDonald* **Date: 25th October 2014**

Ian J McDonald

## 8. Attachment – Database Line Clearance Field Audit 2014 – AusNet Services

## 9. Attachment – Photos Line Clearance Field Audit 2014 – AusNet Services