

2018 Bush Fire Mitigation and Electric Line Clearance Audit Final Report – AusNet Services Distribution

Contents

Table of Contents

1.	Audit Overview	2
1.1	Executive Summary:.....	2
1.2	Audit Context:	2
1.3	Audit Objective and Scope:.....	2
1.4	Audit Methodology:	2
1.5	Audit Duration and details:.....	3
1.6	Limitations:	3
2.	Audit Report – Bushfire Mitigation (Asset condition).....	3
2.1	Overview	3
2.2	Inspection Cycles – AusNet Services	4
2.3	Priority Coding – AusNet Services.....	4
2.4	Training and Competency of Asset Inspectors	4
2.5	Desktop review	4
2.6	Field Audit	5
2.7	Audit Summary and Recommendations	15
3.	Audit Report – Electric Line Clearance (Vegetation).....	16
3.1	Overview	16
3.2	Inspection Cycles – AusNet Services	16
3.3	Priority Coding – AusNet Services.....	16
3.4	Training and Competency of Asset Inspectors	16
3.5	Desktop review	17
3.6	Field Audit	17
3.7	Audit Summary and Recommendations	19
4	Acknowledgement:	20
5	Attachments:.....	20

1. Audit Overview

1.1 Executive Summary:

Energy Safe Victoria (ESV) engaged Electrix to conduct an Audit in the AusNet Distribution feeders to assess AusNet's compliance with the Electrical Safety (Bushfire Mitigation) Regulations 2013 and the Electrical Safety (Electrical Line Clearance) Regulations 2015.

Electrix conducted a Desktop review and Field audit in the selected area data sample and the findings are provided in this report.

The desk top analysis of Bush Fire Management (BFM) data in 5 zonesub feeders identified [redacted] notifications ([redacted] % of the total notifications) that are either outstanding or in process.

The BFM Field audit conducted on 218 poles has not identified any fault which requires immediate attention. The audit identified [redacted] new non-conformances, which makes it [redacted] % of the audited poles. These non-conformances have various priorities ranging from P30 to P6Y . Audit has not agreed with the findings of [redacted] of the closed notifications.

The desktop analysis of Electrical Line Clearance (ELC) data identified [redacted] % of the spans that were cut after the due date. The ELC filed audit has not identified any PT1 coded items which require immediate attention. The field audit identified [redacted] Non-compliances, which makes the non-compliance as [redacted] % of the audited spans. Code changes were recorded in [redacted] % of the spans. Field audit identified [redacted] spans with a PT180 code which require vegetation management in this year to avoid vegetation encroaching the clearance space. Most of these spans are in [redacted] which were scheduled for cut in November. At the time of audit spans were coded correctly.

Overall the asset management and vegetation management are good in AusNet distribution. Although some non-conformances were identified during the audit, no major defects which requires immediate attention were identified in BFM and ELC audits.

1.2 Audit Context:

Energy Safe Victoria (ESV) is Victoria's statutory independent electricity, gas and pipeline safety and technical regulator. It regulates the safety and technical compliance of energy supply, installations, appliances and pipelines. Each year ESV conducts field audits of Electric Line Clearance (ELC) and Bushfire Mitigation (BFM) compliance on Major Electricity Companies using qualified and experienced field organisations.

1.3 Audit Objective and Scope:

Bushfire Mitigation (BFM) Audit: Assess the AusNet Services' compliance with the Electrical Safety (Bushfire Mitigation) Regulations 2013 based on Desktop review and Field Activities.

Electrical Line Clearance(ELC) Audit: Assess the AusNet Services' compliance with the Electrical Safety (Electrical Line Clearance) Regulations 2015 based on Desktop review and Field Activities.

1.4 Audit Methodology:

- Desk top review and analysis of AusNet Services provided information
- Field Audits against the data provided
- Discussions with randomly selected inspectors regarding inspection process, methods, equipment and training/ competency.
- Analysis and detailed reporting

1.5 Audit Duration and details:

Data for the following six Zone Substation areas of AusNet Services Distribution Network was requested from the AusNet Services.

- Maffra Zone Substation
- Maffra North Zone Substation
- Bairnsdale Zone Substation
- Woori Yallock Zone Substation
- Officer Zone Substation.
- Belgrave Zone Substation

BFM Field audit was conducted in these Zone Substation areas for five days from 8 October 2018 to 12 October 2018.

ELC Field audit was conducted in these Zone Substation areas on 19 October 2018 and from 23 October 2018 to 26 October 2018.

Members of the Audit team are

- Electrix BFM Field Auditor: [REDACTED]
- Electrix ELC Field Auditor: [REDACTED]
- Electrix Project Manager: [REDACTED]

1.6 Limitations:

The audit was conducted based on the information and data provided by AusNet Services and conditions observed in the field on the day of the audit. The audit was conducted within the limitations of the scope of works in a professional manner by qualified auditors in accordance with generally accepted practices. The report is solely for Energy Safe Victoria's use only.

2. Audit Report – Bushfire Mitigation (Asset condition)

2.1 Overview

AusNet Services has supplied an excel sheet with notification and other required data of the below six Zone Substation areas for which BFM data has been requested by ESV. ESV has supplied a copy of AusNet Services Asset Inspection Manual.

- Maffra Zone Substation
- Maffra North Zone Substation
- Bairnsdale Zone Substation
- Woori Yallock Zone Substation
- Officer Zone Substation.
- Belgrave Zone Substation

Electrix has conducted BFM field audits in the following feeders from 8 October 2018 to 10 October 2018.

- Maffra Zone Substation
- Bairnsdale Zone Substation
- Woori Yallock Zone Substation
- Officer Zone Substation.
- Belgrave Zone Substation

AusNet Services compliance with the Electrical Safety (Bushfire Mitigation) Regulations 2013 was assessed based on Desktop review and Field Activities.

2.2 Inspection Cycles – AusNet Services

- Cyclic Inspection of all poles in HBRA: Maximum 37 months between inspections
- Cyclic Inspection of all poles in non-HBRA : Maximum 61 month interval between inspections
- Private Overhead Electric Lines HBRA : Maximum 37 months between inspections
- Private Overhead Electric Lines non-HBRA : Maximum 61 month interval between inspections

2.3 Priority Coding – AusNet Services

AusNet Services -Distribution follows the below priority coding.

FAULT, P30, P90, P180, P365, P900, P6Y

- FAULT : Any defect assessed, as an immediate risk to public safety must be reported immediately to CEOT as a Fault.
- Priority Target P30: Complete in 30 calendar days
- Priority Target P90: Complete in 90 calendar days
- Priority Target P180: Complete within 180 calendar days i.e. six months
- Priority Target P180: Complete within 365 calendar days i.e. one year
- Priority Target P 900: Complete within 365 calendar days
- Priority Target P 6Y: Complete within 6 Years

2.4 Training and Competency of Asset Inspectors

As part of the BFM audit a field visit was conducted with two Inspectors working on the AusNet Network, [redacted] i [redacted] and [redacted] (Trainee) was also working with [redacted]. A check was carried out on the ESI Network Passports and found all training to be current. The inspection vehicle, tools, equipment and work instructions were appropriate for the task and in working order. Electrix Auditor found that AusNet inspectors have a sound knowledge of the inspection processes, methods, equipment and training.

2.5 Desktop review

A desktop analysis was conducted on the below Zone Substation lines based on the data provided by AusNet services.

- Maffra Zone Substation
- Bairnsdale Zone Substation
- Woori Yallock Zone Substation
- Officer Zone Substation.
- Belgrave Zone Substation

The supplied data has both HBRA and LBRA notifications. Below table summarises the desktop review of the supplied data.

Zone Sub	Total Notifications with Required End date up to Sep 2018	HBRA Notifications with Required End date up to Sep 2018	Total Notifications in process / outstanding	HBRA Notifications in process / outstanding
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]
[redacted]	[redacted]	[redacted]	[redacted]	[redacted]

2.6 Field Audit

Electrix BFM Field Auditor: [Redacted]

Field Audit was conducted for 5 days from 8 Oct 2018 to 12 Oct 2018. 218 Sites were visited during the five days of field Audit in the 5 zone sub areas selected. All findings have been discussed and agreed with AusNet Services representative. New findings have been reported to AusNet Services representative.


The details are provided in the below table.








































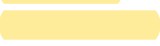































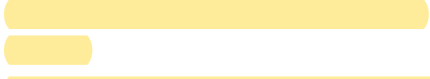


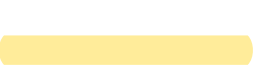

















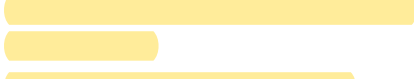

































Zone Sub	Total poles audited	Priority / Findings Agreed	Priority / Findings not Agreed	New Non-conformances identified
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Priorities / Findings not agreed: The following [Redacted] discrepancies were identified during the filed audit

[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]
[Redacted]	[Redacted]

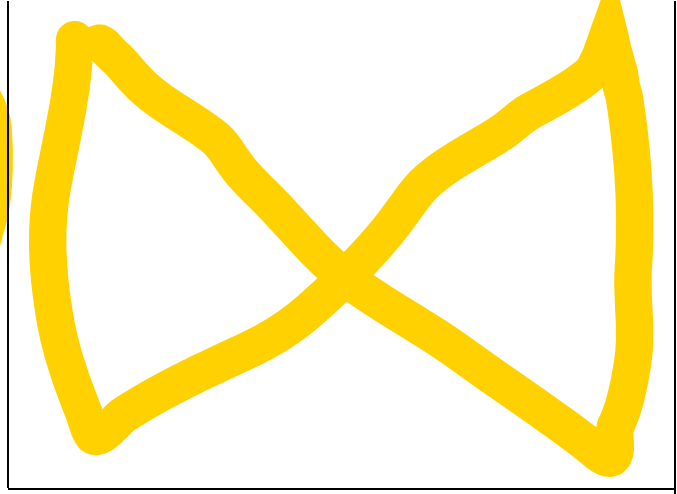
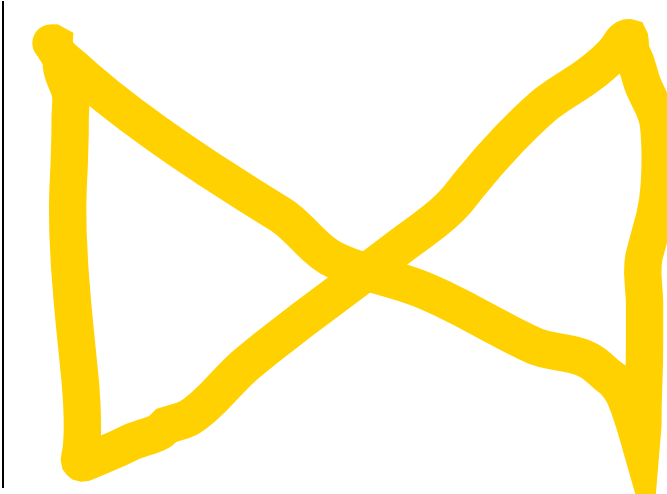
New Non-conformances identified:

 New Non-conformances were identified and the findings are listed below. Photos are available in the following pages.

Sl. No	Description	Feeder	Fire zone	New non-conformance identified	Priority for new items	Photo Tags
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						
						

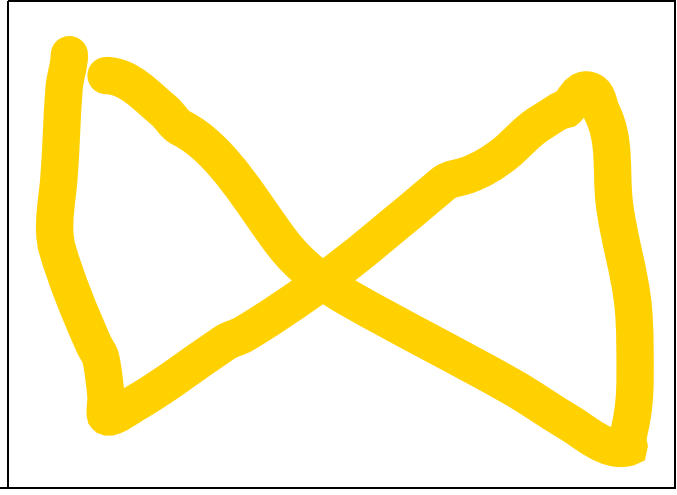
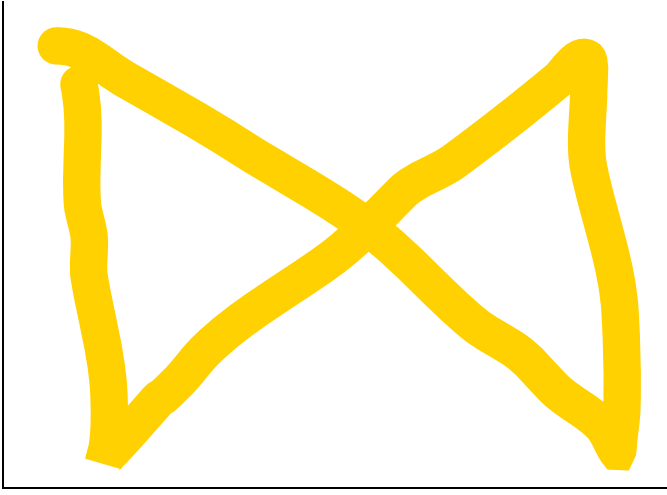
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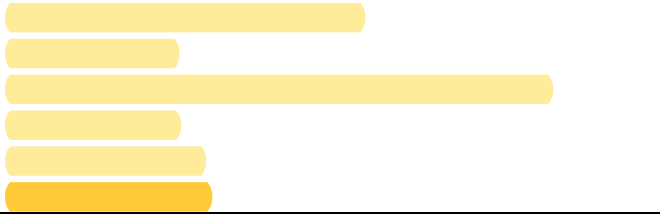
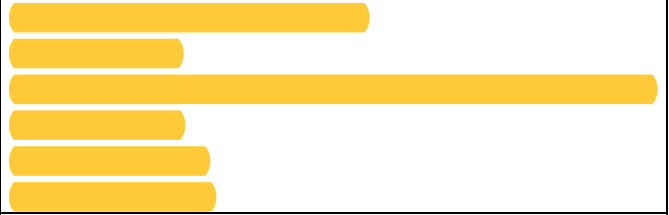
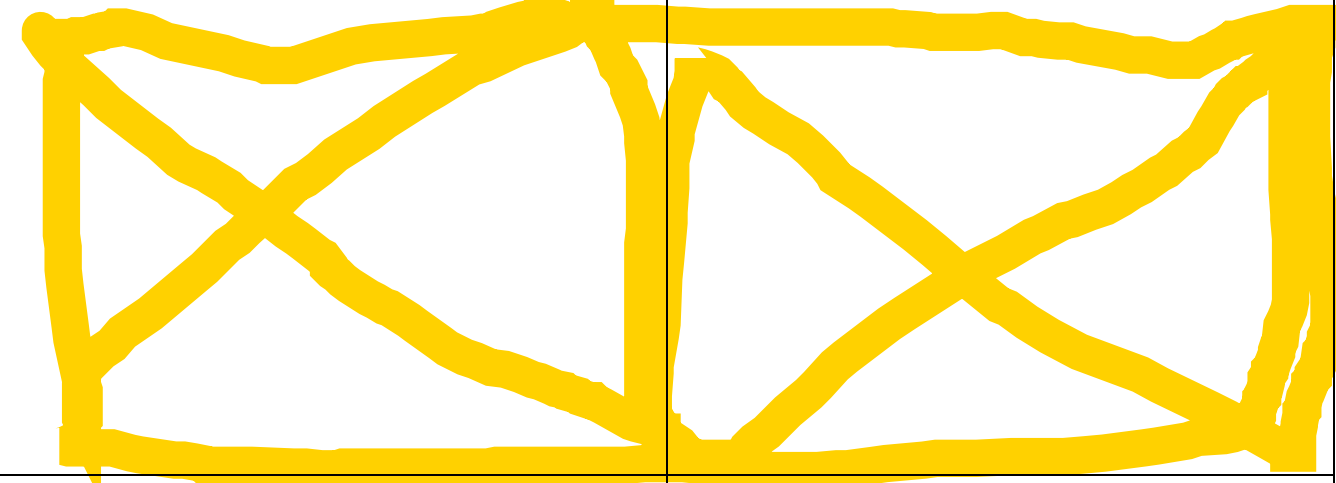

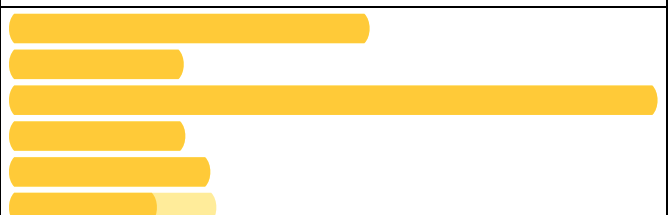
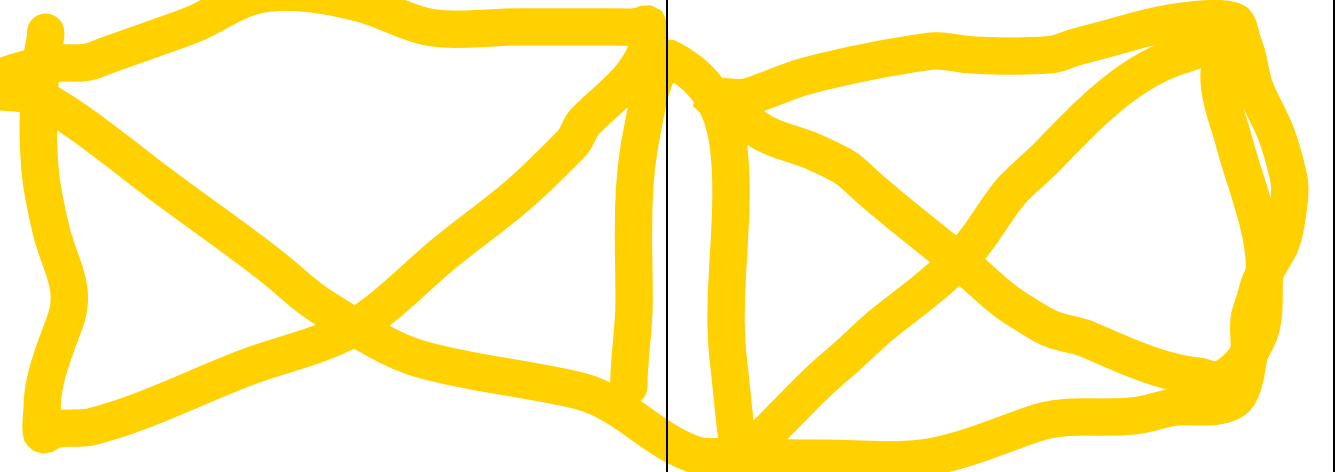


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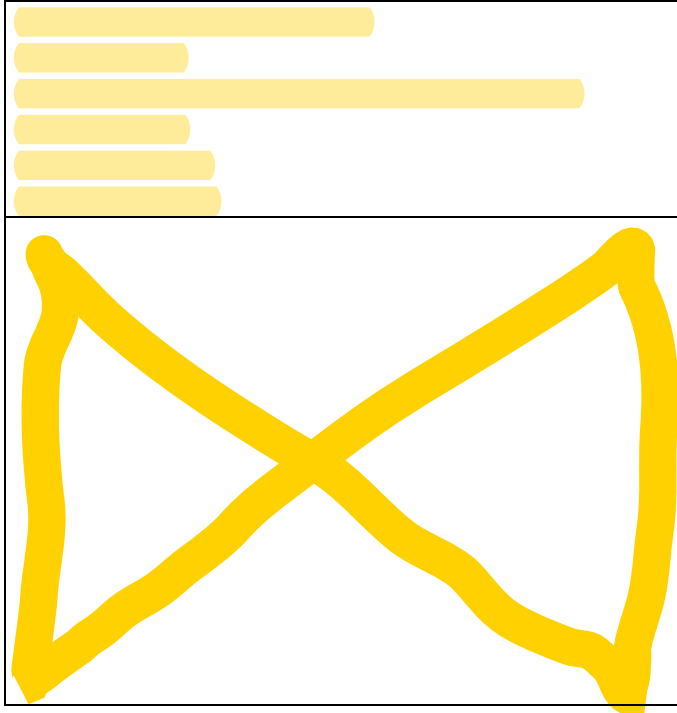
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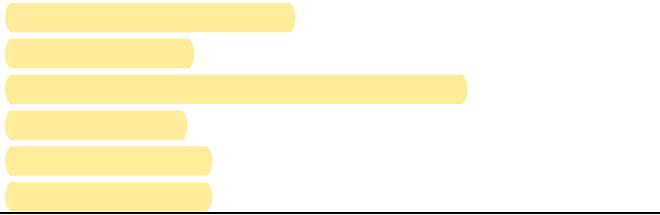
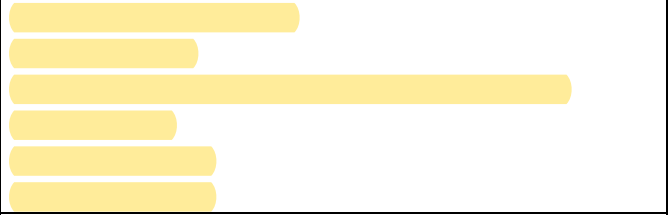
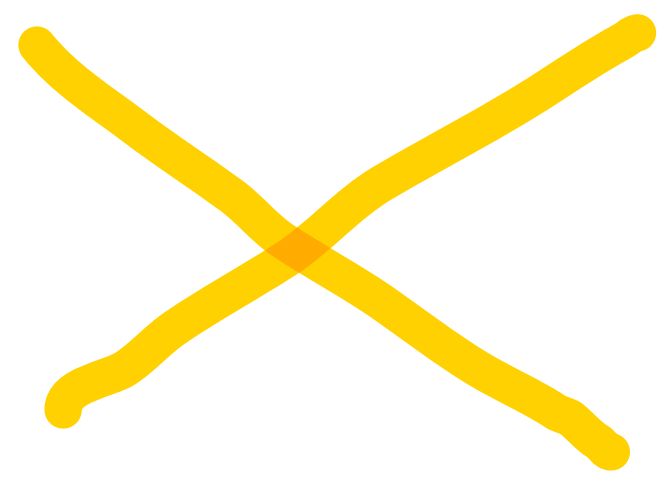
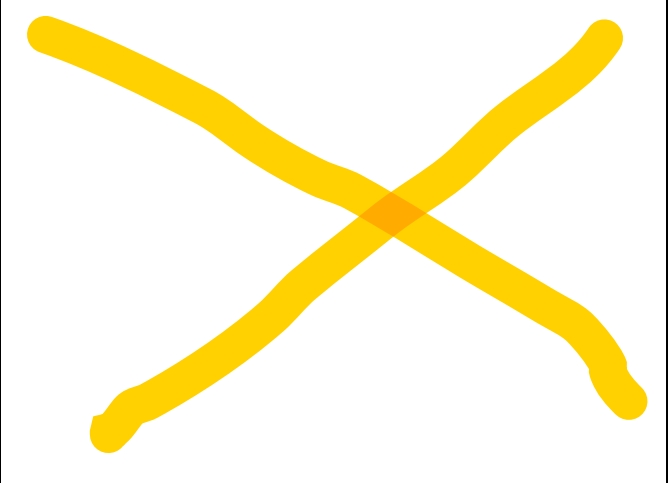
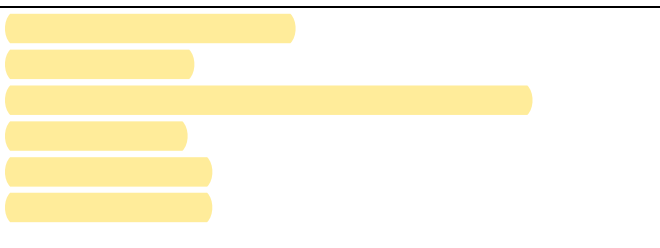
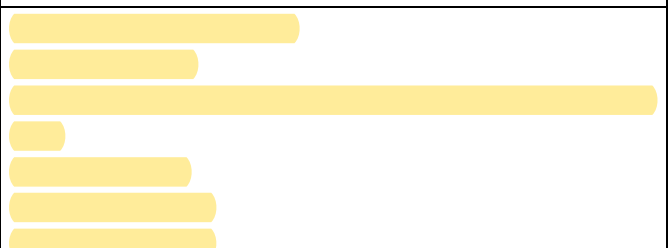
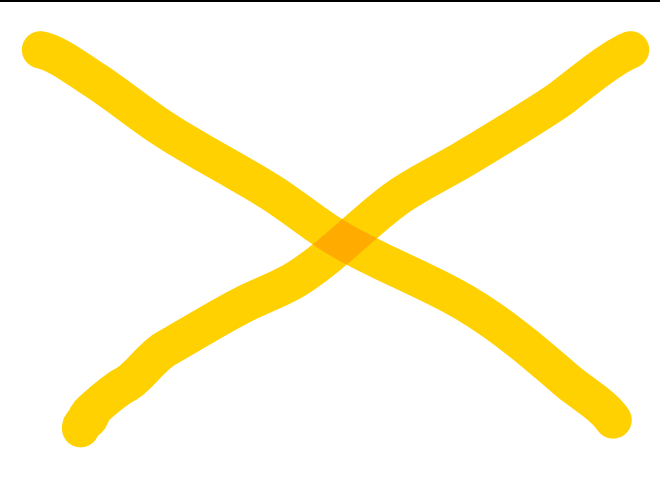
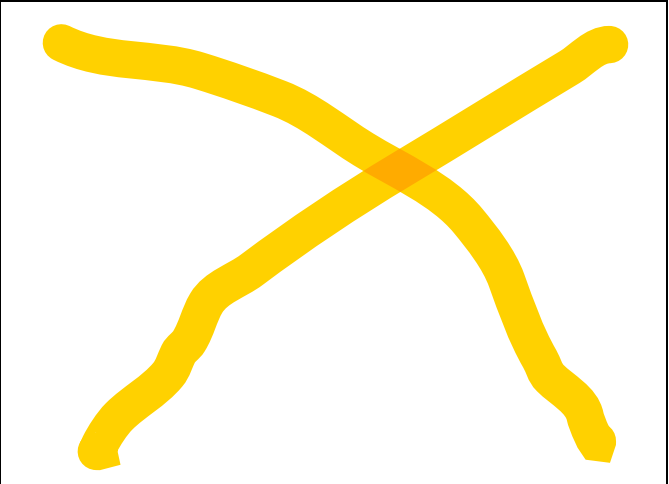
Zone Sub Feeder: MFA21-22



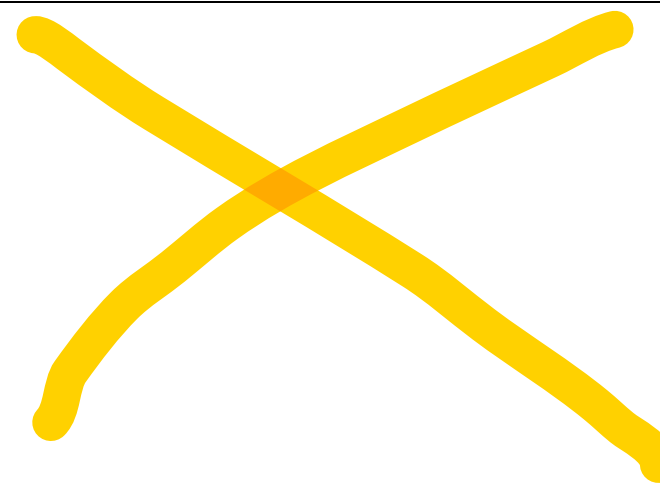
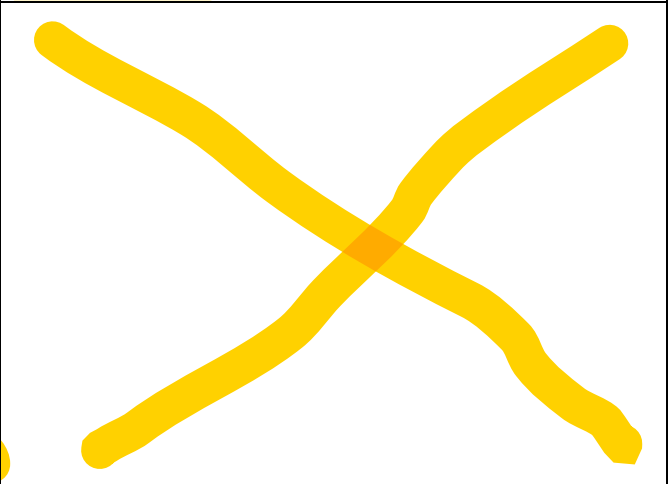
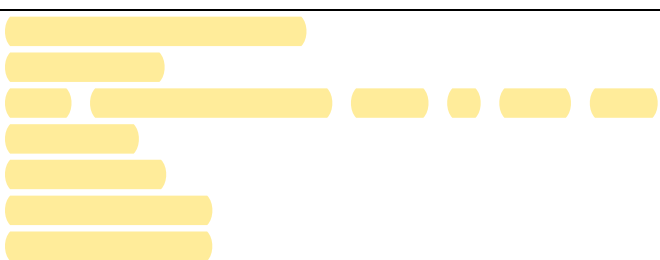
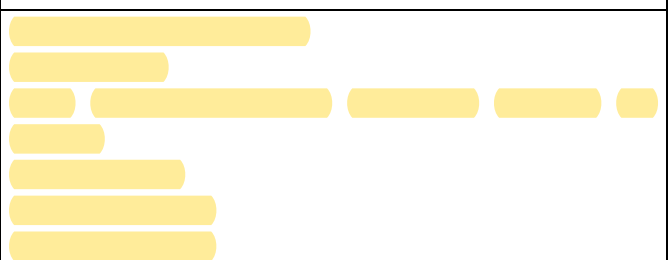
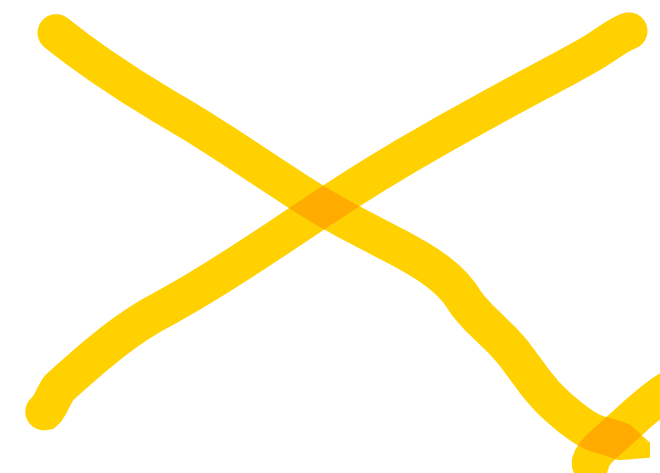
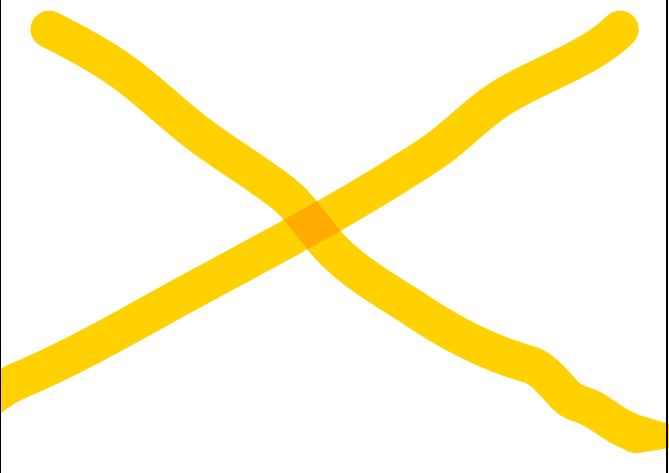
Zone Sub Feeder: MFA21-22





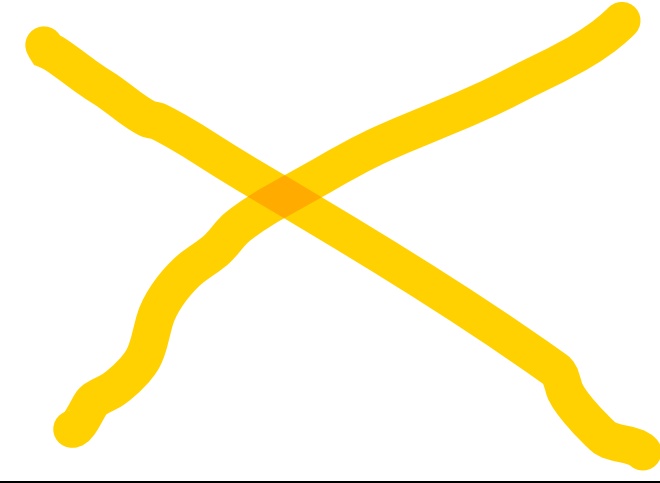
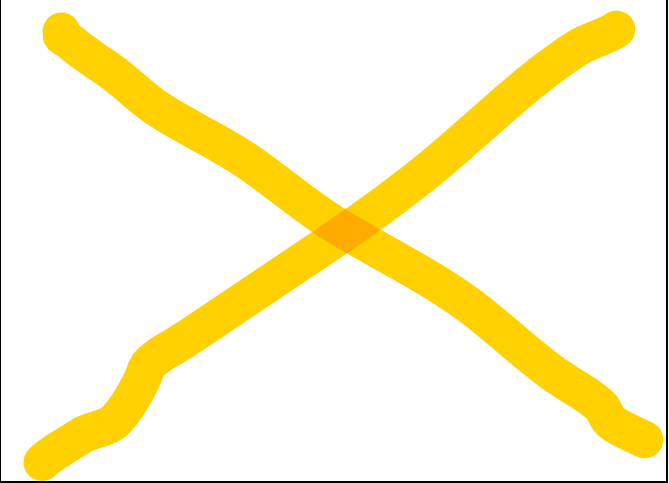
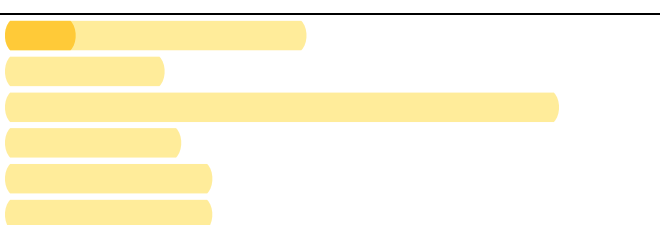
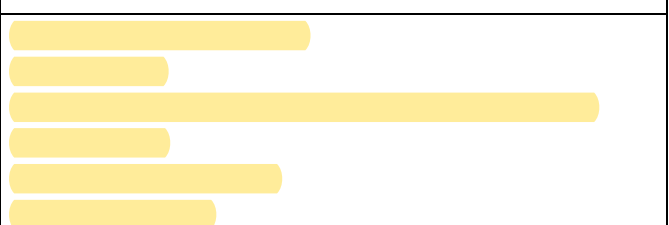
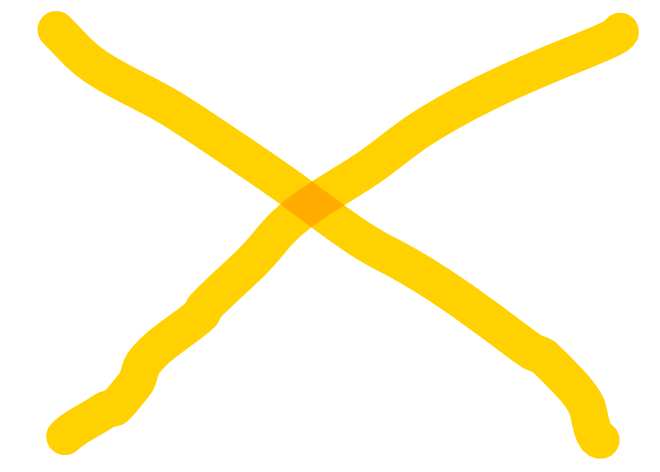
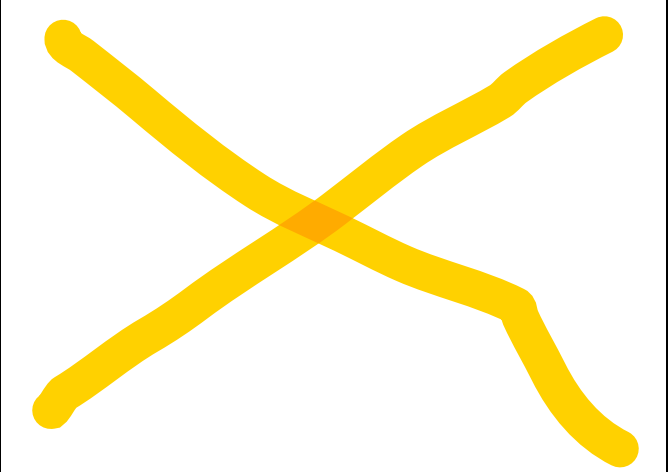
Zone Sub Feeder: BDL 8

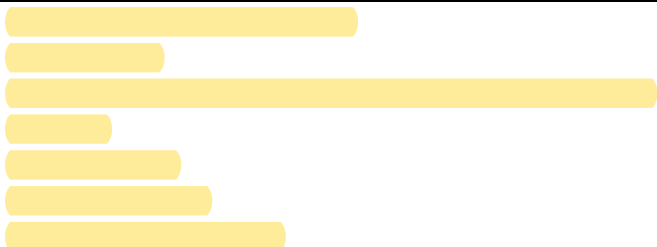
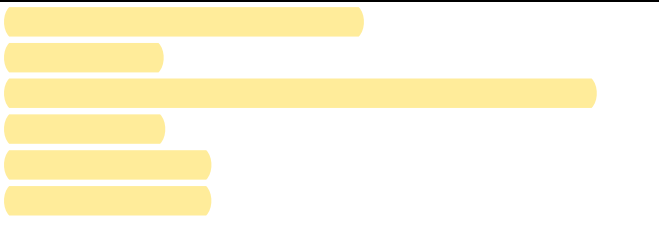
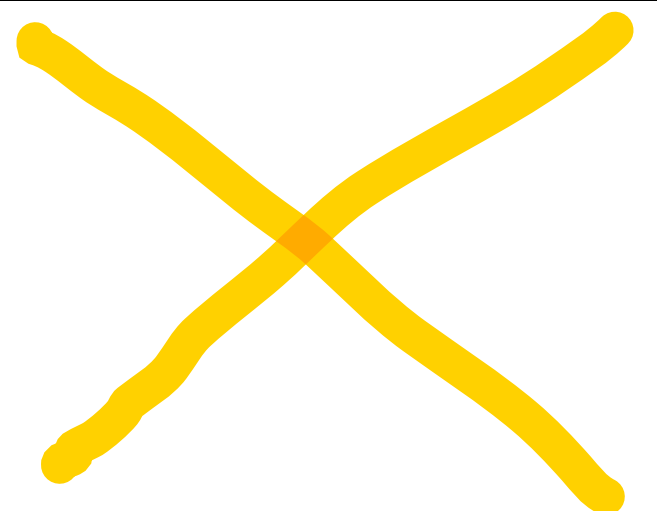
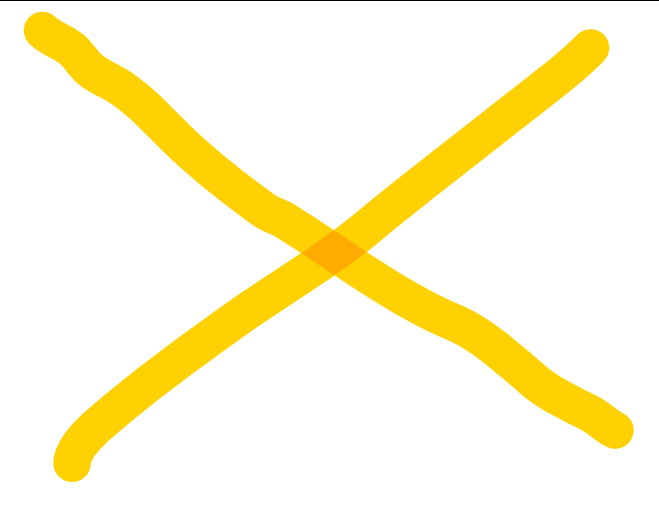
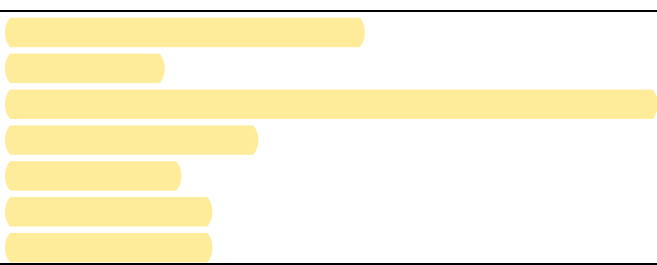

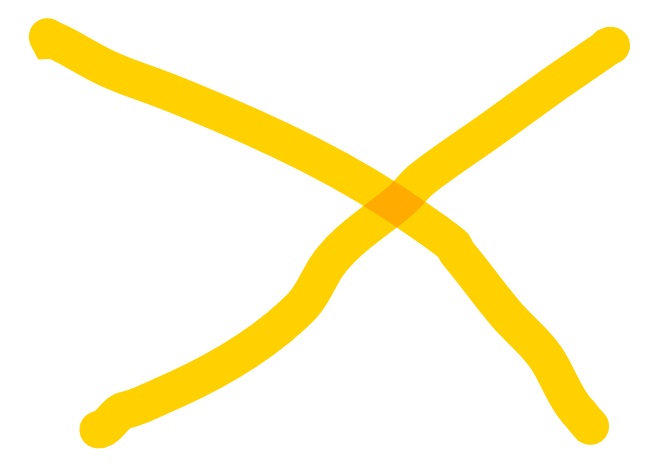
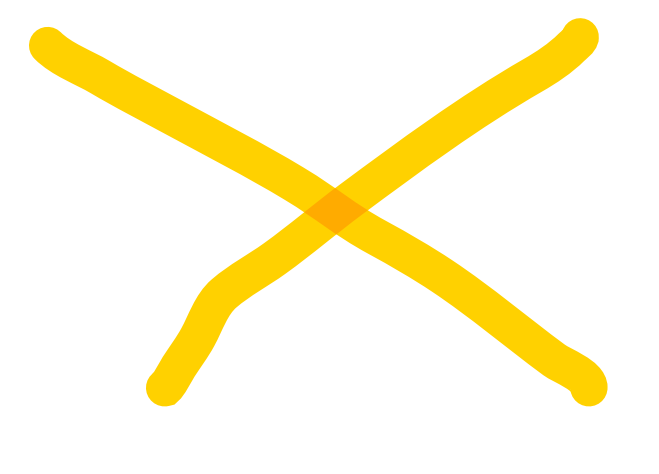
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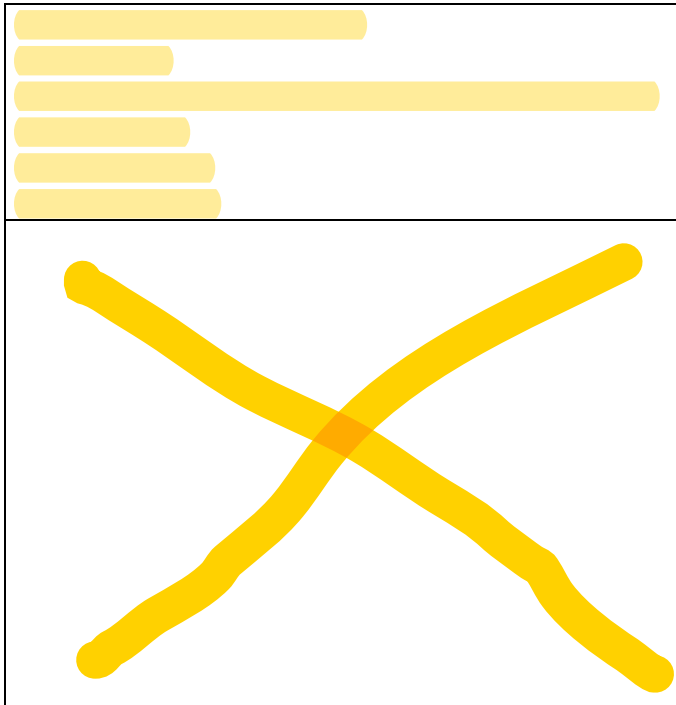
ZoneSub Feeder : OFR23

Zone Sub Feeder: BGE 22-24

Zone Sub Feeder: BGE 22-24



2.7 Audit Summary and Recommendations

Audit Summary:

Desktop review conducted on 5 Zone Sub feeders of AusNet identified [redacted] notifications ([redacted] % of the total notifications) that are either outstanding or in process. BFM Field audit conducted on [redacted] poles has not identified any faults which requires immediate attention. [redacted] new non-conformances were identified during the field audit, which makes it [redacted] % of the audited poles. These non-conformances have various priorities ranging from P30 to P6Y which are listed in the above pages. Findings were not agreed in [redacted] of the closed notifications.

Overall the asset management is good in AusNet Distribution. As described above even though some Non-conformances were identified during the audit, none of them are critical which requires immediate attention.

Recommendations:

AusNet may consider further training and audits to reduce the % of Non-conformances

3. Audit Report – Electric Line Clearance (Vegetation)

3.1 Overview

AusNet Services has supplied the vegetation management data and other required data of the below zonesub feeders, as requested by ESV.

- Maffra Zone Substation /Maffra North Zone Substation
- Bairnsdale Zone Substation
- Woori Yallock Zone Substation
- Officer Zone Substation.
- Belgrave Zone Substation

AusNet Services compliance with the Electrical Safety (Electrical Line Clearance) Regulations 2015 was assessed based on Desktop review and Field Activities.

3.2 Inspection Cycles – AusNet Services

As a minimum requirement HBRAs & LBRAs are assessed annually. Assessors are required to consider anticipated re-growth rates to ensure that identified pruning will achieve maintenance of the clearance space until the next scheduled assessment. Shorter inspection cycles are required if this cannot be achieved.

3.3 Priority Coding – AusNet Services

AusNet Services – Distribution uses the following Assessment codes - Ref: BFM 10 -05 & VEM 20-03

Assessment Code	Cutting Timeframe
PT1	1 day
PT30	30 days
PT180	180 days
PT365	365 days
PT720	No cutting required
RE (Reinspect)	There is some uncertainty whether or not vegetation may encroach prior to the next assessment cycle.
CC (Cyclic Clear)	The vegetation throughout the span (adjacent/below) is unlikely to require any action to maintain the Minimum clearance Space for a minimum period of 720 days.
PTM (Phantom)	Assigned for various reasons defined in Assessment Procedure VEM 20-03

3.4 Training and Competency of Asset Inspectors

During the filed audit, Electrix auditor had a conversation with AusNet Asset Inspectors [redacted] and [redacted] and noted the following.

Inspection process: Jsa (re assessed every site)

- Note any safety issues
- Note any ESR customers
- Any access requirements / pasT history
- ID Camm / lis number at both poles

Equipment used: Tablet with relevant data base available
Establish span length
Then review clearances for sag and sway in relation to span length.
Inspectors carry rangefinders and use that when required.

Inspectors then priorities a code in respect to vegetation and Clearance.

Training: AusNet Inspectors have qualifications as per AusNet and VESI requirements. They also receive scoping training every year prior to the start of the inspection cycle and receive refreshers as required.

3.5 Desktop review

From the feeder map supplied by AusNet, Electrix selected some areas in each Zonesub for auditing and AusNet supplied data for those areas. A desktop analysis was conducted based on the data provided and It was noted that the area selected by Electrix for auditing have not got any declared areas. Hence as per Electrix’s request some more area data (in BDL and OFR) which have declared areas was supplied by AusNet.

All the spans in the 5 Zone Sub Feeders for which data was received are in the HBRA areas.

The desktop analysis of the data is given below.

Feeder	Total Spans in requested area	Last inspection	Fire Risk	Declared area	Comments
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]
[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]	[REDACTED]

3.6 Field Audit

Field Audit was conducted in the selected zonesub feeders on 19 October 2018 and from 23 October 2018 to 26 October 2018.

Electrix ELC Field Auditor: [REDACTED]

370 spans were audited in 5 days and in general the vegetation management is good. Site location and spans were checked and agreed with the AusNet representative.

Photos are attached as a separate attachment. The audit results are tabulated below.

Field Audit overview

[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

The below AusNet Spans are Non-Compliant

Feeder	Ausnet Span Code	Declared Area	Fire Risk	LIS# - Pole 1	LIS# - Pole 2	Auditors Assessed span code(AusNet)	Comments If Non compliant	Photo
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	Photo
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

The below Shire Span is Non-Compliant

Feeder	Ausnet Span Code	Declared Area	Fire Risk	LIS# - Pole 1	LIS# - Pole 2	Auditors Assessed span code(AusNet)	Comments If Non-compliant	Photo
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]
[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]	[Redacted]

Auditor assessed codes are different from the AusNet assigned codes for the below spans.

Feeder	Declared Area	Fire Risk	LIS# - Pole 1	LIS# - Pole 2	Ausnet Span Code	Auditors Assessed span code(AusNet)
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██	██████
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██████	██████
██████	█	██	██████	██████	██████	██████

█ Spans out of the 370 spans audited were assessed with a different code, which makes it █% of the total spans audited.

The below table provides the number of spans with PT180 code in each Feeder, which requires vegetation management in this year to avoid vegetation encroaching the clearance space

Feeder	Spans with PT180 code
██████	██
██████	██
██████	██
██████	██
██████	██
██████	██████

3.7 Audit Summary and Recommendations

Summary: The desktop review on the supplied data identified █ of the spans that were cut after the due date. The filed audit has not identified any PT1 coded items which require immediate attention. █ Non-compliances were identified during the field audit which makes the non-compliance as █ of the audited spans. Code changes were recorded in █% of the audited spans.

Field Audit identified █ spans with a PT180 code which require vegetation management in this year to avoid vegetation encroaching the clearance space. Most of these spans are in ██████████ which were scheduled for cut in November. At the time of audit spans were coded correctly.

Overall the vegetation Management is good in AusNet distribution. Although some non-conformances were identified during the audit, none of them are PT1 coded as described above

Recommendations: Nil

4 Acknowledgement:

Electrix would like to acknowledge the support provided by AusNet Services representatives [REDACTED] (BFM), [REDACTED] (ELC) and Energy Safe Victoria representative [REDACTED] during the AusNet Distribution audit.

5 Attachments:

1. Audit database of all the BFM sites audited in AusNet services Distribution lines
2. Audit database of all the ELC sites audited in AusNet services Distribution lines
3. Original BFM Datasheets received from AusNet
4. Original ELC Datasheets received from AusNet
5. Photos BFM and ELC Audit