

Distribution Overhead Defect Handbook

Document No. MMI 0002

Amendment No. 3

30/04/25

Revision History

This standard has been re-written with changes in content. Major amendments are listed below:

- 'TB 0270 – Timber crossarm defect' written into MMI 0002
- Incorporation and clarification of bushfire defect prioritisation in line with changes to MMI 0034

This standard replaces amendment no 2. All changes are highlighted in this document with grey colouring.

Important Disclaimer

As the information contained in this publication is subject to change from time to time, Endeavour Energy gives no warranty that the information is correct or complete at the time of its use or is a definitive statement of procedures.

Endeavour Energy reserves the right to vary the content of this publication as and when required. You should make independent inquiries to satisfy yourself as to the correctness and accuracy of the content. Endeavour Energy is not liable to any persons in respect of anything done or not done by any such person in reliance, whether in whole or in part, on this document.

Copyright

This publication is copyright protected. No part of this document may be reproduced by any process without the written permission of Endeavour Energy, except as permitted under the Copyright Act 1968.

Contact Information

The latest version of this document and other standards, are located on Endeavour Energy's standards website located at:

<https://www.endeavourenergy.com.au/aspPortal/webengine/au/com/ee/asp/Standards/Standards>.

For any enquiries relating to the content of this document please contact the Standards Coordinator on 13 10 81.

Document Control

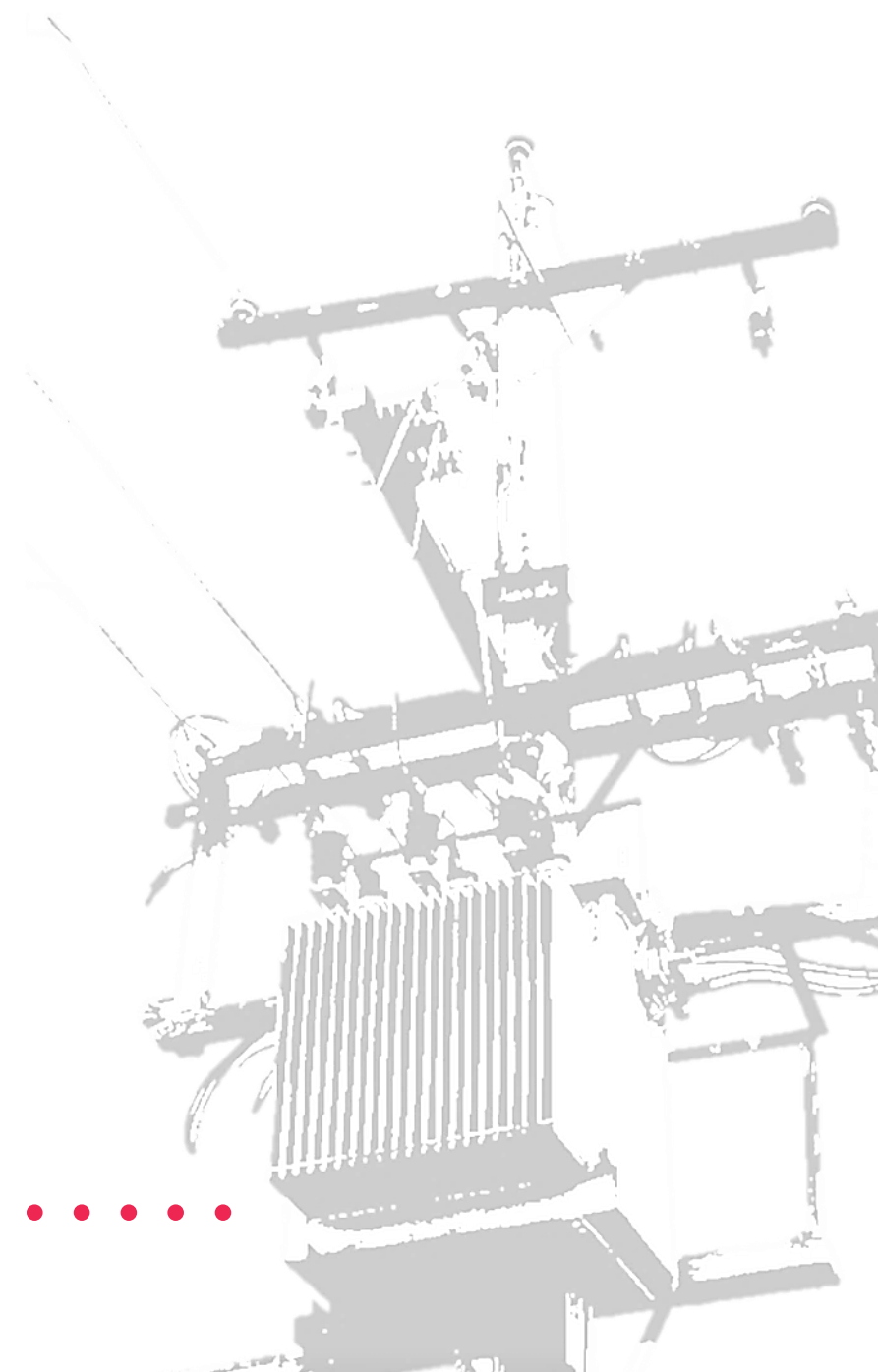
Documentation content coordinator: Asset Performance Manager

Documentation process coordinator: Standards Process Coordinator

Contents

1	Documentation Scope	5
2	References	5
3	Definitions and Abbreviations	6
4	General Requirements	7
4.1	Failure modes	7
4.2	Fault and Emergency Defects	7
4.3	Unassisted failed poles, columns and conductors	7
4.4	Pole Replacement Standard Jobs	7
4.5	Defect Priority	8
4.6	Bushfire Defect Priorities	9
5	Roles and Responsibilities	11
6	Conductor	12
7	Crossarm	28
8	Earthing	43
9	Hardware	45
10	Insulator	61
11	Pole	75
12	Service Mains and Connections	93
13	Streetlight	101
14	Substation	104
15	Switches (ABS, LBS, DOF)	115
16	Reinstated Poles	131

•		
•		
•		
•		
•		
•	17 Stay System	134
•	18 UGOH	139
•		



1 Documentation Scope

To set out the requirements for management of defects which are found within Endeavour Energy's overhead network to establish a uniformed approach to defect identification and prioritisation.

This document provides guidance on whether abnormalities found within the system are to be considered defects, the priorities in which these typical defects shall be treated, the data to be recorded and the replacement decision for these defects.

This document covers the typical defects found during the routine pole and line inspection processes, including the OLI, PSBI and TLI maintenance activities.

The document does not cover the inspection requirements of streetlight columns and pillars and any associated equipment.

The philosophy around defects, their priorities are given in SMI 124.

This document should be read in conjunction with MMI 0001, MMI 0012 and MMI 0034.

2 References

External Regulations

Electricity Supply Act 1995 (NSW)

Electricity Supply (Safety and Network Management) Regulation 2014

Work Health and Safety Act 2011 (NSW)

Work Health and Safety Regulation 2017 (NSW)

Company Policies and Procedures

Company Policy 9.2.5 – Network Asset Design

Company Policy 9.9.1 - Network Asset Maintenance

Company Procedure (Network) GAM 0006 – Notifying, Reporting and Conducting a post mortem on failed poles

Endeavour Energy Electrical Safety Rules

Company Standards

Mains Maintenance Instruction MMI 0001 – Pole and line inspection and treatment procedures

Mains Maintenance Instruction MMI0021 – Guide to rights and obligations for electricity mains located on private property

Mains Maintenance Instruction MMI 0034 – Pre-summer bushfire inspections

Earthing Design Instruction EDI 0001 – Earthing design risk assessment

Substation Maintenance Instruction SMI 124 – Maintenance data entry and defect prioritisation

3 Definitions and Abbreviations

Abbreviation	Meaning
OHEW	Overhead Earth Wire
UGOH	Underground Overhead Connection
HV	High voltage - a voltage exceeding or equal to 1000V AC.
LV	Low voltage - a voltage not exceeding 1000V AC.
PSBI	Pre-summer bushfire inspection

Term	Definition
Authorised Pole / Line Inspector	Person authorised according to Company Procedure GAM 00089, with pole and line inspection qualifications, trained, accredited and authorised by Endeavour Energy to carry out inspection duties in accordance with this instruction. Hereafter is referred to as “inspector”.
Bushfire Defect	A defect type, which has been assessed as having the ability, if left to deteriorate, to potentially produce an arc in a Bushfire Risk Area , and has a sufficient likelihood to warrant increased priority.
Bushfire Danger Period	The statutory Bushfire Danger Period is defined by the Royal Fire Service which is nominally between 1st of October to 31st March each year but may vary from year to year and in specific locations due to local conditions.
Bushfire Prone Land	As defined by the NSW Rural Fire Service, including buffer zones and specified on the Bushfire Prone Land Maps stored on the Endeavour Energy GIS.
Bushfire Risk Area	Areas identified by Endeavour Energy, within our network area, where PSBI of network hardware are to be carried out at the specified frequency. These areas are calculated based on an economic risk-based calculation and use a number of third-party inputs.
Condemned Pole	Poles that do not satisfy the serviceability criteria as specified in the Mains Asset Standard MMI 0001.
Consumers Mains	Conductors between the point of supply and the main switchboard, forming part of an electrical installation. Consumers' mains may be overhead, underground or within a structure.
Minimum Vegetation Clearance	The minimum clearance area surrounding an asset which as far as reasonably practicable is kept free of all vegetation in accordance with the requirements of the Vegetation Standard.
Point of Supply	Junction of an electricity distributor's conductors with consumer's mains. A physical break is not required to constitute a junction.
Pole Top and Associated Hardware	The top of electrical poles and towers, associated hardware such as crossarms, insulators and stay wires and attached electrical assets, such as drop-out fuses or air break switches.
Vegetation Standard	Refers to MMI 0013.

4 General Requirements

This document has been developed in conjunction with RCM principles, regional experience and risk analysis.

This document is to be referenced when raising defects, to ensure consistency between defect periods and also the information to be included when raising a defect.

4.1 Failure modes

The following sections detail the common identified failure modes for various assets inspected during the OLI/GLI, PSBI and TLI maintenance processes.

For the failure modes listed in the following sections, the listed 'Component', 'Failure Type' and 'Cause' are to be used. However, it is noted that every possible failure is not listed, nor every cause of failure. As such, an 'Other' option will be made available, for free text input to be used to describe any anomalies. However, this is to be used sparingly, and its usage will be monitored to continue to update the document and Endeavour Energy's asset management systems.

Where the 'Other' option is selected, detailed information about the failure mode must be included in the Work Order Description.

4.1.1 Defect Source

A defect source must be recorded in the "Reference Codes" section of Ellipse. For example, defects found during the PSBI process, must be labelled with 'PSBI', and OLIGLI with 'OLIGLI'.

4.2 Fault and Emergency Defects

'Fault and Emergency (F&E)' defects differ from the 'Immediate' defects detailed in the rest of this standard. F&E defects have already reached a failed-state, while immediate defects pose a risk of an imminent failure. Immediate defects present an imminent risk of failure, that has a potential to impact on:

- The safety of staff or customers;
- The environment;
- Loss of supply to customers;
- Imposes an unacceptable operational constraints on the network.

Due to the nature of F&E work, not all information may be known, however, as much information needs to be recorded where it can be gathered, in line with the requirements of the following sections.

4.3 Unassisted failed poles, columns and conductors

If a pole, column or conductor is found to have failed, the notification, process and standard job recording detailed in GAM 0006 must be followed.

4.4 Pole Replacement Standard Jobs

Due to the number of pole replacement workorders, the following table details all pole workorders, instead of being listed in the following sections.

MMI 0002 – Distribution Overhead Defect Handbook

Construction	Std Job	
	Defect at ground line	Defect at Pole head
Sub pole/recloser/voltage regulator replacement	POLGAA	POLHBA
LBS/ABS pole replacement	POLGAB	POLHBB
HV pole term/UGOH replacement	POLGAC	POLHBC
HV pole pin replacement	POLGAD	POLHBD
HV pole shackle replacement	POLGAE	POLHBE
LV pole pin replacement	POLGAF	POLHBF
LV pole shackle / term replacement	POLGAG	POLHBG
HV/LV pole pin replacement	POLGAH	POLHBH
HV/LV pole shackle replacement	POLGAI	POLHBI
HV/LV pole termination replacement	POLGAJ	POLHBJ
Service / Stay / SL pole replacement	POLGAK	POLHBK
Transmission Poles	1POLE	
Nailed Pole	EOLPLN	

4.5 Defect Priority

The following sections detail the standard priorities which should be used when raising the applicable defects that are in line with the system detailed in SMI 124. However, if there is local evidence which suggests that a higher priority defect must be raised, then it is the responsibility of the person doing the inspection to do so. The following situations will require a shorter priority than those listed in the following sections:

- A defect that causes clearances to be compromised;
- A defect that could cause a fire;
- A defect that could cause a safety issue.

The SAP related defect priorities are displayed below and will be superseded by those in SMI 124 upon amendment of that instruction. Priority definitions across the relevant Maintenance Instructions are detailed in SMI 124 & MMI 0013.

Defects identified by the Pole Assessment Officer (OLI/GLI) during Endeavour Energy's inspection programs (such as PSBI, OLI/GLI or TLI) may be reviewed with consideration of long-term condition data. If the defect has been shown to not be degrading (no change to condition) over previous years then the defect priority may be changed.

MMI 0002 – Distribution Overhead Defect Handbook

SAP Priority Selection	Priority Explanation	
	Rectification Timeframes	Defect Examples
2 – Urgent – High	Immediate/48hr/1 Week	Defects representing immediate hazards and safety risks
6 – General – High	Up To 1 Month	Timeframes considerate of degradation rates, ability to package works & network reliability impacts Note: Immediate re-inspect required where rectification timeframes are exceeded
7 – General – Medium	3-6 Months	
8 – General – Low	12-18 Months	
9 – General – Observation	N/A	Observation 'defects' are to left open until remediated and packaged with other localised works.

4.6 Bushfire Defect Priorities

Network asset defects shall be rectified within the assigned defect prioritisation period (in this document). The following table provides reprioritisation requirements for rectification of defects classed as 'bushfire defects'.

Aerial Inspection Type	Defect Status	Rectification Action	
		Within Bushfire Danger Period	Outside of Bushfire Danger Period
Annual (1 Year) Map Cycle	Defects not due	Immediate Priority / Fault & Emergency ¹	Per MMI0002 Priority
	Defects overdue		
Biennial (2 Year) Map Cycle	Defects not due	Per MMI0002 Priority	
	Defects overdue	Immediate Priority / Fault & Emergency	

Notes:

1. Annual (1 Year Map Cycle) identified defects found up to 14 days prior to the declared Bushfire Danger Period may be treated as either F&E or as per the priority in this document until the official start of the Bushfire Danger Period. At the commencement of the Bushfire Danger Period all such defects are to be classified as immediate and treated as Fault and Emergency works.
2. For clarity, there is no difference in actions between bushfire defects found on private networks vs our network – refer to MMI 0021 and WAE 2039 for more information.

Bushfire Defect 'Immediate Priority' Process:

For bushfire defects identified during a Bushfire Danger Period within an **annual map cycle**, the following is to occur:

1. The Distribution, Transmission or Operations Manager for the relevant area is to be immediately notified by phone.
2. A report shall be provided to the relevant Distribution, Transmission or Operations Manager within 24 hours of the notification. The report must include an aerial location overview map, a detail asset location map and a defect labelled image.
3. The report shall be reviewed by an OLI/GLI auditor within 24 hours of receipt regarding compliance to MMI 0002, regarding defect type, location, priority and bushfire status (e.g. confirm the defect is a true bushfire defect as per the standards);
4. If the defect is deemed to have been correctly classified as a bushfire defect, the defect shall be given a priority of immediate and treated as Fault and Emergency works.

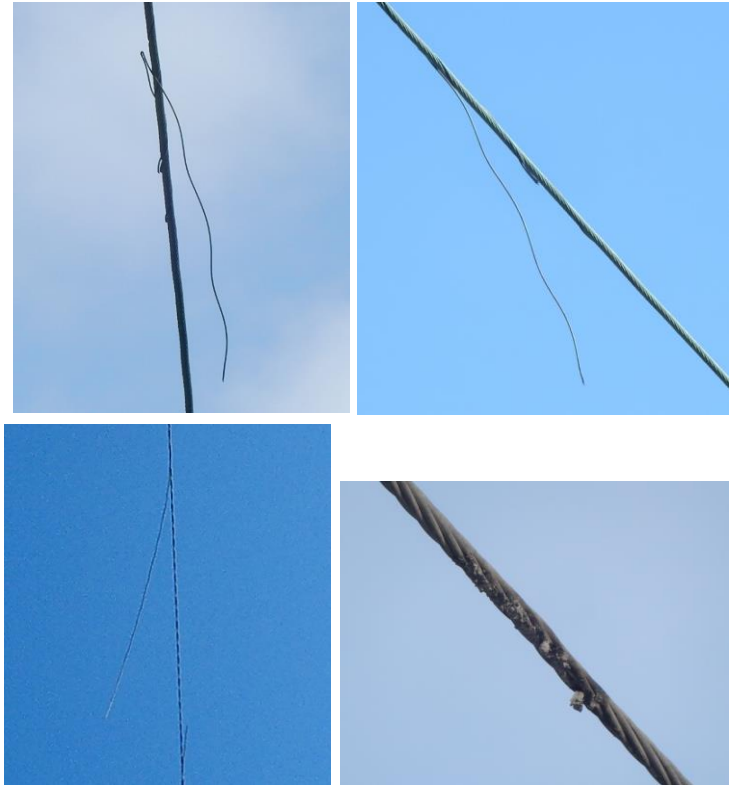
-
-
- **MMI 0002 – Distribution Overhead Defect Handbook**
-

For clarity, bushfire defects identified on assets in areas assigned inspection frequencies greater than annual (i.e. biennial or greater) shall not be considered a bushfire defect until they become overdue based on the standard rectification time-period outlined in this Standard and are within the Bushfire Danger Period.

5 Roles and Responsibilities

Role	Authority and Responsibilities
General Manager Future Grid & Asset Management	• Approving this instruction; • Delegating any of these authorities and responsibilities to the Head of Asset Planning & Performance.
Head of Asset Planning & Performance	• Approving this instruction for minor changes and making recommendations to General Manager Operations for major changes in respect to this instruction.
Asset Performance Manager	• Keeping the contents of this instruction up to date.
Manager Major Contracts	• confirming that the inspectors are aware of their responsibilities under this instruction; • Verifying that all inspectors have been suitably trained; • Implementing this instruction, • Keeping the Asset Performance Manager informed of any factors that may prevent the acceptance of responsibility for its full implementation; • Initiating the process to update the data capture tool in accordance with any changes specified in this standard; • Verifying that the inspection details are entered into Ellipse, as set out in the contract; • Updating the data capture tool in accordance with any changes specified in this standard; • Keeping the training documentation associated with the data capture tool up to date.
Pole and Line Inspector	• Carrying out all of the procedures of this instruction, appropriate to each pole examined; • Seeking clarification of this instruction, as required, from the Asset Performance Manager; • Confirming that all poles covered by each map are fully inspected in accordance with this instruction. • Referring poles to the Asset Performance Manager for a second opinion in the event of uncertainty about serviceability
All Endeavour Energy Employees	• Working in accordance with local and statutory requirements; • Upholding a high level of public safety; • Working in accordance with Endeavour Energy's Electrical Safety Rules; • Recording maintenance and test data in Endeavour Energy's electronic databases;

6 Conductor

Defect Description	Defect Photo	Task Details
<u>Conductor - Broken or Damaged</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Strand(s) of the conductor of have broken. - Physical separation of the conductor.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR) - Streetlight Conductor (1SLCDR)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Broken (BR)
<u>Cause</u> - Deterioration (DG) - Foreign Objects (FO)		
<u>Scope of Rectification Works</u> Repair / joint conductor if possible, otherwise replace the span of the conductor.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Conductor - Major Rust / Corrosion</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Conductor deterioration, showing signs of pitting and rust. - Previously considered a Category 4 or 5.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR) - Streetlight Conductor (1SLCDR)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Damaged (major) (D3)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Conductor to be replaced.		

Defect Description	Defect Photo	Task Details
<u>Conductor - Minor Rust / Corrosion</u>		<u>Priority</u> No Defect
Indicators: - Conductor showing slight signs of deterioration: whereby there is surface rust on the conductor. - Previously considered a Category1-3.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> N/A
		<u>Component</u> N/A
		<u>Failure Type</u> N/A
		<u>Cause</u> N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Conductor Clearances - Compromised Due to Foreign Objects</u>	 	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Phase to phase separation compromised due to foreign objects being attached to the mains or laying across the mains.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR)
		<u>Component</u> - Conductor (C1)
	<u>Failure Type</u> - Clearance Compromised (CL)	
	<u>Cause</u> - Foreign Objects (FO) / Vermin (VN)	
<u>Scope of Rectification Works</u> Remove object.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Conductor - Clearances to Structures Are Compromised</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Clearances to buildings or structures have been compromised due to unauthorised erection of structures or buildings. - Storage of earthworks beneath powerlines. - Ground level has been raised beneath powerlines.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Encroachment on Easement (1ENCRO)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Clearance Compromised (CL)
		<u>Cause</u> - Unauthorised attachment (ER) / Altered ground level (ER)
<u>Scope of Rectification Works</u> Raise issue with owner of the offending construction. If the altered ground level is temporary. Have this removed immediately. If this is a permanent construction, contact the owner and work out a solution.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Conductor – Ground Clearances Compromised</u>	Services Refer to Drawing 011985. Mains MDI 0031 Clause 5.1.	<u>Priority</u> Refer to MMI 0001 for priority based on clearance encroachment
Indicators: - Conductor ground clearance has been reduced due to construction issues. - If no other cause for conductor clearances issues can be found, this failure mode must be used. Note: Refer to MDI 0031 for required ‘minimum clearance in-service” ground clearance values for various voltage levels.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Low Conductor High Voltage (1LWCOH) - Low Conductor Low Voltage (1LWCOL) - Low Conductor Street Light (1LWCOS) - Low Conductor Service Wire (1LWCOW)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Clearance Compromised (CL)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> The cause of the clearance issue is to be investigated. Possible rectification is restringing, removal of encroachments, redesigning span.		

MMI 0002 – Distribution Overhead Defect Handbook

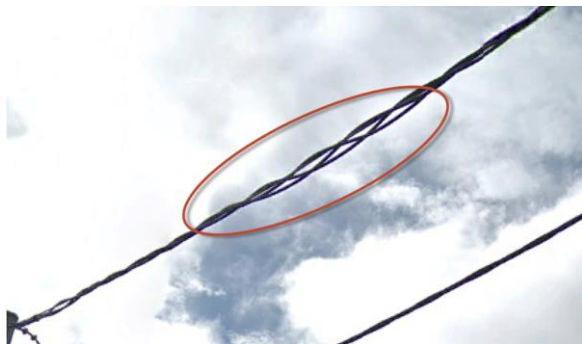
Defect Description	Defect Photo	Task Details
<u>Service Conductor – Overtension</u>	-	<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Service Mains conductor is over tensioned and causing damage to connection/POA.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Service Conductor (1SECDR)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Clearance Compromised (CL)
		<u>Cause</u> - Overloaded (OV)
<u>Scope of Rectification Works</u> The cause of the tension issue is to be investigated, whether its pole movement or not enough slack in span.		

Defect Description	Defect Photo	Task Details
<u>Conductor - Obsolete</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Excess conductor or conductor hanging, which is not connected to mains.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR) - Service Conductor (1SECDR) - Streetlight Conductor (1SLCDR)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Obsolete (OB)
		<u>Cause</u> - Obsolete (OB)
<u>Scope of Rectification Works</u> Remove conductor.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Mains - Vegetation Clearance Breached</u>		<u>Priority</u> Refer to MMI 0013
Indicators: - Bare conductors that are in contact with vegetation; - Covered conductors that are touching heavy branches that are likely to cause insulation damage to the conductor; - Branches laying across bare mains; - Branches applying downward pressure to services creating over-tension.		<u>Bushfire Defect</u> Refer to MMI 0013
		<u>Standard Job</u> Endeavour Energy Responsibility - Tree Trimming (1TRET) Customer Responsibility - Customer Vegetation (1VEGCU)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Obstructed (OS), Clearances Compromised (CL),
<u>Cause</u> - Vegetation (VE) / Object Falling (VE)		
<u>Scope of Rectification Works</u> For defects on Endeavour Energy mains, raise vegetation trimming workorder.		

Defect Description	Defect Photo	Task Details
<u>CCT - Insulation Damaged</u>		<u>Priority</u> No Defect
Indicators: - Cracking of the insulation on CCT conductors.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
	<u>Cause</u> - N/A	
<u>Scope of Rectification Works</u> No action required.		

Defect Description	Defect Photo	Task Details
<u>Bundled Conductor - Cable Loose</u>	<u>High voltage (HVABC)</u>  <i>(Note the above is not a defect)</i> <u>Low voltage (LVABC)</u> 	<u>Priority</u> SAP Priority 9 Observation
		LV – Not a defect
<u>Bushfire Defect</u> No		
<u>Standard Job</u> - HV Conductor (1HVCDR)		
<u>Component</u> - HVABC Attachment (AT)		
<u>Failure Type</u> - Loose (LO)		
<u>Cause</u> - Deterioration (DG)		
<u>Scope of Rectification Works</u> Span will need to be re-strung.		

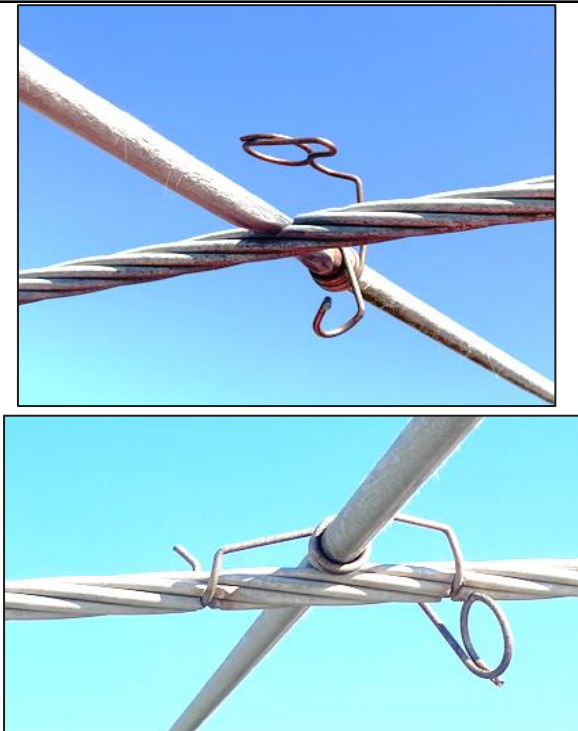
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>LVABC - Insulation Damaged</u>	 	<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Conductor can be seen through the XLPE insulation. - Defect applies to both LVABC services and mains.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - Service Conductor (1SECDR)
		<u>Component</u> - Conductors (LVABC) (C3)
		<u>Failure Type</u> - Exposed (EX)
		<u>Cause</u> - Abrasion (AB) - UV Damage (UV)
<u>Scope of Rectification Works</u> Replace conductor.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Spreader - Deteriorated</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Spreader damaged or broken. - Spreader does not have a "smooth" appearance.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Install LV Spreader (1LVSPR)
		<u>Component</u> - Spreader (SP)
		<u>Failure Type</u> - Deteriorated (DE)
		<u>Cause</u> - Degradation (DG)
<u>Scope of Rectification Works</u> Replace spreader.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Spreader – Damaged Conductor</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Spreader has caused damage to the conductor. - Spreader clips have caused damage to the conductor.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Damaged (Major) (D3)
		<u>Cause</u> - Degradation (DG)
<u>Scope of Rectification Works</u> Repair / joint conductor if possible, otherwise replace the span of the conductor. Reattach spreader clips if possible, otherwise replace clips.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Spreader - Out of Alignment</u>		<u>Priority</u> No Defect
Indicators: - Spreader is not flat across all phases. - Spreader is sitting diagonally.		<u>Bushfire Defect</u> No Defect
		<u>Standard Job</u> No Defect
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Spreader - Missing</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Where a spreader should exist, and it doesn't. Refer to MDI 0031 for spreader requirements.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Install LV Spreader (1LVSPR)
		<u>Component</u> - Spreader (SP)
		<u>Failure Type</u> - Missing (MI)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Install any missing spreaders on the span.		

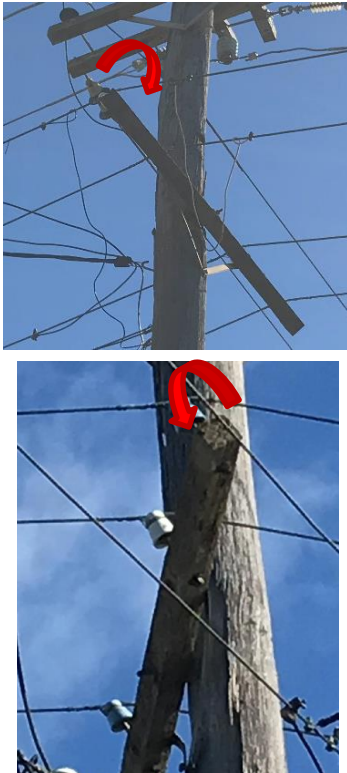
7 Crossarm

Defect Description	Defect Photo	Task Details
<u>Crossarm – Loose (Nut Missing)</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - No Nut on kingbolt through crossarm		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Hardware (1LVHAR) - Replace HV Hardware (1HVHAR) - Transmission Hardware (1TRHAR)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Missing (MI)
		<u>Cause</u> - Fittings (FI)
<u>Scope of Rectification Works</u> Replace securing nut. Call and advise Local Operations Manager of defect and priority.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm - Loose</u>		<u>Priority</u> SAP Priority 8 12 Months
Indicators: - Gap between crossarm and pole, with daylight able to be seen. - Nut still on kingbolt		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LV Hardware (1LVHAR) - Replace HV Hardware (1HVHAR) - Transmission Hardware (1TRHAR)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Kingbolt (KG)
		<u>Scope of Rectification Works</u> Tighten kingbolt.

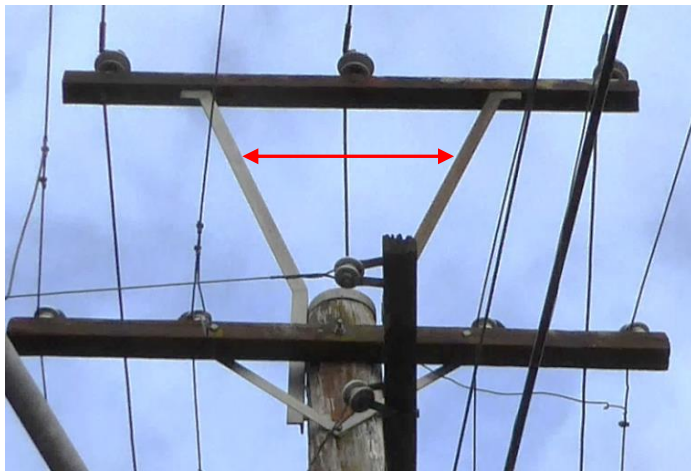
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm - Twisted</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Crossarm has rotated and no longer parallel with ground. - Wires are under high tension		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Hardware (1LVHAR) - Replace HV Hardware (1HVHAR) - Transmission Hardware (1TRHAR)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Twisted/Bent (TW)
<u>Cause</u> - Broken (BR) / Damaged Fittings (CI) / Overloaded (OV)		
<u>Scope of Rectification Works</u> Re-orientate crossarm and replace the braces if damaged. Tension of the conductor between termination points needs to be re-assessed, such there is no overloading.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm Braces – Buckled, Damaged or Missing</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Crossarm braces are significantly buckled/damaged, warped. - Minor damage to braces not a defect NOTE: One missing brace on a two-brace construction is <u>not</u> considered a defect.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LV Hardware (1LVHAR) - Replace HV Hardware (1HVVHAR) - Transmission Hardware (1TRHAR)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Damaged (DM) / Missing (MI)
		<u>Cause</u> - Overloaded (OV)
<u>Scope of Rectification Works</u> Replace braces on crossarm.		

Defect Description	Defect Photo	Task Details
--------------------	--------------	--------------

<u>Defective Crossarm on Raiser Bracket</u>	 <i>NOTE: photo used to illustrate raiser bracket only (crossarm pictured is not defective).</i>	<u>As per crossarm defects</u>
- Where a defective HV crossarm is found (per the defects listed above), and is installed on a raiser bracket, the crossarm is to be replaced only. - The riser bracket will only be replaced once the pole has been condemned.		
<u>Scope of Rectification Works</u> Replace crossarm / insulators only.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm – Failed or Broken</u>		<u>Priority</u> SAP Priority 2 Immediate
Indicators: - Crossarm has failed. - Crossarm completely separated or cracked through. - Crossarm fallen or hanging.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Broken (BR)
		<u>Cause</u> - Vehicle Impact (MI) / Overloading (OV) / Weather (WE) / Deterioration (DG)
<u>Scope of Rectification Works</u> All crossarm and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work. <u>Call and advise Local Operations Manager of defect and priority.</u>		
Defect Description	Defect Photo	Task Details

<u>Crossarm - Splitting (Major)</u>		<u>Priority</u> SAP Priority 2 Immediate/1 Week
Indicators: - Split/s extend through entire cross-section. - Separation of timber (daylight can clearly be seen). - Hardware slipping/moving due to split, at imminent risk of falling out. - Crossarm failure is imminent.		<u>Bushfire Defect</u> Yes <u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM) <u>Component</u> - Crossarm (CR) <u>Failure Type</u> - Reduction in mechanical strength (MS) <u>Cause</u> - Splitting (major) (S4)
<u>Scope of Rectification Works</u> All affected crossarms and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work. Twin crossarm constructions are to have both crossarms replaced. Call and advise Local Operations Manager of defect and priority.		
Defect Description	Defect Photo	Task Details

<u>Crossarm - Splitting (Moderate)</u> <u>Near Hardware</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Split/s extending through cross-section - <u>No</u> separation of timber (daylight <u>cannot</u> be seen). - Split/s meet or extend through hardware (e.g. kingbolt, shackle bolt, insulator pin). - Hardware <u>not</u> at imminent risk of falling out.	 	<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Reduction in mechanical strength (MS)
		<u>Cause</u> - Splitting - Moderate (near hardware) (S3)
<u>Scope of Rectification Works</u> All affected crossarms and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work. Twin crossarm constructions are to have both crossarms replaced.		
Defect Description	Defect Photo	Task Details

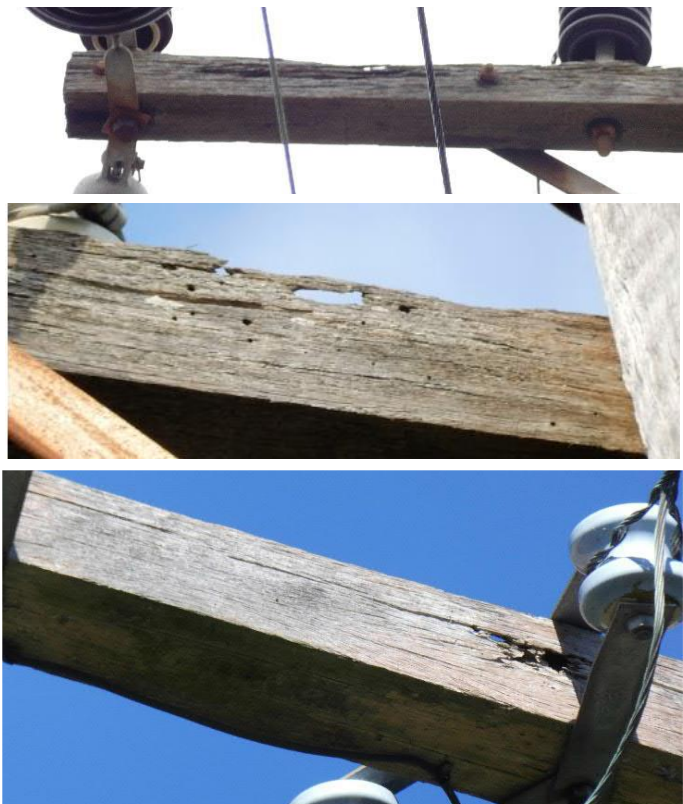
MMI 0002 – Distribution Overhead Defect Handbook

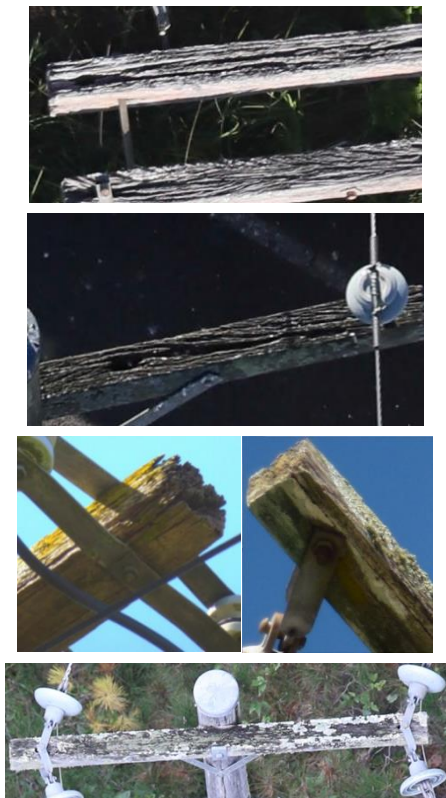
<u>Crossarm - Splitting (Moderate)</u> <u>Not Near Hardware</u>		<u>Priority</u> No Defect
Indicators: - Split/s extending through cross-section. - No separation of timber (daylight cannot be seen). - Split/s <u>do not</u> meet or extend through hardware (e.g. kingbolt, shackle bolt, insulator pin). - Hardware not at risk of falling out (strain of conductor not in same direction as split)	  	<u>Bushfire Defect</u> No
		<u>Standard Job</u> -N/A
		<u>Component</u> -N/A
		<u>Failure Type</u> -N/A
		<u>Cause</u> -N/A
<u>Scope of Rectification Works</u> No action required.		
Defect Description	Defect Photo	Task Details

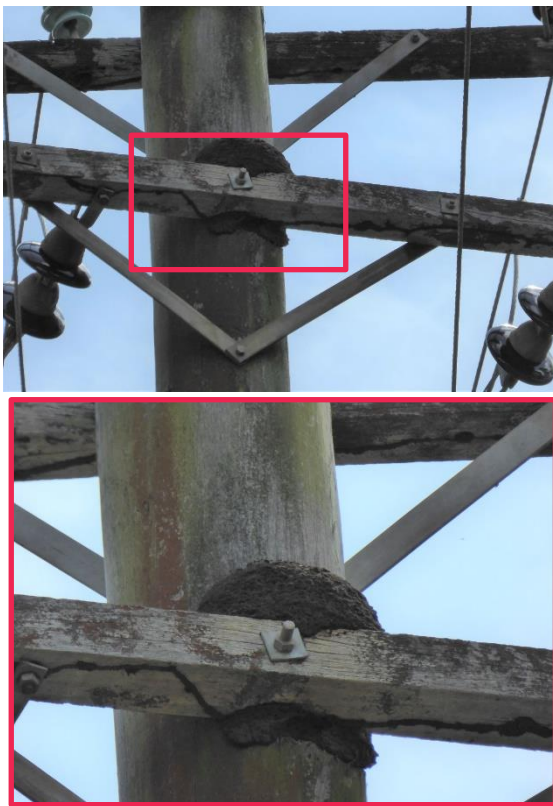
<u>Crossarm - Splitting (Minor)</u>	 	<u>Priority</u> No Defect
Indicators: - Small splits and cracks. - Confined to surface or ends of crossarm (flaking / splintering). - Splits which are indications of general weathering.	 	<u>Bushfire Defect</u> No
		<u>Standard Job</u> N/A
		<u>Component</u> N/A
		<u>Failure Type</u> N/A
		<u>Cause</u> N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm - Deterioration (Major)</u>		<u>Priority</u> SAP Priority 2 Immediate/1 Week
Indicators: - Significant decay/burn $\geq 30\%$ loss of cross-sectional area with holes that can be seen through. - Large proportion of timber missing. - Daylight can be seen through the crossarm. - Hardware at imminent risk of falling out. - Crossarm failure is imminent.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Reduction in mechanical strength (MS)
		<u>Cause</u> - Deterioration (major) (D3) / Fire Damage (FD)
<u>Scope of Rectification Works</u> All crossarm and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work. <u>Call and advise Local Operations Manager of defect and priority.</u>		

Defect Description	Defect Photo	Task Details
<u>Crossarm - Deterioration (Moderate)</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Crossarm has deterioration (or burnt) and loss of cross-sectional area of > 20% and <30%. - Significant deterioration but <u>no</u> obvious holes in which daylight can be seen through the crossarm. - Hardware <u>not</u> at risk of falling out.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Reduction in mechanical strength (MS)
		<u>Cause</u> - Deterioration (D2) / Fire Damage (FD)
<u>Scope of Rectification Works</u> All crossarm and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work.		

Defect Description	Defect Photo	Task Details
<u>Crossarm - Deterioration (Minor)</u>		<u>Priority</u> No Defect
Indicators: - Crossarm has deterioration but loss of cross-sectional area of < 20%. - Insignificant deterioration. - Confined to ends of crossarm. - Surface timber only. - Unused drill holes for hardware. - Lichen / moss present.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> No Defect
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
		<u>Scope of Rectification Works</u> No action required.

Defect Description	Defect Photo	Task Details
<u>Crossarm - Termite Infestation</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Signs of termite mound/s (nest) on crossarm. - Signs of termite galleries (mud tubes) on crossarm.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM) - Replace Service Crossarm (1SEARM)
		<u>Component</u> - Crossarm (CR)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
<u>Cause</u> - Termites (T3)		
<u>Scope of Rectification Works</u> Special pole inspection to be completed to assess condition of pole condition and termite treatment to be applied to pole. Crossarm (and any insulators) to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Crossarm – Gang Nail (Nail Plate) Loose</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Gang nail not flush with crossarm surface - Gang nail appears to be loose and is likely to fall out		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - Gang Nail / Nail Plate (GN)
		<u>Failure Type</u> - Loose (LO)
	<u>Cause</u> - Weather (WE)	
<u>Scope of Rectification Works</u> Record as observation, remove on next maintenance		

8 Earthing

Defect Description	Defect Photo	Task Details
<u>Earth Batten - Damaged, Broken or Missing</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Earth batten showing signs of mechanical damage <u>AND</u> contact with earth wire is possible. Note: General damage to the earth batten alone is not considered a defect.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Earth Batten (1EARBA)
		<u>Component</u> - Earth Batten (EB)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace earth batten.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Earth Downlead – Broken or Damaged</u>		<u>Priority</u>
		<u>Pole Substation / Regulator / SWER – SAP 2 (Immediate/48)</u>
<u>Indicators:</u> - Earth conductor showing signs of damage (frayed / broken strands).		<u>ABS / UGOH / Recloser / LBS / OHEW - SAP 7 (6 Months)</u>
		<u>Transmission down-lead – SAP 8 (1 Year)</u>
		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Earthing (1EARTH)
		<u>Component</u> - Earth Conductor (EC)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
<u>Cause</u> - Deterioration (DG) / Vandalism (VA)		
<u>Scope of Rectification Works</u> Replace earth downlead and replace batten where required. If at Pole Substation, Regulator, or SWER, <u>Call and advise Local Operations Manager of defect and priority.</u>		

9 Hardware

Defect Description	Defect Photo	Task Details
<u>LVABC Hardware (Clamp, Suspension) – Broken / Damaged</u>	  	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - LVABC Clamp showing signs of rust and general signs of deterioration. - Insert of LVABC has come loose. - J-Hooks damaged / broken. - Wedge Clamp broken.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace LV Hardware (1LVHAR)
		<u>Component</u> - ABC Attachment (AB)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
<u>Cause</u> - Deterioration (DG)		
<u>Scope of Rectification Works</u> Replace clamp		

Defect Description	Defect Photo	Task Details
<u>HVABC Termination - Loose</u>	Photo to be added in next revision.	<u>Priority</u> SAP Priority 8 12 Months
Indicators: - Anti-birdcage preform loose and no longer effective. Daylight can be seen through preform. - Catenary termination showing signs of deterioration, broken strands.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - HV Conductor (1HVCDR)
		<u>Component</u> - HVABC Attachment (AT)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace preform.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Marker Ball – Broken, Damaged or Missing</u>	 <i>(image shows undamaged marker ball)</i>	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Marker ball showing general signs of deterioration in colour or shape. - Marker ball broken. - Where there are less than 3 Marker balls on a span. (Refer to MDI 0031 for requirements)		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Broken Aircraft Marker Ball (1ARCBB) - Faded Aircraft Marker Ball (1ARCBF) - Missing Aircraft Marker Ball (1ARCBM)
		<u>Component</u> - Marker Ball (MB)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Install/Replace Marker Ball.		

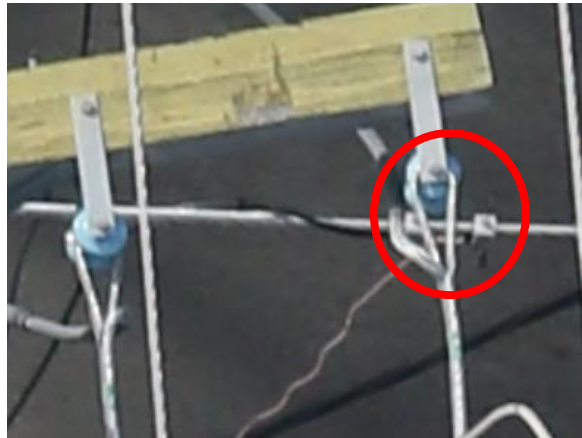
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Yellow Aerial Marker Disc - Missing, Damaged or Deteriorated</u>	 (image shows undamaged marker disc)	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Yellow marker disc missing on 2nd and/or 3rd pole from line crossing. - Marker disc showing signs of colour fading or deterioration. - Yellow marker disc vandalised with graffiti.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Install Yellow Warning Disc (1PLYWD)
		<u>Component</u> - Yellow Warning Marker Disc (WD)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Install Warning Disc.		

MMI 0002 – Distribution Overhead Defect Handbook

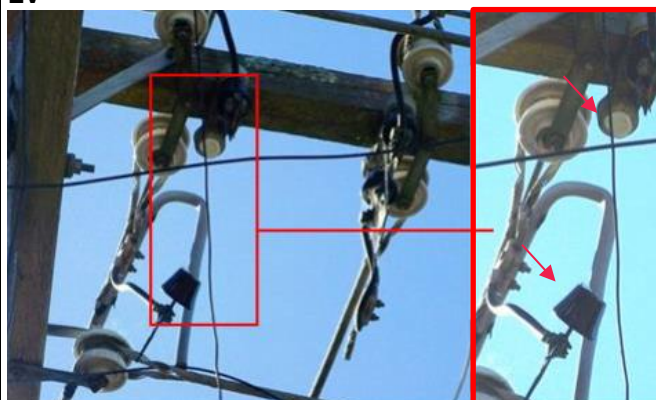
Defect Description	Defect Photo	Task Details
<u>Dead-End – Damaged</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Dead end showing signs of mechanical damage. - Loose strands. - Heavy rust (ie, rust that extends the entire length of the dead-end).		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR)
		<u>Component</u> - Deadend (DE)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1)
<u>Cause</u> - Corrosion (CO) / Installation Error (IE)		
<u>Scope of Rectification Works</u> Replace dead end of affected conductor. Check other phases for dead end integrity		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Dead-End Grip - Dislodged from Insulator</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Dead-end not correctly seated around insulator. - Has slipped off insulator or never correctly installed.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV Conductor (1LVCDR) - HV Conductor (1HVCDR) - Transmission Conductor (1TRCDR)
		<u>Component</u> - Deadend (DE)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Reseat dead-end if dead end is in good condition. Replace dead-end of affected conductor if dead-end is defective. Check other phases for dead end integrity.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Underslung Link ('USL') - Loose</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - USL has rotated / out of alignment when compared to other phases. - Gap between USL and crossarm. - General indications that it is not secure.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - LV: Replace LV Link (1LVLIN) - HV: Repair/Replace USL (1USLRP)
		<u>Component</u> - Underslung link (US)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Secure USL to crossarm. Check alignment with other phases. For 1USLRP, send email to, or call, system control identifying the Network Limiting Defect (NLD) NetworkAccess@endeavourenergy.com.au.		

Defect Description	Defect Photo	Task Details
<u>Underslung Link ('USL') – Damaged or Broken</u>	LV 	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - USL has separated from crossarm / hanging - USL is broken, insulators cracked.	HV 	<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - LV: Replace LV Link (1LVLIN) - HV: Replace USL (1USL)
		<u>Component</u> - Underslung link (US)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Cracked (CR)
<u>Cause</u> - Normal Operation (NO) / Lightning Damage (LD)		
<u>Scope of Rectification Works</u> Replace all USLs, regardless of condition of the other phases. If the age of the pole is greater than 20 years old, replace the crossarm and all fittings also. <u>For 1USL, send email to, or call, system control identifying the Network Limiting Defect (NLD) NetworkAccess@endeavourenergy.com.au.</u>		

Defect Description	Defect Photo	Task Details
<u>Pole Signage - Missing or Damaged</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Pole labelling damaged, not legible or missing. NOTE: Pole Inspectors are to rectify pole numbering defects at the time of pole inspection. However, a pole signage defect must still be raised and closed, and defect photos captured, to record the defect.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Structure/Fdr Number (PLSIGN)
		<u>Component</u> - Identification (ID)
		<u>Failure Type</u> - Missing (MI) / Loose (LO)
		<u>Cause</u> - Deterioration (DG) / Vandalism (VA)
<u>Scope of Rectification Works</u> Replace signage.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Cable Guard - Moderate Damage, Broken or Missing</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Cable guard having dents which are more than a 5cms in depth. - Cable can be seen through cable guard. - Cable guard not present.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Cable Guard (1CAGRD)
		<u>Component</u> - Cable Guard (CG)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Mechanical Impact (MC) / Vandalism (VA)
<u>Scope of Rectification Works</u> Replace cable guard. Check condition of cable during replacement.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Cable Guard - Minor Damage</u>		<u>Priority</u> No Defect
Indicators: - Cable guard having dents which are less than a 5 cms in depth.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Cable Guard - Rusted</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Cable guard has separation and/or showing large holes in the metal. - Surface rust does not constitute a defect.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Cable Guard (1CAGRD)
		<u>Component</u> - Cable Guard (CG)
		<u>Failure Type</u> - Rusted (RU)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace cable guard.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Cable Guard - Loose or Not Secure to Pole</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Cable guard is not fully secure to pole. - One or more bolts or straps are missing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Cable Guard (1CAGR)
		<u>Component</u> - Cable Guard (CG)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Corrosion (CO) / Deterioration (DG)
<u>Scope of Rectification Works</u> Re-secure cable guard.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole Cap – Loose / Hanging AND Compromising Clearances</u>		<u>Priority</u>
Indicators: - Pole cap is loose / hanging, and - Pole cap is <u>in contact</u> with <u>bare</u> conductor/s, or - Pole cap is <u>compromising clearances</u> to <u>bare</u> conductor/s.		<u>In Contact – SAP 2</u> (Immediate/48) <u>Compromising Clearance – SAP 7</u> (3 Months) <u>Bushfire Defect</u> Yes <u>Standard Job</u> - Hanging Pole Cap (1PCAPH) <u>Component</u> - Pole Cap (PC) <u>Failure Type</u> - Compromising clearances (CL) <u>Cause</u> - Installation Error (IE) / Deterioration (DG)
<u>Scope of Rectification Works</u> Existing pole cap to be removed, and a new pole cap installed with securing strap. If pole cap is in contact with phase conductor, <u>Call and advise Local Operations Manager of defect and priority.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole Cap – Loose / Hanging</u> <u>NOT Compromising Clearances</u> Indicators: - Pole cap is loose / hanging, but - <u>NOT compromising clearances</u> to bare conductor/s.	 	<u>Priority</u> SAP Priority 9 Observation
		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Hanging Pole Cap (1PCAPH)
		<u>Component</u> - Pole Cap (PC)
		<u>Failure Type</u> - Damaged (D1)
<u>Cause</u> - Installation Error (IE)		
<u>Scope of Rectification Works</u> Existing pole cap to be removed, and a new pole cap installed with securing strap.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole Cap - Missing or Damaged</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Pole cap is missing / not present. - Pole cap is damaged or corroded such that there are holes present and/or it is no longer preventing water entry into pole top.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Pole Cap (1PLCAP)
		<u>Component</u> - Pole Cap (PC)
		<u>Failure Type</u> - Missing (MI)
		<u>Cause</u> - Installation Error (IE) / Missing (MI) / Loose (LO)
<u>Scope of Rectification Works</u> Replace pole cap.		

10 Insulator

Defect Description	Defect Photo			Task Details
<u>Porcelain Insulator – Major Damage</u>		<u>Priority</u>		
		Trans./HV – SAP 6 (1 Month)		
LV – SAP 7 (6 Months)				
<u>Bushfire Defect</u> Yes				
<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)				
<u>Component</u> - Insulator (IN)				
Indicators: - Major cracks / damage. - Major chips / pieces of insulator missing. - Separation of the insulator. - Hairline cracks which extend the full length of the insulator.	<u>Failure Type</u> - Damaged (major) (D3)			
	<u>Cause</u> - Vandalism (VA) / Normal Operation (NO) / Foreign Objects (FO)			
	<u>Scope of Rectification Works</u> Replace all insulators (not just the affected phase) unless cause is foreign object and defected insulator is not representative of others. If age of pole is more than 20 years old, replace crossarm also.			

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Porcelain Insulator – Minor Damage</u> Indicators: - Minor cracks / damage. - Chips to the insulator in areas not under strain - Chips that are only <2cm in width. - Minor hairline cracks (only extend part way through insulator).		<u>Priority</u> No Defect
		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Polymer Insulator – Major Damage</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - All (or almost all) sheds missing / significantly reduced. - Fibreglass rod is exposed. - Electrical tracking (carbon treeing).		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Damaged (major) (D3) - Tracking / surface degraded (TR)
<u>Cause</u> - Vermin (VM) - Surface Contamination (SC)		
<u>Scope of Rectification Works</u> Replace all insulators (not just the affected phased). <u>Call and advise Local Operations Manager of defect and priority.</u>		

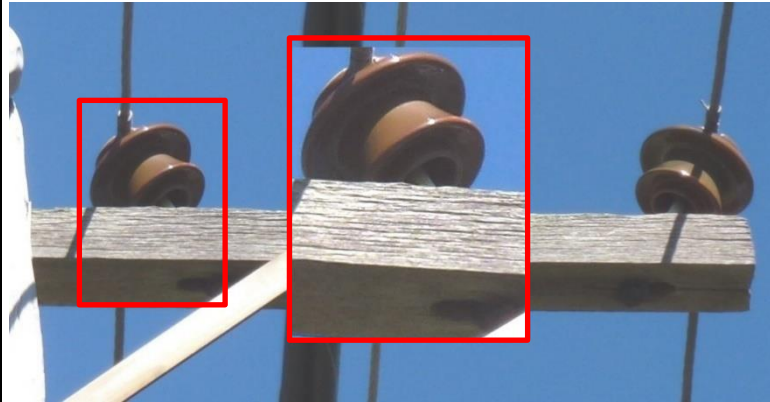
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Polymer Insulator – Moderate Damage</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - 20% or more of sheds missing / significantly reduced. <i>(but less than major category above)</i>		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Damaged (moderate) (D2)
<u>Cause</u> - Vermin (VM) / Vandalism (VA)		
<u>Scope of Rectification Works</u> Replace all insulators (not just the affected phased).		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Polymer Insulator – Minor Damage</u>		<u>Priority</u> No Defect
Indicators: - Minor shed damage (<20% reduction). - Majority of sheds still intact. - Presence of mould, fungus or insect activity.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Leaning (Major)</u> <u>Caused by Crossarm Degradation</u> Indicators: - Major lean (>45°); - Significant elongation of pin hole; AND - Conductor clearance is compromised.		<u>Priority</u> SAP Priority 7 6 Months
		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Leaning (major) (L3)
		<u>Cause</u> - Crossarm deterioration (CD)
<u>Scope of Rectification Works</u> All crossarm and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work.		

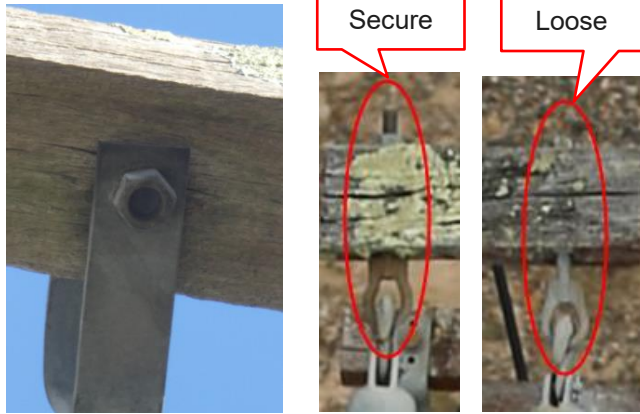
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Leaning (Major)</u> <u>Caused by Overloading</u> Indicators: - Major lean (>45°); and - Insulator has bent pin; and - Conductor clearance is compromised.		<u>Priority</u> SAP Priority 7 6 Months
		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Leaning (major) (L3)
<u>Cause</u> - Overloading (OV)		
<u>Scope of Rectification Works</u> Insulator Pin to be replaced only. Issue to be raised with the applicable design group for suspect overloading in span.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Leaning (Minor)</u> Indicators: - A lean of the insulator of less than 45 degrees from vertical. - Minor elongation of pin hole. - Conductor clearances to other phases is <u>not</u> compromised.		<u>Priority</u> No Defect
		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
<u>Cause</u> - N/A		
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Nut Loose or Missing</u> <u>(Termination / Strain / Suspension)</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Nut missing / non-existent. - Nut loose (i.e. thread of bolt/pin not flush with or extending beyond nut). - Only applies to termination / strain / suspension constructions. - Strain of termination warrants replacement	 Secure Loose	<u>Bushfire Defect</u> Yes <u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS) <u>Component</u> - Insulator (IN) <u>Failure Type</u> - Not secure (NS) <u>Cause</u> - Missing (MI)
<u>Scope of Rectification Works</u> Replace/tighten nuts, install spring washer.		

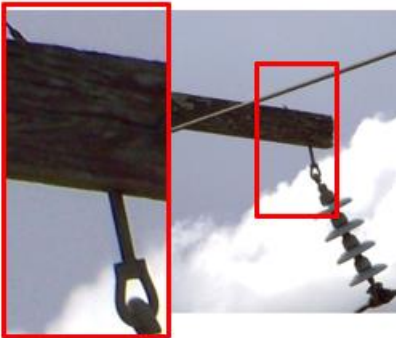
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Nut Missing</u> <u>(Pin / Intermediate)</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Nut missing / non-existent. - Only applies to pin / intermediate constructions.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Missing (MI)
<u>Scope of Rectification Works</u> Replace nuts, install spring washer.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Nut Loose</u> <u>(Pin / Intermediate)</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Nut still present but loose - Minimal amount of thread remaining past the nut or end of the thread can not be seen. - Only applies to pin / intermediate constructions.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LV Insulator (1LVINS) - Replace HV Insulator (1HVINS) - Transmission Insulator (1TRINS)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Loose (LO)
<u>Scope of Rectification Works</u> Tighten nuts, install spring washer if needed.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Insulator - Not Secure (Slipping) Due to Crossarm Degradation</u>	 Slipping out	<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Hole for insulator (disc, long rod or shackle) has enlarged and bolt is slipping through. - Hardware at imminent risk of falling out.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace LV Crossarm (1LVARM) - Replace HV Crossarm (1HVARM) - Replace Transmission Crossarm (1TRARM)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> All crossarm and all insulators of the failed overhead construction to be replaced. Overhead line fittings not removed as part of the works to be reused, unless further defects identified during work. <u>Call and advise Local Operations Manager of defect and priority.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Tie Wire – Broken or Missing</u>	 	<u>Priority</u> SAP Priority 2 Immediate
Indicators: - Conductor is no longer attached to the insulator. - Conductor is resting on the crossarm. - Tie wire may or may not be present, but is no longer securing conductor.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Repair broken LV tie (1LVTIE) - Repair broken HV tie (1HVTIE)
		<u>Component</u> - Tie (TI)
		<u>Failure Type</u> - Broken (BR) / Missing (MI)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Replace tie wire.		
<u>Call and advise Local Operations Manager of defect and priority.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Tie Wire - Loose</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Conductor is still attached to insulator, but tie wire is loose. - Daylight can be seen between the tie wire and the conductor.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Repair broken LV tie (1LVTIE) - Repair broken HV tie (1HVTIE)
		<u>Component</u> - Tie (TI)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Repair/Replace Tie Wire.		

11 Pole

Defect Description	Defect Photo	Task Details
<u>Pole – Burnt (Major)</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Fire damage which has penetrated the sapwood and damaged heartwood, - ≥40mm of pole diameter lost.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Condemn Pole Refer to clause 4.4.
		<u>Component</u> - Pole (P1)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Fire (FD)
<u>Scope of Rectification Works</u> Pole to be replaced. Inspection of pole top hardware (including conductors) is to be performed and any damaged assets replaced.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole – Burnt (Moderate)</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Fire damage to the pole/CCA and requires removal of burnt CCA material - Fire damage not extensive enough to warrant replacement of pole (ie, lost pole diameter width < 40mm)		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Burnt Pole (1BPOLE)
		<u>Component</u> - Pole (P1)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Lightning Damage (LD) / Fire (FD)
<u>Scope of Rectification Works</u> Pole is to have any charred CCA material removed by qualified staff. A special inspection by pole inspector is to be completed to assess remaining strength. Pole to be replaced if remaining strength is not sufficient.		

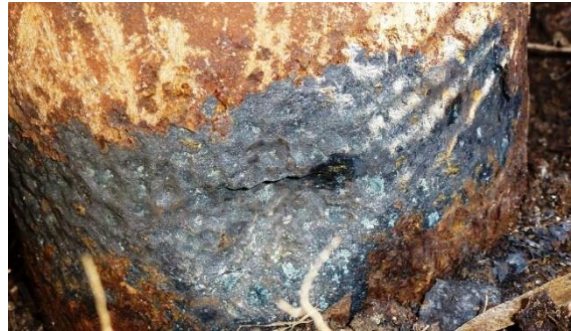
Defect Description	Defect Photo	Task Details
<u>Pole – Leaning (Major)</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Pole lean of 10° or greater.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair Leaning Pole (1PLLEA); or - Pole Replacement as per clause 4.4, where pole found to be unserviceable.
		<u>Component</u> - Pole (P1)
		<u>Failure Type</u> - Leaning (LN)
<u>Cause</u> - Overloaded (OV)		
<u>Scope of Rectification Works</u> Check the design of the pole; Check the foundation of the pole; If the lean of the pole due to below ground failure, the pole is to be replaced.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole – Redundant / Obsolete</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - An Endeavour Energy pole that has no circuits, attachments, stay wires, and is no longer being used. - Pole remains serviceable (not condemned). NOTE: pole is still to be inspected in accordance with OLI/GLI inspection program: - If serviceable, a ‘Remove Pole’ defect is to be raised. - If unserviceable, a ‘Condemned Pole’ defect is to be raised with the appropriate priority for the pole condition.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Remove Pole (PLREM)
		<u>Component</u> - Pole (P1)
		<u>Failure Type</u> - Obsolete (OB)
		<u>Cause</u> - Obsolete (OB)
<u>Scope of Rectification Works</u> Remove pole.		

Defect Description	Defect Photo	Task Details
<u>Concrete Pole - Spalling</u>	 	<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Concrete flaking off the pole. - Pole no longer has smooth surface. - Reinforcement could be exposed.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Pole (Concrete) (P2)
		<u>Failure Type</u> - Spalling (SP)
		<u>Cause</u> - Corrosion (CO)
<u>Scope of Rectification Works</u> Replace pole.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Steel pole - Corrosion (Major)</u>	 	<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Rust has damaged galvanising to more than 10% of the circumference. - Rust hole between 10 mm and 75 mm in total length. - Rust does not extend below 350 mm from groundline. - Signs of pitting. - Flaking of the galvanising. - Holes in the steel		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> Endeavour Network Pole – Refer to clause 4.4. Private Service Pole – Customer Defect (1CUSDF)
	<u>Component</u> - Pole (Steel) (P3)	
	<u>Failure Type</u> - Mechanical strength compromised (major) (M3)	
	<u>Cause</u> - Corrosion (CO)	
<u>Scope of Rectification Works</u> Pole to be condemned and replaced.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Steel Pole - Corrosion (Minor)</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Rust is present on the surface of the metal, but no pitting or flaking is seen.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Endeavour Network Pole – Inspect Rust/Corrosion (1RUSCO) - Private Service Pole – Customer Defect (1CUSDF)
		<u>Component</u> - Pole (Steel) (P3)
		<u>Failure Type</u> - Mechanical strength compromised (minor) (M1)
<u>Cause</u> - Deterioration (DG) / Corrosion (CO)		
<u>Scope of Rectification Works</u> Treatment applied to Endeavour Energy poles only. Customer notification if defect is found on Private Service Poles.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Sapwood – In Contact with Conductor/s</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Pole sapwood is separated from timber and is <u>in contact with bare</u> conductor/s.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Desap Pole (1PLSAP)
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Clearance Compromised (CL)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Remove sapwood. <u>Call and advise Local Operations Manager of defect and priority.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Sapwood – Compromising Clearances</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Pole sapwood is separated from timber and is <u>compromising clearances to bare conductor/s</u> .		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Desap Pole (1PLSAP)
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Clearance Compromised (CL)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Remove sapwood.		

Defect Description	Defect Photo	Task Details
<u>Sapwood – Loose but NOT Compromising Clearances</u>		<u>Priority</u> No Defect
Indicators: - Loose sapwood <u>not</u> compromising clearances. - Loose sapwood below conductors.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - N/A
		<u>Component</u> - N/A
		<u>Failure Type</u> - N/A
		<u>Cause</u> - N/A
<u>Scope of Rectification Works</u> No action required.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Mid Pole / Pole Top - Deterioration</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators to prompt Aerial Inspection: - General degradation to the pole top, whereby splitting, lightning damage, open knot holes or termite holes can be seen. - Open knot holes reachable from ground level (typically up to 2 metres) are to be inspected/drilled by the Pole Inspector at the time of the inspection. - Degradation of pole-head puts any aerial mains at risk		<u>Bushfire Defect</u> Poles located in top 50% of Phoenix Areas: Yes All other poles: No
		<u>Standard Job</u> - Aerial Inspection: Reinspect Pole (1PLRIN)
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical Strength Compromised (MS)
		<u>Cause</u> - Splitting (SP) / Deterioration (DG) / Knot Hole (KH)
<u>Scope of Rectification Works</u> Pole to be visually inspected, sounded and drilled.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole Top - Condemning</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators for Pole Condemning: - Refer to Annexure 8 of MMI 0001.		<u>Bushfire Defect</u> Poles located in top 50% of Phoenix Areas: Yes All other poles: No
		<u>Standard Job</u> - Pole Condemning: Refer to clause 4.4
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical Strength Compromised (MS)
<u>Cause</u> - Splitting (SP) / Deterioration (DG) / Knot Hole (KH)		
<u>Scope of Rectification Works</u> If pole head satisfies pole condemning criteria in Annexure 8 of MMI 0001, the pole is to be replaced.		

Defect Description	Defect Photo	Task Details
<u>Pole – Splitting (Major)</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Separation of the timber which is greater than 2cm wide. - Split can be vertical or horizontal.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Splitting (S1)
<u>Scope of Rectification Works</u> Replace pole. Do not perform ground line excavation.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Timber Pole Degraded Due to Internal Rot</u>	Refer to MMI 0001 Serviceability Flowchart	<u>Priority</u> Refer to MMI 0001
Indicators: - Pole not suitable for nailing; and - Drilling of pole determines the safety factor is less than 1.5.		<u>Bushfire Defect</u> Yes – Only when SF is less than 1.5
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Pole to be replace accordingly to MMI 0001 Figure 1.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Fruiting Bodies Present - Demonstrating Internal Rot is Present</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Presence of fruiting bodies are found.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
	<u>Cause</u> - Fruiting Bodies (RT)	
<u>Scope of Rectification Works</u> Pole to be sounded and drilled if fruiting body within 2m of the groundline. If pole found to be not serviceable, pole to be replaced.		

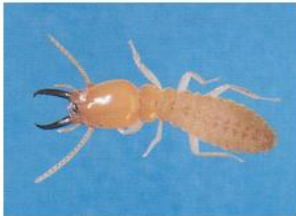
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Termites - Glyptotermes</u>		<u>Priority</u> Dependent upon pole condition following inspection. Refer to MMI0001 and Pole Serviceability Flowchart.
Indicators: - Pin (flight) holes visible on pole surface, that turn once inside the pole (rather than going straight in). - Cross-grain galleries visible after chipping away pin (flight) holes. - Poles with brown and/or carrot rot can be more prone to Glyptotermes. - Refer to MMI0001 for further details. NOTE: - Poles infested with Glyptotermes are to be <u>condemned</u> (with the appropriate priority based on pole condition). - They are <u>not</u> to have a termite treatment defect raised.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Termite (Glyptotermes) (T1)
<u>Scope of Rectification Works</u> Condemn / Replace pole.		

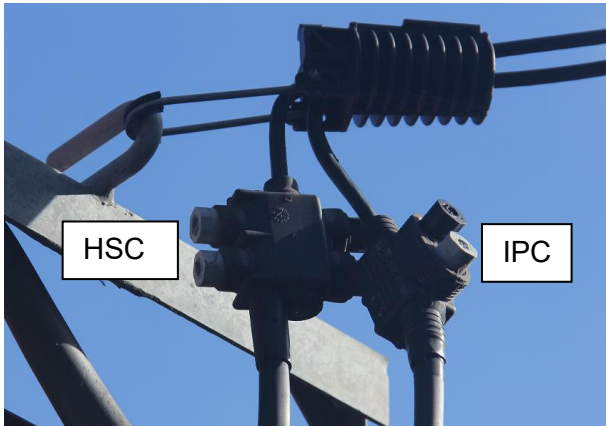
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Termites – Nasutitermes</u>	 <i>Soldier of Nasutitermes</i>   	<u>Priority</u> SAP Priority 7 3 Month
Indicators: - Evidence of termite mud tracks / galleries on the pole's external surface. - Termites may be visible by breaking open a gallery. - Nasutitermes have a 'tear-drop' shaped head. - Refer to MMI0001 for further details. NOTE: - If there are active termites, or fresh signs of termite activity, a termite treatment defect is to be raised. - This applies regardless of whether the pole is serviceable or condemned following inspection.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Termites – Nasutitermes (1PLTER)
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Termite (Other) (S2)
<u>Scope of Rectification Works</u> Treat pole as per MMI 0001.		

MMI 0002 – Distribution Overhead Defect Handbook

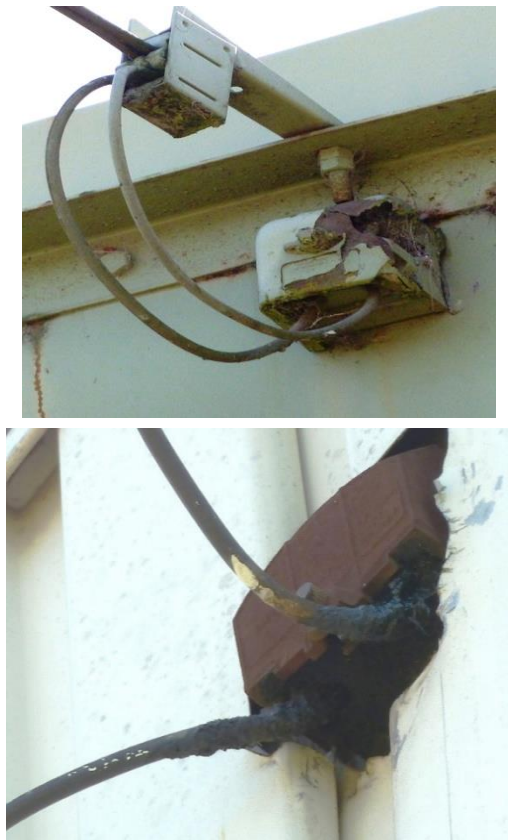
Defect Description	Defect Photo	Task Details
<u>Termites – Coptotermes (or Other)</u>	 Soldier of Coptotermes 	<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Evidence of termite mud tracks / galleries on the pole's external surface, inside cracks, behind loose sapwood. - Termites may be visible by breaking open a gallery, peeling back loose sapwood, removing plug holes. - Refer to MMI0001 for further details. NOTE: - If there are active termites, or fresh signs of termite activity, a termite treatment defect is to be raised. - This applies regardless of whether the pole is serviceable or condemned following inspection.	 	<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Termites – Coptotermes (1PLTR2)
		<u>Component</u> - Pole (Timber) (P4)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
		<u>Cause</u> - Termite (Other) (S2)
<u>Scope of Rectification Works</u> Treat pole as per MMI 0001.		

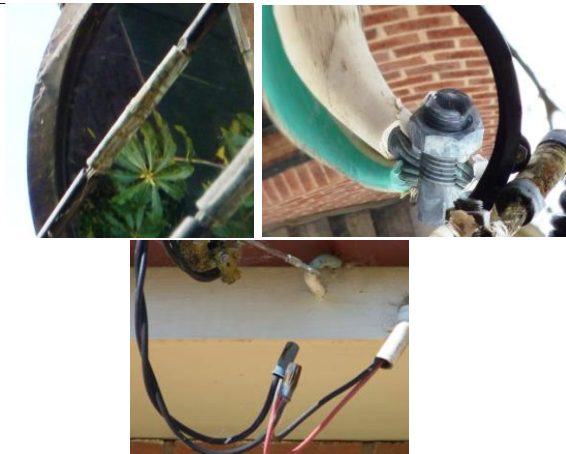
12 Service Mains and Connections

Defect Description	Defect Photo	Task Details
<u>HSC/IPC – Minor Damage</u>	 (Photo for reference. No defect is shown in the photo)	<u>Priority</u> SAP Priority 8 12 Months
Indicators: - IPC general damage. - General cracking in housing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Service Connections (1SERCO)
		<u>Component</u> - IPC (IP)
		<u>Failure Type</u> - Damaged (DM) / Corroded (CO)
		<u>Cause</u> - Deterioration (DG) / Moisture ingress (MO)
<u>Scope of Rectification Works</u> Replace IPC.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>HSC/IPC – Major Damage, Loose or Not Secure</u>	 To be sheared off in installation	<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Bolts not sheared off - Coloured shear off tag still present - Insulation melted. - Signs of burning. - Bolt/s missing.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Repair/Replace Service Connections (1SERCO)
		<u>Component</u> - IPC (IP)
		<u>Failure Type</u> - Burnt (BU) / Damaged (DM) / Corroded (CO) / Loose (LO)
		<u>Cause</u> - Installation Error (IE) / Deterioration (DG) / Moisture ingress (MO)
<u>Scope of Rectification Works</u> Tighten correctly, if IPC is faulty, replace. <u>Call and advise Local Operations Manager of defect and priority.</u>		

Defect Description	Defect Photo	Task Details
<u>Mains Connection Box (MCB) – Damaged or Burnt</u>		<u>Priority</u> Report to customer immediately
Indicators: - Signs of burning on MCB. - Broken / Cracked MCB.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Customer Defect (1CUSDF)
		<u>Component</u> - Mains connection box (MC)
		<u>Failure Type</u> - Burnt (BU) / Damaged (DM) / Cracked (CR) / Loose (LO)
		<u>Cause</u> - Deterioration (DG) / Installation Error (IE)
<u>Scope of Rectification Works</u> Notify customer of defect with their installation. Raise and close defect as customer notified.		

Defect Description	Defect Photo	Task Details
<u>Service Connector - Bare</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Insulation of service connector is damaged, and metal can be seen (insulink, line tap or crimp sleeve). - Blue point connector present (bottom photo). <i>Note: This is a customer defect, and to be managed as per the customer defect process.</i>		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Customer Defect (1CUSDF)
		<u>Component</u> - Connection (CN)
		<u>Failure Type</u> - Loss of insulation (IS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Service Connector is to be replaced with an approved HSC.		

Defect Description	Defect Photo	Task Details
<u>Service Mains - Not Secure to Insulator / Equipment</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Service mains not properly attached to hardware / dislodged, at either service pole/point of attachment or network pole. - This does not include the consumer mains.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Restrain Service Conductors (1SEGRD)
		<u>Component</u> - Service Mains (SM)
		<u>Failure Type</u> - Not Secure (NS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace hardware / check design / forces		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Services - Vegetation Clearance Breached</u>		<u>Priority</u> Refer to MMI 0013
Indicators: - Bare conductors that are in contact with vegetation; - Covered conductors that are touching heavy branches that are likely to cause insulation damage to the conductor; - Branches laying across bare services; - Service conductor(s) has moved from the nominal sag position; or, - Unable to inspect insulation. - Branches applying downward pressure to services creating over-tension. - Vegetation growth represents a public safety hazard in relation to the service.		<u>Bushfire Defect</u> Refer to MMI 0013
		<u>Standard Job</u> Endeavour Energy Responsibility - Tree Trimming (1TRET) Customer Responsibility - Customer Vegetation (1VEGCU)
		<u>Component</u> - Conductor (C1)
		<u>Failure Type</u> - Obstructed (OS), Clearance Compromised (CL), Unable to Inspect (UI), Public Safety (PS)
		<u>Cause</u> - Vegetation (VE) / Object Falling (VE)
<u>Scope of Rectification Works</u> For defects on Endeavour Energy mains, raise vegetation trimming workorder.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Service Wire - Minor Damaged</u>	 <i>Note: CCT cracking shown.</i>	<u>Priority</u> SAP Priority 9 Observation
Indicators: - General cracking along insulation, but conductor can NOT be seen through the XLPE insulation. - Defect applies to both LVABC services and mains.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Service Conductor (1SECDR)
		<u>Component</u> - Service Mains (SM)
		<u>Failure Type</u> - Cracking (CR)
		<u>Cause</u> - Abrasion (AB), Damage (D1), Deterioration (DG), UV Degradation (DG)
<u>Scope of Rectification Works</u> Replace conductor / temporary rectification maybe achieved by increasing vegetation management clearances to bare conductor standards		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Service Wire – Major Damage</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Conductor is either bare or can be seen through the XLPE insulation. - Defect applies to both LVABC services and mains.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Service Conductor (1SECDR)
		<u>Component</u> - Service Mains (SM)
		<u>Failure Type</u> - Exposed (EX)
		<u>Cause</u> - Abrasion (AB) - UV Damage (UV)
<u>Scope of Rectification Works</u> Replace conductor.		

13 Streetlight

Defect Description	Defect Photo	Task Details
<u>Streetlight Cover - Hanging</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Plastic cover of lantern is not closed and is hanging.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Streetlight (1STLGT)
		<u>Component</u> - Lantern (LN)
		<u>Failure Type</u> - Broken (BR)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Reaffix cover if possible.		

Defect Description	Defect Photo	Task Details
<u>Streetlight Cover – Missing</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Streetlight cover is no longer affixed to lantern.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Streetlight (1STLGT)
		<u>Component</u> - Lantern (LN)
		<u>Failure Type</u> - Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace cover only.		

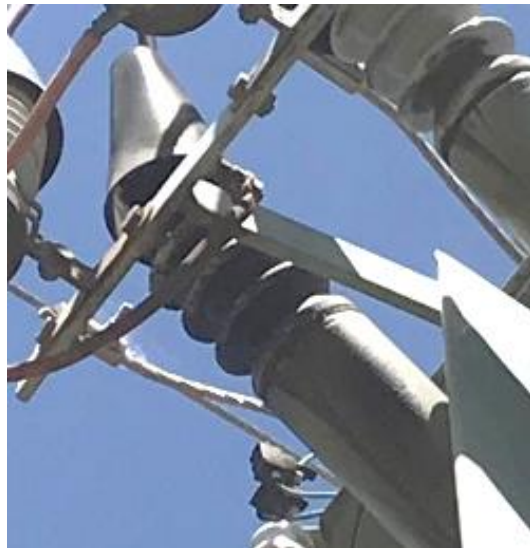
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Streetlight Outreach – Not Secure</u>	 (Image for reference, no defect pictured)	<u>Priority</u> SAP Priority 8 12 Months
Indicators: - One or more securing screws missing. NOTE: If securing screws are loose/thread can be seen, this is not a defect.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Streetlight (1STLGT)
		<u>Component</u> - Outreach (OR)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace screw.		

14 Substation

Defect Description	Defect Photo	Task Details
<u>Transformer Tank – Obstruction in Easement</u>	To be added.	<u>Priority</u> SAP Priority 8 12 Months
Indicators: The following are within 2 metres of substation tank: - Vegetation (dead or alive); and/or - Permanent structures.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Encroachment on Easement (1ENCRO)
		<u>Component</u> - Easement (EA)
		<u>Failure Type</u> - Obstructed (OS)
		<u>Cause</u> - Vegetation (VE)
<u>Scope of Rectification Works</u> Remove encroachment and inspect asset condition, according to defect handbook, to check for potential damage from encroachment (if applicable).		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>HV / LV Bushing - Broken</u>		<u>Priority</u> As per insulator defects.
Indicators: - Significant visual damage.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace Transformer (1TXREP)
		<u>Component</u> - HV Bushing (HB) - LV Bushing (LB)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Vermin (VM) / Vandalism (VA)
<u>Scope of Rectification Works</u> Replace transformer.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Pole Substation – Missing or Damaged Signage</u>	To be added	<u>Priority</u> SAP Priority 8 12 Months
Indicators: - Missing appropriate signage and identification.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Missing or Incorrect Asset Number (MISSAN)
		<u>Component</u> - Identification (ID)
		<u>Failure Type</u> - Deteriorated (DE)
		<u>Cause</u> - Deterioration (DG) / Vermin (VM) / Vandalism (VA)
<u>Scope of Rectification Works</u> Install / replace signage.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Transformer Tank – Leaking Oil</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Significant signs of leaking oil on tank or bushing. - Oil on the ground.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Oil Leak (1OILLE)
		<u>Component</u> - Transformer Tank (TT)
		<u>Failure Type</u> - Leaking (LE)
	<u>Cause</u> - Broken (BR) / Damaged (DM)	
<u>Scope of Rectification Works</u> For mild leaks or leak at a seal, seal/patch the concerned area. For major or active leaks, transformer tank will need to be replaced, and defect priority increased.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Transformer Tank – Not Secure</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Leaning transformer. - Transformer not secure to pole mounting.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> Replace HV Hardware (1HVVHAR)
		<u>Component</u> - Transformer Tank (TT)
		<u>Failure Type</u> - Not secure (NS)
		<u>Cause</u> - Installation error (IE)
<u>Scope of Rectification Works</u> Secure substation to pole mounting.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Shroud (Possum Guard) – Burned or Melted</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Melted / heat damage to the shroud.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Install/Replace Shroud (1SHROU)
		<u>Component</u> - Animal Guard (AG)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Loose (LO)
		<u>Cause</u> - Overloaded (OV)
<u>Scope of Rectification Works</u> Replace bushing shroud.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Shroud (Possum Guard) - Missing</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Adjacent phases have covers and a cover is no longer present - Applies to transformer only.	 	<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Install/Replace Shroud (1SHROU)
		<u>Component</u> - Animal Guard (AG)
		<u>Failure Type</u> - Missing (MI)
		<u>Cause</u> - Missing Component (MC) / Installation Error (IE)
<u>Scope of Rectification Works</u> Replace bushing shroud.		

Defect Description	Defect Photo	Task Details
<u>Surge Diverter - Obsolete Model</u> <u>(Brown Porcelain Type)</u>	To be added	<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Old brown surge diverter.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace Surge Diverter (1SURGE)
		<u>Component</u> - Surge Arrestor (SA)
		<u>Failure Type</u> - Obsolete (OB)
		<u>Cause</u> - Obsolete (OB)
<u>Scope of Rectification Works</u> Replace with new polymeric surge arrestor.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Surge Diverter - Damaged</u>	To be added	<u>Priority</u> See Insulator Defects for priorities
Indicators: - Surge arrestor having chips / cracks. - Surge arrestor to be treated like an insulator in terms of defect identification and prioritisation.		<u>Bushfire Defect</u> See Insulator Defects for Bushfire Status
		<u>Standard Job</u> - Replace Surge Diverter (1SURGE)
		<u>Component</u> - Surge Arrestor (SA)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1)
		<u>Cause</u> - Various (XX)
<u>Scope of Rectification Works</u> Replace damaged surge diverter only.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Surge Diverter - Earth Connection Missing</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Earth drop out lead has detached / missing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Surge Diverter (1SURGE)
		<u>Component</u> - Surge Arrestor (SA)
		<u>Failure Type</u> - Loss of Earth connection (EL)
		<u>Cause</u> - Installation Error (IE) / Missing (MI) / Loose (LO)
<u>Scope of Rectification Works</u> Replace with new polymeric surge arrestor.		

Defect Description	Defect Photo	Task Details
<u>MDI Housing - Not Secured</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Visual damage to the securing bolts. - Unsecure MDI housing, lift away from pole.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Broken MDI Unit (1MDIUN)
		<u>Component</u> - MDI (MD)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Only where the MDI unit is found to be no longer secure to the pole, must the MDI be removed in accordance with SMI116 – Identification of overloaded distribution transformers.		

15 Switches (ABS, LBS, DOF)

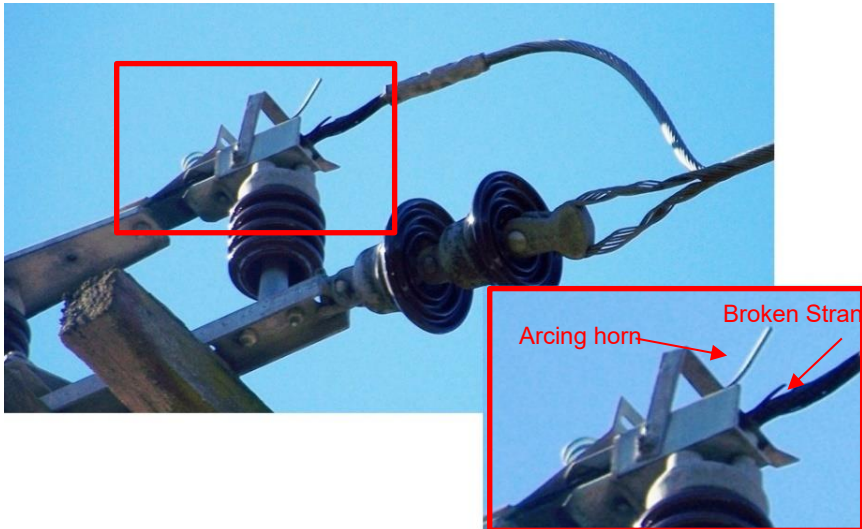
Defect Description	Defect Photo	Task Details
<u>Arcing Horn - Broken or Missing</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Arcing horn/s broken or completely missing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace ABS Arcing Horn (1ABSAH)
		<u>Component</u> - Arcing horns (AH)
		<u>Failure Type</u> - Broken (BR) / Missing (MI)
		<u>Cause</u> - Degradation (DG) / Vermin (VM)
<u>Scope of Rectification Works</u> Replace arcing horn on affected phase, inspect other phases also.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Arcing Horn - Out of Alignment</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Comparing to other phases, arcing horn/s not correctly, or fully, engaged.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Adjust ABS (1ABSAD)
		<u>Component</u> - Arcing horns (AH)
		<u>Failure Type</u> - Not fully closed (NC)
		<u>Cause</u> - Out of Alignment (OA)
<u>Scope of Rectification Works</u> Perform Maintenance / Realign		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Main Contact (Blade) – Out of Alignment or Not Fully Closed</u>		<u>Priority</u>
		If Audible Discharge: SAP 2 (Immediate/48)
No audible discharge: SAP 7 (6 Months)		
<u>Bushfire Defect</u>		
If Audible Discharge: Yes		
No audible discharge: No		
<u>Standard Job</u>		
- Repair/Replace ABS Blade (1ABSBL)		
<u>Component</u>		
- Main Contacts (MA)		
<u>Failure Type</u>		
- Not operational (NO)		
<u>Cause</u>		
- Out of Alignment (OA)		
<u>Scope of Rectification Works</u> Perform Maintenance / Realign.		
<u>If Audible Discharge: Call and advise Local Operations Manager of defect and priority.</u>		

Defect Description	Defect Photo	Task Details
<u>ABS Bond - Damaged</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Bonding cable with broken strands.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - HV Conductor (1HVCDR)
		<u>Component</u> - Bond (BD)
		<u>Failure Type</u> - Damaged (DM) / Broken (BR)
		<u>Cause</u> - Corrosion (CO)
<u>Scope of Rectification Works</u> Replace Bond		

MMI 0002 – Distribution Overhead Defect Handbook

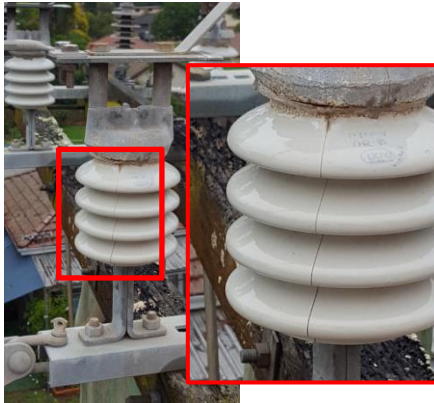
Defect Description	Defect Photo	Task Details
<u>Down Rods - Broken, Warped or Damaged</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Down rod shows visible damage, cracking and/or warping.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace ABS Operating Rod (1ABSOR)
		<u>Component</u> - Down rods (DR)
		<u>Failure Type</u> - Broken (BR)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace Down rod <u>Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Operating Handle – Broken or Damaged</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Handle not affixed to pole correctly. - Handle with physical signs of damage.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace ABS Operating Handle (1ABSOH)
		<u>Component</u> - Handle (HD)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1)
		<u>Cause</u> - Vandalism (VA)
<u>Scope of Rectification Works</u> Reaffix handle to pole <u>Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Operating Handle – Un-earthed</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Earthing braid/bond attaching the handle to the mounting bracket is missing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace ABS Operating Handle (1ABSOH)
		<u>Component</u> - Handle (HD)
		<u>Failure Type</u> - Not earthed (EA)
		<u>Cause</u> - Missing (MI)
<u>Scope of Rectification Works</u> Replace earthing connection		

Defect Description	Defect Photo	Task Details
<u>ABS Insulators - Damaged</u>	 	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - General damage to insulators including: chips to the porcelain. Cracks in the mounting insulators, burn marks to the polymer.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace ABS Assembly (1ABSSW)
		<u>Component</u> - Insulator (IN)
		<u>Failure Type</u> - Damaged (DM)
		<u>Cause</u> - Deterioration (DG)

Scope of Rectification Works

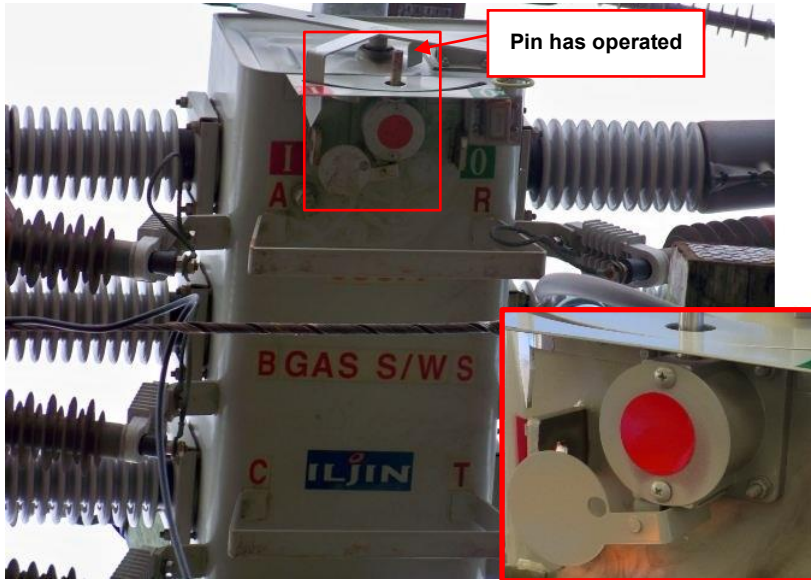
Replace entire ABS unit

Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>ABS Lock Device - Damaged or Missing</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
Indicators: - Lock used to lock open/closed switch is missing.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Lock (1LOCK)
		<u>Component</u> - Lock (LO)
		<u>Failure Type</u> - Damaged (D1) / Missing (MI)
		<u>Cause</u> - Vandalism (VA)
<u>Scope of Rectification Works</u> Install Lock <u>Call and advise Control Room of defect and priority.</u>		

Defect Description	Defect Photo	Task Details
--------------------	--------------	--------------

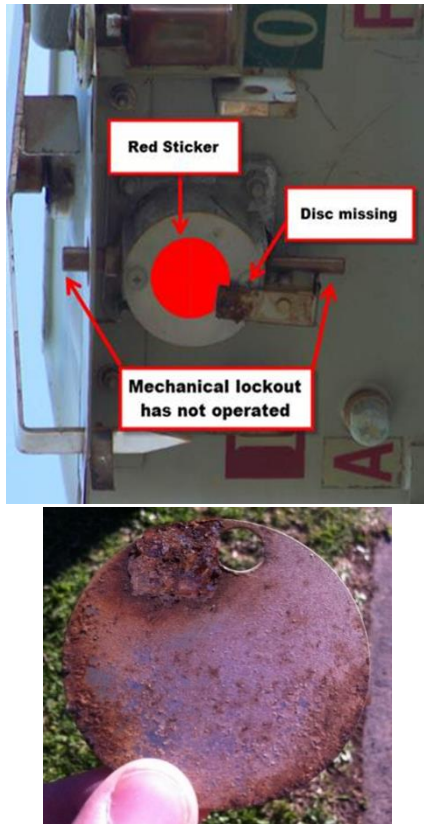
<u>LBS Indicator – Low Gas</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Red disc is visible, - interlock pin has 'locked out',		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LBS Unit (1LBSSW)
		<u>Component</u> - Indicator (IC)
		<u>Failure Type</u> - Operated (OP)
		<u>Cause</u> - Normal Operation (NO)
<u>Scope of Rectification Works</u> Replace LBS Unit / <u>Send email to, or call, system control identifying the NLD</u> NetworkAccess@endeavourenergy.com.au.		

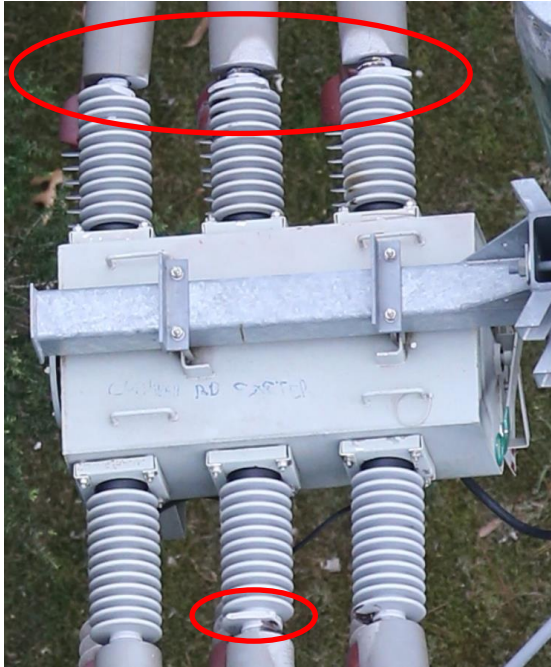
Defect Description	Defect Photo	Task Details
--------------------	--------------	--------------

MMI 0002 – Distribution Overhead Defect Handbook

<u>LBS Indicator Semaphore – Rusted or Missing</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Corrosion has warped semaphore, causing interlock pin to become inoperable. - Semaphore has detached and exposed gas chamber.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LBS Unit (1LBSSW)
		<u>Component</u> - LBS Tank (LB)
		<u>Failure Type</u> - Rusted (RU)
	<u>Cause</u> - Deterioration (DG)	
<u>Scope of Rectification Works</u> Replace LBS Unit /		
<u>Send email to, or call, system control identifying the NLD</u> NetworkAccess@endeavourenergy.com.au .		

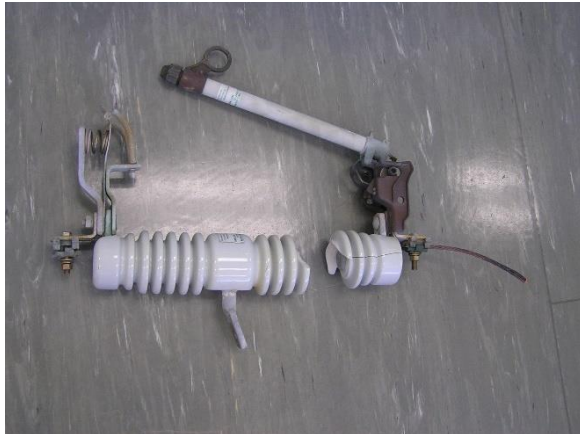
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>LBS Indicator Cover Plate - Rusted or Missing</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Indicator cover plate has corroded and the spot welds have failed. - Interlock pin has <u>not</u> operated. Note: Switch is still safe to operate as the low gas mechanical lockout has not been activated.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace HV Hardware (1HVVHAR)
		<u>Component</u> - LBS Tank (LB)
		<u>Failure Type</u> - Rusted (RU)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace cover part for low gas indicator, refer to SDI 215 (Stockcode - 1565985) / <u>Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.</u>		

Defect Description	Defect Photo	Task Details
<u>LBS Bushings - Damaged, Cracked or Chipped</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Minor Damage to multiple bushings (small chips,cracks); or - Major damage to one bushing (ie, missing multiple sheds). - ≥20% of sheds damaged;		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace LBS Unit (1LBSSW)
		<u>Component</u> - HV Bushing (HB)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1)
		<u>Cause</u> - Vermin (VM) / Vandalism (VA)
<u>Scope of Rectification Works</u> Replace entire unit / <u>Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.</u>		

Defect Description	Defect Photo	Task Details
--------------------	--------------	--------------

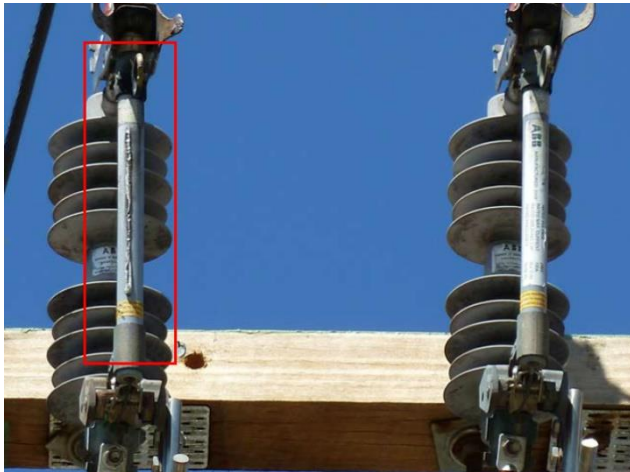
MMI 0002 – Distribution Overhead Defect Handbook

<u>DOF Assembly – Damaged</u>		<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Visual signs of damage. - Significant cracking, chips or broken.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Replace DOF Assembly (1DOFSW)
		<u>Component</u> - Drop out fuse assembly (DO)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replace all HV fuse links. For porcelain assemblies replace all three units. If polymer only replace damaged unit. <u>Send email to, or call, system control identifying the NLD NetworkAccess@endeavourenergy.com.au.</u>		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>DOF - Spark Catchers Installed</u>		<u>Priority</u> SAP Priority 7 6 Months
		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Remove Spark Arresters (1RMSPA)
		<u>Component</u> - Drop out fuse assembly (DO)
		<u>Failure Type</u> - Obsolete (OB)
		<u>Cause</u> - Obsolete (OB)
<u>Scope of Rectification Works</u> - Remove spark catcher if possible. If not possible, replace unit.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>DOF Carrier - Damaged or Blown Fuse Link</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Visual signs of burnt, damaged, fraying or tracking fuse carriers.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> Replace DOF Carrier (1DOFCA)
		<u>Component</u> - Fuse (FU)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1) / Missing (MI)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Replaced only damaged fuse carriers.		

16 Reinstated Poles

Defect Description	Defect Photo	Task Details
<u>Reinstated Pole - Wall Thickness Not Sufficient</u>	To be added	<u>Priority</u> SAP Priority 6 1 Month
Indicators: - Reinstated pole’s wall thickness is below threshold stated in MMI 0001.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Reinstated Pole (RP)
		<u>Failure Type</u> - Mechanical Strength Compromised (MS)
		<u>Cause</u> - Deterioration (DG)
<u>Scope of Rectification Works</u> Pole to be replaced.		

Defect Description	Defect Photo	Task Details
<u>Reinstated Pole - Leaning Due to Failure of Reinstatement</u>	To be added	<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Reinstated pole is leaning greater than 10 degrees. - Failure is due to issues with the reinstatement itself (ie, timber is degrading, damage to the reinstatement).		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Use condemn pole workorders - See Clause 4.4.
		<u>Component</u> - Reinstated Pole (RP)
		<u>Failure Type</u> - Leaning (LN)
		<u>Cause</u> - Deterioration (DG) / Corrosion (CO)
<u>Scope of Rectification Works</u> Pole to be replaced. If the reinstatement is less than 10 years old, this should be raised with Major Contracts Manager.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Reinstated Pole - Bands Damaged or Deteriorated</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Reinstatement pole bands showing signs of rusting. - Pole bands damaged / split / broken.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - End of Life Nail Pole (EOLPLN)
		<u>Component</u> - Reinstated Pole (band) (RB)
		<u>Failure Type</u> - Mechanical strength compromised (MS)
<u>Cause</u> - Corrosion (CO) / Vandalism (VA)		
<u>Scope of Rectification Works</u> Replace Pole.		

17 Stay System

Defect Description	Defect Photo	Task Details
<u>Stay Guard – Damaged, Broken or Missing</u>		<u>Priority</u> SAP Priority 9 Observation
Indicators: - Stay wire can be seen through cracks in guard. - No stay guard present.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Stay Guard (1STYGD)
		<u>Component</u> - Stay Guard (SG)
		<u>Failure Type</u> - Damaged (D1) / Missing (MI)
		<u>Cause</u> - Mechanical Impact (MC)
<u>Scope of Rectification Works</u> Install/Replace stay guard.		

MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Ground Anchor - Damaged or Broken</u>		<u>Priority</u> SAP Priority 7 3 Months
Indicators: - Ground anchor system showing signs of damage or corrosion.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Repair / Replace Stay (1PLSTY)
		<u>Component</u> - Stay (Ground) (SY)
		<u>Failure Type</u> - Broken (BR) / Damaged (D1)
		<u>Cause</u> - Ground Level Change (ER) / Corrosion (CO) / Mechanical Damage (MD)
<u>Scope of Rectification Works</u> Replace anchor system.		

MMI 0002 – Distribution Overhead Defect Handbook

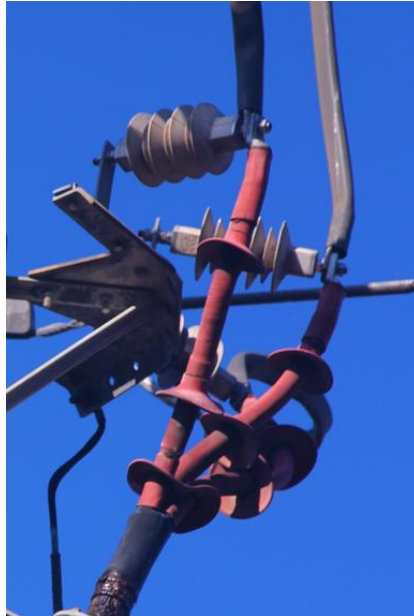
Defect Description	Defect Photo	Task Details
<u>Stay Insulator – Damaged or Broken</u>		<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Mechanical Damage to stay insulator.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Replace Stay Insulator (1STYIN)
		<u>Component</u> - Stay insulator (SI)
		<u>Failure Type</u> - Electrical breakdown (EB)
		<u>Cause</u> - Vermin (VM) / Vandalism (VA)
<u>Scope of Rectification Works</u> Replace stay insulator.		

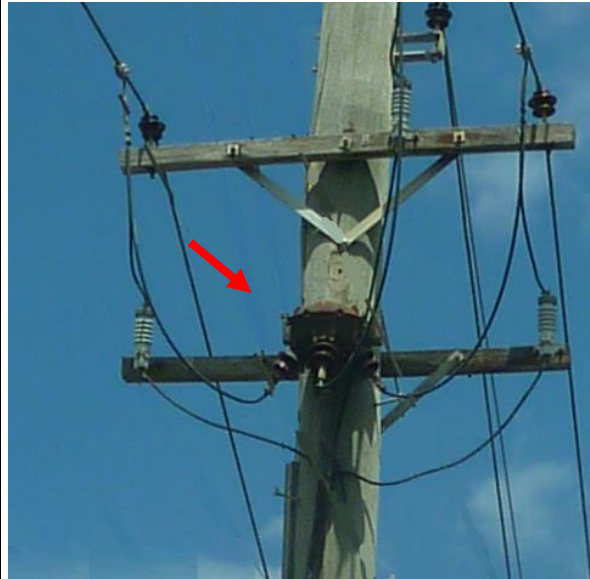
MMI 0002 – Distribution Overhead Defect Handbook

Defect Description	Defect Photo	Task Details
<u>Stay Wire - Broken or Damaged</u>		<u>Priority</u> SAP Priority 2 Immediate/48 hrs
		<u>Bushfire Defect</u> Yes
<u>Standard Job</u> - Repair / Replace Stay (1PLSTY)		
<u>Component</u> - Stay Wire (SW)		
<u>Failure Type</u> - Broken (BR) / Damaged (D1)		
<u>Cause</u> - Vehicle Impact (TP) / Vandalism (VA) / Deterioration (DG)		
<u>Indicators:</u> - Broken strands of the stay wire. - Stay wire does not have any tension in wire and is not providing mechanical support to pole.		
<u>Scope of Rectification Works</u> Replace stay wire.		
<u>Call and advise Local Operations Manager of defect and priority.</u>		

Defect Description	Defect Photo	Task Details
<u>Stay Wire - Loose</u>		<u>Priority</u> SAP Priority 7 6 Months
		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair / Replace Stay (1PLSTY)
		<u>Component</u> - Stay wire (SW)
		<u>Failure Type</u> - Loose (LO)
		<u>Cause</u> - Installation Error (IE)
<u>Scope of Rectification Works</u> Re-anchor stay wire to ground or to pole. Check whether there is an additional reason for slack in the span.		

18 UGOH

Defect Description	Defect Photo	Task Details
<u>UGOH Polymeric - Insulation Deteriorated</u>	 (Image for reference, no defect pictured)	<u>Priority</u> SAP Priority 7 6 Months
Indicators: - Polymer faded/discolouration. - Showing signs of cracks/splits.		<u>Bushfire Defect</u> Yes
		<u>Standard Job</u> - Repair/Replace Cable Termination (1CABTE)
		<u>Component</u> - UGOH (UG)
		<u>Failure Type</u> - Deteriorated (DE)
		<u>Cause</u> - UV Degradation (DG)
<u>Scope of Rectification Works</u> Replace UGOH termination on all three phases.		

Defect Description	Defect Photo	Task Details
<u>UGOH Pot head - Installed</u>		<u>Priority</u> SAP Priority 8 12 Months
Indicators: - Pot head is installed on the network. - UGOH is constructed with a cast-iron connection. - These are an obsolete design and should be removed.		<u>Bushfire Defect</u> No
		<u>Standard Job</u> - Repair/Replace Cable Termination (1CABTE)
		<u>Component</u> - UGOH (Pot Head) (PO)
		<u>Failure Type</u> - Obsolete (OB)
		<u>Cause</u> - Construction Issue (CI)
<u>Scope of Rectification Works</u> Replace pot head termination and replace with a polymeric termination.		

Produced by Asset Planning and Performance

W Endeavourenergy.com.au
T 131 081



ABN 11 247 365 823