

Title: **METAL STRUCTURE POWER
LINE INSPECTIONS AND
DEFECT CLEARING - LATTICE
STRUCTURES, INSULATORS &
CONDUCTORS**

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Content

	Page
1. Introduction	4
2. Supporting clauses	4
2.1 Scope	4
2.1.1 Purpose	4
2.1.2 Applicability	4
2.2 Normative/Informative references	4
2.2.1 Normative	4
2.2.2 Informative	5
2.3 Definitions	5
2.3.1 General	5
2.3.2 Disclosure classification	6
2.4 Abbreviations	6
2.5 Roles and responsibilities	6
2.5.1 TX Grid Managers / DX Plant Management Managers shall be responsible for:	6
2.5.2 TX Grid Managers / DX Zone Managers shall be responsible for:	7
2.6 Process for monitoring	7
2.7 Related/supporting documents	7
3. Requirements	7
3.1 Pre-planning	7
3.2 Risk Assessment	7
3.3 Pandemic related specific safe work assessment	8
3.4 Personal Protective Equipment	8
3.5 Preparation of work site	8
3.6 Record Keeping	9
3.7 Defect Category codes	9
4. First Line Maintenance	9
4.1 Safety and preparation	9
4.2 Inspection sheets	9
4.2.1 Inspection requirements	9
5. Authorization	17
6. Revisions	17
7. Development team	17
8. Acknowledgement	17
Annex A – Detail Air Inspection	18
Annex B – Ground Patrol	19
Annex C – Fast Air (Tx only)	20
Annex D – Transmission Inspection Report	21
Annex E – Distribution Inspection Report	22

Figures

Figure 1: Horizontal and Vertical distances to consider	10
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Figure 2: Horizontal distance of tree to power line	11
Figure 3: Encroaching growth of tree to power line	11

1. Introduction

This Task Manual serves to ensure safety compliance and performance improvement for Steel Structure Power Lines (Transmission and Sub-Transmission voltages). It aligns with NRS 082 and ensures that Metal Structured Power Lines is maintained in accordance to the OHS Act requirements. This document was compiled to conform or align with NRS 082 to ensure:

- that equipment on Eskom's Steel Structure Power Lines is effectively maintained,
- that the OHS Act requirements are met and
- Standardisation of the maintenance instructions on the inspection of Steel Structure Power Lines within the wires business.

2. Supporting clauses

2.1 Scope

This document is applicable to all Eskom's Steel Structure Power Lines (Transmission and Sub-Transmission voltages).

2.1.1 Purpose

The purpose of this document is to provide persons with minimum criteria for the effective ***inspection and maintenance (that is, with respect to defect clearing) for all*** Eskom's Steel Structure Power Lines. It is a detailed description of the task as well as the most critical observations associated with the equipment being maintained.

2.1.2 Applicability

This Task Manual is applicable to persons performing inspections and maintenance on Eskom's Steel Structure Power Lines in the OU areas and Grids under the jurisdiction of Eskom Holdings (Pty) Limited.

2.2 Normative/Informative references

Parties using this Task Manual shall apply the most recent edition of the documents listed in the following paragraphs.

2.2.1 Normative

- [1] 32-9: Definition of Eskom documents
- [2] 32-644: Eskom documentation management standard
- [3] 474-65: Operating Manual of the Steering Committee of Technologies (SCOT)
- [4] OHS Act: Occupation Health and Safety Act 85 of 1993 and Regulations;
- [5] [EPC 32-846](#), Operating Regulations for High Voltage systems;
- [6] [240-100176186](#): Distribution Standard on Fall Arrest Systems;
- [7] DST_34-1710: Provision and Use of Personal Protective Equipment
- [8] [240-78692652](#): Procedure for the application and maintenance of portable earths;
- [9] [240-86100853](#): Procedure for Barricading;
- [10] [DPC 34-380](#): Identifying, Analysing, Documenting and Observing Dangerous/Hazardous tasks;
- [11] DPC_34-1402: Procedure for Using A Fall Arrest System
- [12] DPC_34-227: Pre-task planning and feedback process

-
- [13] [DST 34-1150](#): Lifting machine operators training
- [14] NRS 082 – Recommended Maintenance Policy for Electricity Networks
- [15] 240-82421511 MAINTENANCE STANDARD FOR TRANSMISSION AND SUB-TRANSMISSION POWER LINES (Steel structures)
- [16] TST41-475 STANDARD FOR TRANSMISSION MAINTENANCE PLANNING, SCHEDULING AND CONTROL
- [17] 240-101063224 STANDARD HOURS FOR ROUTINE INSPECTION AND MAINTENANCE TASKS OF TRANSMISSION LINES
- [18] TGL 41-332 TRANSMISSION BIRD PERCH GUIDELINES
- [19] TGL41-333 BIRD NESTING GUIDELINES
- [20] TGL41-334 TRANSMISSION VEGETATION MANAGEMENT GUIDELINE
- [21] TGL41-335 TRANSMISSION BIRD COLLISION PREVENTION GUIDELINE
- [22] TGL41-336 FIRE PROTECTION ASSOCIATION GUIDELINE
- [23] TGL41-337 SOIL EROSION GUIDELINE
- [24] TGL41-338 TRANSMISSION SERVITUDE GATES STANDARD GUIDELINE.
- [25] TGL41-927 TREE FELLING GUIDELINE
- [26] TGL41-340 ACCESS TO FARMS
- [27] 240-119669098 INSTALL, MAINTAIN AND REPLACE LINE LABELS AND BIRD GUARDS ON OI&E AND LIVE TRANSMISSION LINES
- [28] 240-170000064 Performing Maintenance Tasks while employing Covid-19 Preventive Measures - Engineering Instruction
- [29] 240-154263529 COVID-19 Protective Measures to be taken during the COVID-19 (Field Staff) - Work Instruction
- [30] 240-170000630 Defect Categories in Inspection Sheets

2.2.2 Informative

None

2.3 Definitions

2.3.1 General

All definitions in 32-846 and OHS Act 85 of 1993 including the following are applicable:

Definition	Description
Authorised person	Means a person, whether an employee or another person, who has been authorised in terms of these regulations
Dangerous/hazardous task	A specific element of work, which has produced and/or which possesses the potential to produce major loss or harm to people, assets, processes/production and/or the environment when performed incorrectly.
Risk Assessment	This process involves the combined functions of hazards identification, risk analysis, risk evaluation, determining the risk control strategy/s and the identification of the risk control measures that will be implemented during the task execution.

Definition	Description
Sub-transmission Voltage	Voltages ranging between 66kV and 132kV
Task Analysis	The systematic examination of all dangerous/hazardous tasks (work) in order to identify and quantify all the potential and existing inherent hazards that employees are exposed to while the tasks are being executed.
Transmission Voltage	Voltages above 132kV

2.3.2 Disclosure classification

Controlled disclosure: controlled disclosure to external parties (either enforced by law, or discretionary).

2.4 Abbreviations

Abbreviation	Description
ACD	Anti-climbing Device
CLN	Customer Load Network (TX)
CNC	Customer Network Centre (DX)
DX	Distribution
EDA	Electronic Data Assistant
FAS	Fall Arrestor System
FPI	Fault Path Indicator
GLD	Ground Lead Disconnecter
kV	Kilo Volt
LDPE	Light Density Polyethylene
O/H	Overhead
ORHVS	Operating Regulations for High Voltage Systems.
OU	Operating Unit
PPE	Personal Protective Equipment;
PTO	Principal Technical Official
STO	Senior Technical Official
TCIF	Technology Change Implementation Forum
TRFR	Transformer
TX	Transmission

2.5 Roles and responsibilities

2.5.1 TX Grid Managers / DX Plant Management Managers shall be responsible for:

- Ensuring that equipment Job Plans (Task Lists) are available and issued for specific maintenance.
- Ensuring that the maintenance feedback information that is available in the maintenance management system is analysed.

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2.5.2 TX Grid Managers / DX Zone Managers shall be responsible for:

- a) Ensuring the safe execution of all work and activities as set out in this Task Manual.
- b) Ensuring that staff carrying out maintenance tasks is trained, competent and authorized to perform maintenance on the specific equipment;
- c) Ensuring that instructions are implemented and adhered to, and equipment is maintained in accordance to relevant Task Manuals.
- d) Ensuring that the maintenance feedback information / data is captured and recorded into the maintenance management system for future maintenance planning

2.6 Process for monitoring

The Task Supervisor (CLN (TX) or CNC (DX)) is responsible for the overseeing, Signing off and Quality assurance of the WR. The defects arising from the WR must be appropriately addressed by the Task Supervisor.

2.7 Related/supporting documents

Not applicable.

3. Requirements

3.1 Pre-planning

Note: Ensure that the relevant / correct PPE is identified and used.

- a) Assessment at the site to determine the scope of work and the resources that would be required (people, equipment, PPE, etc.)
- b) Identify all the underground services.
- c) Plan work and resources.
- d) Ensure that all necessary documentation is completed / processed (e.g. check lists).

3.2 Risk Assessment

The risk assessment shall cover at least the risk associated with the following: (Where applicable)

- Working in close proximity to energised equipment / parts.
- Working in water environment.
- Roadside work.
- Noise levels and effectiveness of communication.
- Working in elevated positions.
- Condition of poles, structure, hardware and conductors.
- Rating of equipment.
- Public.
- Weather condition.
- Equipment and tools.
- Materials and spares.
- Overall supervision.

- Completion of a workers register.

Note: Workers retain the right to refuse to work on the grounds of health, safety and environmental concerns according to DPC_34-925.

- Conduct an onsite risk assessment prior to commencement of work and continuously thereafter during the task execution by:
 - Identifying the existing hazards/risks.
 - Treating, transferring, tolerating or terminating the identified risks.
 - Ensuring that all workers acknowledge identified risks and hazards by signing a risk assessment form / worker's register.
- Ensure good light/lighting and visibility at the work site.
- Ensure that the existing hazards/risks are identified and minimised.
- Ensure that appropriate PPE and safety equipment are identified, inspected and worn/used during execution of the task.
- Ensure that all members of staff are included when performing risk assessment.

3.3 Pandemic related specific safe work assessment

The following activities shall be performed by persons in charge of work: (Refer to par 2.2.1 [27] & [28] above)

- a) Evaluate maintenance tasks to determine whether safe social distances can be maintained, and other (normal) safe work procedures are not compromised, for example, communication by the Team leader, Supervisor or Person-in-charge (PIC) with staff in the proximity of live equipment.
- b) Perform the normal risk assessment, as per the task manuals, **and** consider the specific risk associated with applying PANDEMIC RELATED preventative measures. Including an additional item in the normal risk assessment, which will include the risk of PANDEMIC RELATED infections. Risks may increase due to PANDEMIC RELATED PPE applied.
- c) PPE, as per task manual, shall be utilised as prescribed, **and** PANDEMIC RELATED PPE shall be applied as **additional** safeguards.

Both the safe work procedure and PANDEMIC RELATED precautions shall be applied. If one or the other are compromised; health and safety are at risk, then the maintenance activity shall not be started, or shall be stopped (if the task is already in progress), unless appropriate risk mitigating measure can be put in place or be rescheduled after the PANDEMIC RELATED restrictions are lifted.

<https://www.dictionary.com/e/epidemic-vs-pandemic/>

3.4 Personal Protective Equipment

All personal protective equipment shall be in accordance with DST_34-1710 and those identified by risk assessment (DPC34-227).

- a) Head protection – Hard Hats;
- b) Shirt/Pants – Cotton;
- c) Foot protection – Safety boots/shoes and socks (cotton);
- d) Fall Arrest System (FAS); and
- e) Insulating rubber Gloves.

3.5 Preparation of work site

- All steps as identified in the analysis of physical material handling are applicable.
- Ensure that tools, equipment and materials are inspected for serviceability prior to use.
- Ensure that no substandard / unserviceable / incorrect tools, equipment or materials are used.

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3.6 Record Keeping

Once Annexures A, B, C, D or E is completed; it shall form the record of work done. This completed report must be returned to the Work Co-ordinator (DX) / Grid Senior Engineer / Advisor (PWP) - TX. Where Plant Department (DX) / Senior Engineer TX (PWP) needs to act on feedback from the inspection, example create work orders for defect clearing, refurbishment requirements etc., the inspection sheet shall be scanned and attached to the work order. Refurbishment requirements must be discussed with Plant Department (DX) Grids Senior Engineer/Advisor (PWP) and / Line Engineering Services (TX). Approved inspection tools such as the EDA and the Gimbal may also be used to capture / record defects.

3.7 Defect Category codes

As per 240_170000630 "Defect Categories in Inspection Sheets", the following category codes shall apply.

Defect Category	Defect category description	Process
P1	These types of defects present an immediate risk to safety and asset failure. The appropriate escalation, operating and repair process shall be followed to address the defect within the shortest time frame.	Dispatch
P2	These types of defects can be addressed as per the scheduling process by the relevant execution department.	Scheduling
P3	These types of defects / installations are non-compliant to current standards and are not safety or asset failure related and require Plant Management investigation.	Plant Investigation

4. First Line Maintenance

4.1 Safety and preparation

- Ensure safety as per Eskom standards. Ensure that if you observe any situation that can result in environmental damage, injury or death that the situation is made safe as soon as possible.
- Adhere to Eskom environmental standards.
- Perform risk assessment (DPC 34-22) and adhere to critical task analysis procedures.
- When inspecting the work site ensure to note or take precautionary measure against:
 - Falling into holes;
 - Injuring ones' self by walking into protruding structures;
 - Touch potential;
 - Falling spares / equipment

4.2 Inspection sheets

Inspection sheets shall at least contain the main components to be inspected on Eskom's Steel Structure Power Lines as shown in Annexures A to E.

4.2.1 Inspection requirements

The following checks will be done for the components shown in Annexures A to E.

4.2.1.1 Vegetation

- Identify any structures/buildings that have been built under or near the power line, resulting in safety clearances being compromised.
- Identify vegetation and trees that are encroaching on the acceptable clearances to the power line. The minimum vegetation clearance for Eskom's Steel Structure Power Lines are:
 - a) Transmission voltages:
 - As per Transmission vegetation management guideline TGL41-334.
 - b) Sub-Transmission voltages:
 - Minimum vertical clearance - 3m
 - Minimum horizontal clearance - 3m (from outer phase or 4m from centre line)
 - Identify trees that have grown to a height **in excess of the horizontal distance of that tree from the nearest conductor** of the power line.
 - Identifying trees of this nature will help prevent tall trees from falling onto the power line which could lead to parted conductors and resulting in fatalities.

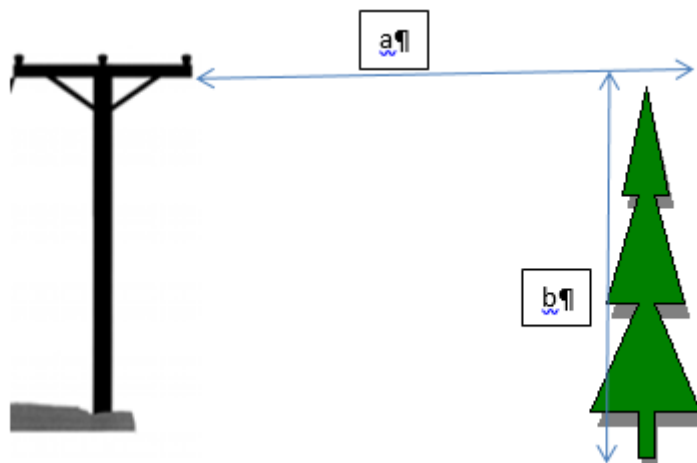


Figure 1: Horizontal and Vertical distances to consider

- a = horizontal distance from tree to outer phase conductor
- b = height of tree
- $b < a$: i.e. height of tree must be less than the horizontal distance to the outer phase conductor.
- Trees that are outside of the minimum clearance boundary's (3m) may grow over a three-year period and resulting in the tree breaking the 3m clearance requirement. If the tree will break the 3m clearance due to its natural growth then it must be identified on the inspection.
- This simple example explains this concept:
- A tree is located 7m away from the power line. This is the horizontal distance from the outer phase of the power line to the centre of the tree.

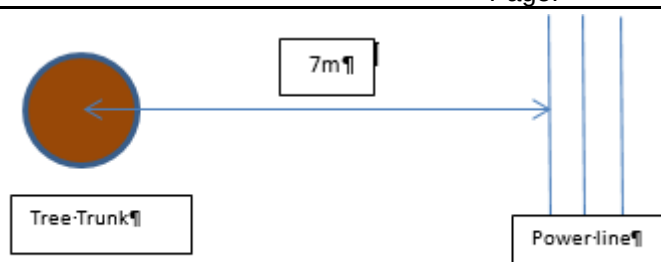


Figure 2: Horizontal distance of tree to power line

- The branches of the tree grow outward, at a rate of 1m a year. The branches would encroach on the minimum vegetation clearance when they are 3m away from the line.

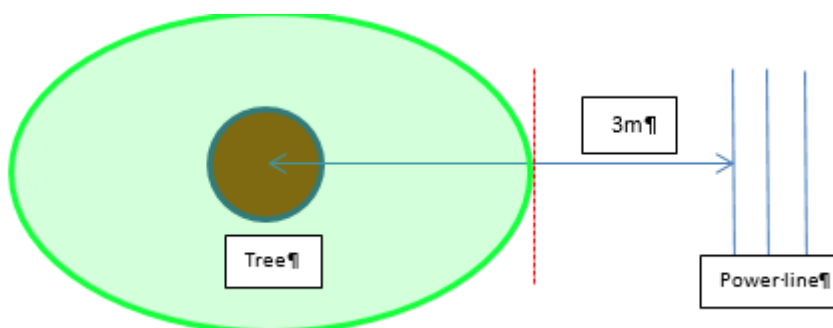


Figure 3: Encroaching growth of tree to power line

- In order to ensure that the tree does not encroach on the minimum vegetation clearance, that tree will need to be trimmed. The Eskom requirement is to trim the tree based on the 3 year growth rate. In this case, the tree grows 1m a year so the tree will need to be trimmed by 3m.
- Trees, shrubs and bushes growing directly under the power line must be identified. This includes vegetation at the base of the structure and any vegetation under the phase conductors that may grow in excess of 4m.
- Where grass clearing has been identified to improve access or reduce the risk of fires, priority shall be given to tree cutting / trimming to ensure that the vegetation budget is managed effectively.

4.2.1.2 Detail Air-mobile Inspection and Pole Top Inspections

4.2.1.2.1 Tower, Stays and Foundations

- Inspect Tower members and stays for corrosion
- Inspect for Missing or damaged members
- Check for Loose or missing bolts
- Check for Missing, displaced or corroded anti-climb devices.
- Check for Back flashovers.
- Inspect bird guards for dislocations
- Inspect for correct and visible labels and warning signs

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- Inspect tower foundations for damaged concrete, cap and seals, soil erosion and foundations water logged.

4.2.1.2.2 Insulators

- Inspect for broken / damaged discs or sheds
- Check for pollution on discs and sheds
- Check for flashover caused by birds
- Check for corroded, worn pins, sockets, composite insulator damaged end cap seals, missing corona rings and corona activities at end caps.

4.2.1.2.3 Conductor and Shield Wires

- Inspect conductor and shield wire attachment assemblies for worn, corroded, damaged, vandalised, missing and loose bolts and split pins
- Inspect for corrosion, damage and poor joints
- Inspect conductor sag due to high temperature (under clearance due to high temp)
- Inspect conductor sag.(as built under clearance or change of topography)
- Check for damage, broken strands, bird caging, bulging, hot spots, gun shots, burn marks, poor joints or joints showing signs of overheating
- Check for damaged or loose vibration dampers, spacers and damage caused to conductor
- Inspect shield wire insulators and arcing horns at line railway and pipe crossings
- Inspect aircraft warning spheres, visibility and correct positioning for lines crossing national roads
- Check bird flappers for correct location and visibility
- Inspect river crossings for sail boat activities and warning spheres on lines at river crossings

4.2.1.2.4 Fibre Optic System

- Inspect Fibre Optic cable for damaged cable and/or strands due to e.g. arcing, bird flappers, aviation spheres, vibration dampers
- Inspect ADLASH fibre tape and attachment to shield wire
- Inspect junction boxes for damage, missing clamps and earth bonds
- Inspect Fibre Optic cable for sharp bend that may cause damage to strands

4.2.1.2.5 Multi Spectrum Camera Scanning

The following components shall be scanned:

- Composite insulators for corona and heat at end caps.
- Conductors and joints for hot spots and excessive corona

4.2.1.2.6 Digital pictures

Pictures of the following components shall be taken:

- Cross arms for loose or missing bolts, corroded, damaged and/or missing members
- Insulators for signs of flash overs, pollution, broken or damaged discs and sheds, corroded pins and caps, missing split-pins.

-
- Conductors and shield wires, spacers, dampers aircraft warning spheres, bird flappers, bird caging, broken strands and vibration dampers.
 - Towers for corrosion, damaged and/missing members and bolts.
 - Tower foundations for water, soil erosion and damage
 - Fibre optic cables and joint boxes for defects
 - Servitude vegetation and activities under the line.

4.2.1.3 Fast Air Mobile Inspections

The following inspections shall be carried out from a helicopter:

4.2.1.3.1 Tower, Stays and Foundations

- Inspect towers and stays corrosion
- Check for missing or damaged towers and members
- Check for missing, displaced or corroded anti-climb devices.
- Inspect bird guards for dislocations.
- Check for correct and visible labels and warning signs

4.2.1.3.2 Insulators

- Inspect pollution on discs and sheds.
- Check for corroded, worn pins, sockets, composite insulator damaged end cap seals, missing corona rings and corona activities at end caps.

4.2.1.3.3 Glass Discs:

a) Shattered disc

Check for broken disc insulators caused by vandalism and lightning. These damages will lead to enhanced leakage current over the remaining discs and this will potentially lead to erosive runaway. It could result in transient faults and intermittent trips.

b) Erosion

Check for erosion on disc insulator pin caused by electrical discharges or mechanical action over time. Look for discoloration, grooves, gullies, waves, rounded holes etc. on surface of the insulator.

c) Corroded pin

Check for corroded ball pin caused by gradual destruction of materials by chemical reaction with their environment.

d) Flashover mark

Check for flash over caused by lightning or insulator failure.

e) Punctured disc

Check for punctured disc caused by breakdown/conduction of the insulating material. Monitor the insulator for punctures and change immediately if found.

4.2.1.3.4 Conductor and Shield Wires

Inspect conductor sag due to high temperature (under clearance due to high temp

- Inspect conductor sag. (as built under clearance or change of topography)

- Check for damaged, loose or missing vibration dampers, spacers and spacer dampers
- Inspect shield wire insulators and arcing horns at line railway and pipe crossings
- Inspect aircraft warning spheres, visibility and correct positioning for lines crossing national roads
- Inspect river crossings for sail-boat activities and warning spheres on lines at these river crossings
- Inspect bird flappers correct location and visibility
- Check for damage, broken strands, bird caging, bulging, hot spots, gun shots, burn marks, poor joints or joints

4.2.1.3.5 Fibre Optic Cables

- Inspect Fibre Optic cable for damaged cable and/or strands due to e.g. arcing
- Inspect ADLASH fibre tape and attachment to shield wire
- Inspect junction boxes for damage, missing clamps and earth bonds
- Inspect Fibre Optic cable for sharp bends that may cause damage to strands

4.2.1.4 Ground Patrol

The following inspections shall be carried out from ground level with the aid of binoculars, etc.

4.2.1.4.1 Tower, Stays and Foundations

- Inspect tower members and stay for corrosion
- Check for missing or damaged tower members and stays
- Inspect foundation seal/cap damage, corroded steel, soil erosion, exposed foundations, waterlogged, and covered under soil.
- Check for loose or missing bolts
- Inspect stay tension, damaged or corroded stay attachment.
- Inspect for missing, displaced or corroded anti-climb devices.
- Inspect earth strap/counterpoise corrosion, dislocated or missing straps
- Inspect for flashovers and burn marks on tower members
- Inspect terminal tower earthing to substation earth mat and structures are in place and according to standard
- Inspect bird guard for dislocations or missing bird guards
- Check for correct and visible labels and warning signs

4.2.1.4.2 Insulators

- Inspect pollution on discs and sheds
- Check corrosion of pins sockets and end caps

4.2.1.4.3 Glass Discs:

- a) Shattered disc

Check for broken disc insulators caused by vandalism and lightning. These damages will lead to enhanced leakage current over the remaining discs and this will potentially lead to erosive runaway. It could result in transient faults and intermittent trips.

b) Erosion

Check for erosion on disc insulator pin caused by electrical discharges or mechanical action over time. Look for discoloration, grooves, gullies, waves, rounded holes etc. on surface of the insulator.

c) Corroded pin

Check for corroded ball pin caused by gradual destruction of materials by chemical reaction with their environment.

d) Flashover mark

Check for flash over caused by lightning or insulator failure.

e) Punctured disc

Check for punctured disc caused by breakdown/conduction of the insulating material. Monitor the insulator for punctures and change immediately if found.

4.2.1.4.4 Long rod insulators

a) Chipped porcelain long rod

Check for damaged insulating material (porcelain) caused by lightning, vandalism, uneven expanding and contracting of the different materials due to heat.

b) Tracking

Check for tracking caused by impurities and electrical field stress over time

c) Sheath abrasion (rope damage)

Check for abrasion caused by poor workmanship/handling

d) Erosion

Check for erosion caused by electrical discharges over time.

e) Core fracture (bullet damage)

Check for fracture caused by mechanical damage, water entry into glass fiber tension and electrolytic corrosion.

f) Shed damage

Check for torn sheds caused by poor handling/vandalism.

g) Flash over of composite insulator

Check for flash over caused by lightning, insulator failure.

h) Shed movement (core exposure)

Check for core exposure caused by poor handling/vandalism

i) Clevis Thimble

Check for incorrect alignment of clevis thimble caused by poor workmanship

4.2.1.4.5 Pin and Post insulators

a) Check for broken porcelain insulator caused by lightning, vandalism, thermal expansion/contraction over time

b) Check for flash over caused by lightning or insulator failure

4.2.1.4.6 Conductor, associated hardware and Shield Wires

- Inspect for damaged or loose vibration dampers, spacers and damage caused to conductor

- Inspect shield wire insulators and arcing horns at line railway and pipe crossings
- Inspect aircraft warning spheres, visibility and correct positioning for lines crossing national roads
- Inspect bird flappers for correct location and visibility
- Inspect river crossings for sail-boat activities and warning spheres on lines at river crossings
- Check for conductor corrosion.
- Check for damage (i.e. broken strands, bulging, hot spots, gun shots, burn marks, pitting and or flashovers, poor joints or joints showing signs of overheating), caused by poor workmanship, vandalism, fatigue/tensile breaks (over-tensioning) and lightning.
- Inspect repair sleeves (where applicable).
- Inspect for bird caging that could lead to the conductor unravelling to the point where internal discharges occur and the conductor eventually burns off.
- Inspect full-tension joints.
- Inspect for over tensioned line.
- Inspect for in-correct sag and tension on all phases.
- Inspect for Incorrectly installed preformed dead ends.
- Inspect for corrosion of compression dead end.
- Check for incorrect installation of pre-formed ties (where applicable)
- Check for un-installed and or incorrect application of raptor protectors.
- Check for incorrectly attached conductor to insulators.

4.2.1.4.7 Jumpers

- Inspect 4 Point Indent Non-Tension Joints or Tap connect tee-off for incorrect crimping (where applicable).
- Inspect bi-metallic lugs (where applicable)
- Inspect jumpers for bird-caging at lugs and at dead-end fittings
- Inspect for broken strands
- Inspect for parted jumpers
- Inspect for sharp bends
- Inspect for clashing conductors

4.2.1.4.8 Fibre Optic Cables

- Inspect Fibre Optic cable for damaged cable and/or strands due to e.g. arcing
- Inspect ADLASH fibre tape and attachment to shield wire
- Inspect junction boxes for damage, missing clamps and earth bonds
- Inspect Fibre Optic cable for sharp bend that may cause damage to strands

4.2.1.4.9 Servitudes

- Inspect for structures under power lines
- Check for construction and mining activities on servitudes using high / tall equipment
- Check that servitude gates are in good working order and posts are earthed

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- Check for vegetation under power line

5. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Amelia Mtshali	Senior Manager (Design Base & Outage CoE)
Andre Becker	Chairperson, Dx, SCOT Plant Delivery Maintenance Study Committee
Thomas Tshikalange	Chairperson, Tx, SCOT Maintenance Study Committee
Vusi Phiri	Chairperson, Tx Lines and Servitudes Maintenance Base Care Group

6. Revisions

Date	Rev	Compiler	Remarks
April 2022	2	A Persadh	As a Distribution (Dx) requirement, added Normative References [28] & [29] to paragraph 2.2.1 and added paragraph 2.5.5 dealing with "Pandemic related specific safe work assessment". Added section 3.7 Defect Category Codes Updated inspection sheets with a legend for defect category codes
March 2017	1	C Pelser and A Persadh	First issue

7. Development team

The following people initially assisted in the development of this Task Manual:

- Ajith Persadh
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- Edward Cronje
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- Portia Mokwetla
- Izak Jooste

8. Acknowledgement

Not applicable.

Annex A – Detail Air Inspection

[illegible]

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Annex B – Ground Patrol

[illegible]

Annex C – Fast Air (Tx only)

[illegible]

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Annex D – Transmission Inspection Report

		Annex D - Transmission Inspection Report: 240-71380115_4				
Customer Network Centre: _____		Area: _____		Notes: 1. Only record towers spans with defects 2. Strain Towers numbers to start with " S " followed by numerical number 3. More than one line may be used per tower / span to record defects		
Source Substation: _____		_____				
Network Breaker: _____		Feeder: _____				
Section Inspected: _____		From: _____ to: _____				
Work Order Number: _____						
Tower Reference / Span Number	Item	Priority Rating	Reported to	Action proposed	Photograph No	Target Date

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Annex E – Distribution Inspection Report

		Annex E - Distribution Inspection Report: 240-71380115_5							
Customer Network Centre: _____		Area: _____			Notes: 1. Only record towers spans with defects 2. Strain Towers numbers to start with " S " followed by numerical number 3. More than one line may be used per tower / span to record defects				
Source Substation: _____		_____							
Network Breaker: _____		Feeder: _____							
Line Section Inspected: _____		_____							
Work Order Number: _____									
Gimble Operator		Spotter		Date done		Direction in which line was flown:			
Reference / Span Number	Item	Fault	Priority	Temp	Comments	Responsibility	Still numbers	IR	

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