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1. Introduction

The document was compiled to align with NRS 082 requirements in ensuring that equipment in the Eskom network is maintained, and to ensure that Occupational Health and Safety Act (OHSA) requirements are met.

Also to ensure that the FIBRE OPTIC LINE inspection tasks are carried out in a safe manner where risks and hazards are analysed and mitigating measures are incorporated into the document.

This Task Manual is the revision of the document that was initially compiled and titled FIBRE OPTIC LINE INSPECTION to formalize the procedures of performing tasks when maintaining the FIBRE OPTIC LINE. The document includes the latest updates in information, format, photos to make the document more user-friendly, the critical tasks identified when doing this maintenance for the safety of maintenance staff.

This document also includes information from the task associated risks and hazards **analysis** which was done on **the tasks** being performed when maintaining network equipment.

2. Supporting clauses

2.1 Scope

2.1.1 Purpose

The purpose of this Task Manual is to standardize maintenance tasks for maintaining FIBRE OPTIC LINE INSPECTION.

2.1.2 Applicability

This document shall apply throughout Eskom Distribution and to contractors employed by the division.

2.2 Normative/informative references

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

2.2.1 Normative

- [1] ISO 9001 Quality Management Systems;
- [2] OHSA, Occupation Health and Safety Act 85 of 1993 and Regulations;
- [3] NRS 000-1, Part 1: Compilation of NRS and other definitions used in the Electricity Supply Industry;
- [4] 240-61182655, Maintenance Standard For Substation Electrical Components;
- [5] 240-70820203, Substation Routine Inspection;
- [6] EPC_32-520, Occupational Health & Safety Risk Assessment Procedure;
- [7] EPL_32-727, Safety, Health Environmental & Quality (SHEQ) policy;
- [8] 240-114967625, Operating Regulations for High Voltage systems;
- [9] 240-120054284, Personal Protective Equipment Standard;
- [10] 240-164468299, Pre-task planning and feedback process;
- [11] 240-70172585, Management and maintenance within Eskom land, servitudes and right of way;
- [12] 240-82744675, Procedure for refusal to work on the grounds of health, safety and environmental concerns;
- [13] 240-125124036, Care, Use, Inspection And Maintenance Of Conductive And Non-Conductive Ladders; and And Non-Conductive Ladders;
- [14] 240-170000064, Performing Maintenance Tasks While Employing COVID-19 Preventive Measures;

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- [15] 240-154263529, Protective measures to be taken during the COVID-19 (Field Staff);
 - [16] 240-86640998, Supervision of people in electrically hazardous locations;
 - [17] 240-86100853, Standard for Barricading Prohibited Area and Live Chamber;
 - [18] 240-43848327, Employees' Right of Refusal to Work in an Unsafe Situation Procedure;
 - [19] 240-65216546, Standard for Portable Earthing Gear;
 - [20] 240-78692652, Standard for Use and Maintenance of Portable Earthing Gear;
 - [21] EPC_32-418: Rev 0, Working AT Heights;
 - [22] DMN_34-1402; Rev 0, Fall Arrest System;
 - [23] 240-80605256, Access to Farms (includes Strategy on dealing with game farms);
 - [24] 240-62196227 Life-saving rules
 - [25] 240-61227489, Telecommunications Guideline: First Line Maintenance Fibre Optic Inspection Document;
 - [26] 240-89259666, Letter of Understanding – Mutual Care to Specific Risks where ADSS Fibre Optic Cables are Operated and Maintained on Distribution Power Line Structures Manufacturers manual;
 - [27] ETPR 0668: Rev 0, Fibre Optic Network Walk down;
 - [28] Engineering And Construction Short Contract (Contract Number 4600012249);
 - [29] Specific operating local instruction / procedure; and
 - [30] Manufacturer's manual.

2.2.2 Informative

- [31] 32-9, Definition of Eskom documents;
- [32] 32-644, Eskom documentation management standard; and
- [33] 240-52380420, Steering Committee of Technologies (SCOT) Standards Development and Change Implementation Procedure.

2.3 Definitions

2.3.1 General

All definitions in 240-114967625 (ORHVS) and OHSAct 85 of 1993 including the following are applicable:

Definition	Description
ADLASH	The Fibre in the span is lashed to the earthing conductor, ADLASH is installed above the phases and at termination boxes (approximately every 5 km) the Optic Fibre Cable is dropped to just above the anti-climbing device.
ADSS	The Optic Fibre is installed below the power line. It is not in any way attached to the line conductors as it is self-supporting but share the same structure.
Authorised person	means a person, whether an employee or another person, who has been authorised in terms of these regulations
Authorized	A person who is trained and has been proven competent to carry out rotten pole replacement in terms of this standard. This authorization shall be in writing.
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 properly.

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Definition	Description
Directive	A document which sets out a management objective, the appropriate policy if deemed necessary, as well as the functional accountability for activities to achieve that objective and the interface between functions affected by, or responsible for the execution of, such activities.
Hooking Height	This refers to the height above ground level which under normal circumstances will be high enough not to be snagged or damaged by farming machinery or vehicles
OPGW	The Optic Fibre in the line span is embedded in the earthing conductor. OPGW is installed above the phases and at termination boxes (approximately every 5 km) the Optic Fibre Cable is dropped to just above the anti-climbing device.
Responsible person	means a person, who has been authorised to be responsible for ensuring that the work on the apparatus covered by work permit can be, carried out with safety and within the terms of these regulations
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.
Rotten Wooden Pole/unsound pole	A pole that has been rejected after assessment and that shall be replaced. An unsound pole is a class 4 pole or a class 3 pole that will not be stubbed by the region (refer to DST_34-334 for classification of poles).
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.
Note: Only persons who have satisfied the designated person on terms of the Occupational Health and Safety Act (Act 85 of 1993) (General Machinery Regulation 2(1)) that their knowledge is adequate to perform specific duties on specified plant and that their knowledge of these regulations is sufficient may be authorised.	

2.3.2 Disclosure Classification

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

2.4 Abbreviations

Abbreviation	Description
ADLASH	All Dielectric Lashed on Earth wire
ADSS	All Dielectric Self Supporting
CDP	Career Development Programme
CNC	Customer Network Centre
CO	Construction Official
EMP	Environmental Management Program
FON	Fibre Optic Network
GMR	General Machinery Regulation
GPS	Geographic Positioning System
HDPE	High Density Poly Ethylene

Abbreviation	Description
JB	Junction Boxes
OPGW	Optic Ground Wire
ORHVS	Operating regulations for high voltage systems
OTS	Officer Technical Support
PML	Pedestal Mounted Ladder
PPE	Personal Protective Equipment
PTO	Principal Technical Officer
SST CNC	Senior Supervisor Technical Customer Network Centre
STO	Senior Technical Officer
TCIF	Technology Change Information Forum
TO	Technical Officer
TSU	Technical Services Unit
WCO	Works-Coordinator

2.5 Roles and Responsibilities

2.5.1 M & O CoE shall be responsible for:

- Ensuring that job plans and task lists are configured as per the maintenance Engineering Standard and available in the respective CMMS; and
- Ensuring that job plans and task lists reference the correct task manual.

2.5.2 Training Department shall be responsible for:

- Where applicable ensure that the relevant training program is available to support the implementation of the task manual.

2.5.3 Plant Department (DX) / Performance and Works Planning Dept. (PWP) (TX) Managers shall be responsible for:

- Ensure that the CMMS is configured as per the requirement of the Maintenance Implementation Standard and maintenance (including defects and / or modification) is actioned as per the workflow process; and
- Ensuring that the correct maintenance feedback information is captured in the CMMS, is analysed and appropriate action is taken.

2.5.4 Zone Management / Specialized Maintenance & Support (DX) / HV Plant / Secondary Plant Manager (TX) shall be responsible for:

- Ensure that maintenance is assigned to staff who are trained, authorized and found competent to perform maintenance on the specific equipment;
- Ensure that the equipment is maintained as per the Work Orders requirements; and
- Ensure that the maintenance feedback information is captured into the CMMS and relevant maintenance feedback documentation is attached for future maintenance analysis.

2.6 Process for monitoring

Document number	Document title
240-45920887	Process Control Manual (PCM) for Manage Maintenance Base
240-52380420	Steering Committee of Technologies (SCOT) Standards Development and Change Implementation Procedure
240-95116172	Maintain Wires PCM

2.7 Related/supporting documents

Document number	Document title
240-125121130	FIBRE OPTIC LINE INSPECTION _ OPGW Fibre Cable check-sheet
240-125121130	FIBRE OPTIC LINE INSPECTION _ ADLASS Fibre Cable Check-sheet
240-125121130	FIBRE OPTIC LINE INSPECTION _ ADSS Fibre Cable Check-sheet
240-125121130	FIBRE OPTIC LINE INSPECTION _ Gate, Access Roads and River Crossing Register
240-125121130	FIBRE OPTIC LINE INSPECTION _ Critical Task Observation / Risk Assessment

3. Requirements

3.1 Pre-Planning

- a) Assessment to determine the scope of work and the resources that would be required:
- People;
 - Equipment;
 - PPE;
 - Tools; and
 - Material / Spares

Note: If you lack knowledge of the area, environment, equipment, etc special care should be taken when performing the pre-task planning

- b) Determine the cause of loss, upgrade / down grade, cable fault etc
- c) Plan work and resources required for the task.

3.1.1 Previous Maintenance Information / Records

Additional work e.g. Modifications, defects etc.

3.1.2 Spares and Materials

- a) Not Applicable.

3.1.3 Tools and equipment

- a) Set of standard tools;
- b) Digital Camera;
- c) Appropriate Binoculars;
- d) Appropriate Vehicle;
- e) Communication Device; and
- f) GPS.

3.1.4 Personal protective equipment

All personal protective equipment shall be in accordance with 240-120054284 and 240-70044736 the additional requirements from the on-site assessment of the equipment installation arc flash energy rating. All PPE shall be approved and comply with the identified arc flash energy rating.

- a) Overall;
- b) Hard Hat (work at height);
- c) FAS including the rescue kit;
- d) Hard hat;
- e) Safety boots;
- f) Apron;
- g) Face shield;
- h) Gloves.
- i) Standard tool set
- j) Sling;
- k) Come a long;
- l) Pulling device (Kito); and
- m) Earthing equipment.

3.2 Safety and preparation

- a) Ensure that where long distances are travelled when going to work site preparations are done and Eskom's guidelines are observed.
- b) Do an assessment to determine the scope of work and the resources that would be required (people, PPE, equipment, etc) as per EPC_32-520.
- c) Ensure that the panel is isolated and earthed in accordance with ORHVS (240-114967625) before commencing with maintenance.
- d) Ensure that when visiting the work site the general inspection is done as per 240-134657571.
- e) Inspect all the tools and equipment for possible defects.
- f) Personal protective equipment shall be used in accordance with 240-120054284 and the risk assessment shall also be done in accordance with 32-520.
- g) Where required ensure that barricading is erected in accordance with 240-86100853.
- h) Where applicable isolate the D.C supply to the panel to prevent accidental operation of the isolator.
- i) Ensure all tools, equipment and materials are placed in the designated area where they will not hinder or obstruct any work.

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- j) Erect scaffolding (where required).
- k) Environmental hazards shall be removed in accordance with EPL_32-727.
- l) Ensure that when work has to be done above ground level, FAS and ladder usage procedures (240-125121012 and 32-418) and shall be used.
- m) Ensure that structures either sides of the leaning structure has no defects and are in good condition.
- n) Visually inspect the structure conductors, insulators, bindings and the hardware conditions.
- o) Inspect the condition of the work site versus the scope of work
- p) Determine if the task can be carried out safely, the direction of pulling, method to be used to pull ie manual pulling with rope or using mechanical equipment.
- q) Determine the capability of the crane
- r) Perform a proper risk assessment before task commencement or continuously during task execution in accordance with the prescribed procedure and ensure that all members of team are included when performing risk assessment as per 240-164468299.
- s) The inspection will be performed from ground level. A close-up inspection will be performed in accordance with 240-114967625 (Operating Regulations for High Voltage) under the supervision of a person authorised to do so.

Note 1: All defects found are to be reported to the Work Management Centre with the work order feedback.

3.3 Routine Inspections

N/A

3.4 Procedure

3.4.1 Plant Isolation

Note: Ensure that poor visibility due to insufficient light/lighting is addressed during the task execution

- a) Ensure that the plant is isolated and earthed and handed over (works permit) where required in accordance with 240-114967625 (ORHVS).
- b) On –site - Apply equipotential working earths in accordance with organisational standards (240-69125290 & 240-78692652).

3.4.2 On-site Risk Assessment

- a) Perform a proper risk assessment before task commencement or continuously during task execution in accordance with the prescribed procedure and ensure that all members of team take part and contribute when performing risk assessment (refer to the form attached and to EPC_32-520 for information).

Note 1: When doing an on-site risk assessment ensure that the measures to mitigate and / or minimize the associated risks and hazards are developed before executing the task.

- b) Do not take short cuts to save time
- c) Ensure that poor visibility due to insufficient light/lighting during the task execution are addressed
- d) Lack of proper communication ability – language, instructions, signals, etc. is mitigated before the commencement of work.
- e) Ensure that the appropriate PPE and safety equipment are identified, inspected and worn / used during execution of the task
- f) Develop measures to mitigate danger that can be caused by tools, equipment and material falling to below /ground.

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- g) Manage the vegetation as per the document “management and maintenance within Eskom land, servitudes and right of way” (240-70172585).

3.4.2.1 Pandemic related specific safe work assessment

- a) The following activities shall be performed by persons in charge of work:
- 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 PIC with staff in the proximity of live equipment.
 - 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.
 - PPE, as per task manual, shall be utilised as prescribed, **and** PANDEMIC RELATED PPE shall be applied as **additional** safeguards.
- b) Both the safe work procedure (240-170000064) and PANDEMIC RELATED (240-154263529) 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 restrictions are lifted.

3.4.3 Maintenance

3.4.3.1 General

- a) Record the anomalies and diversions such as the route to specific tower has changed (due to new fences, roads or dongas).
- b) Record any problems relating to seasonal variations such as rivers swollen, mud, sand, flash floods and any other observations.
- c) Record road types (gravel, tar, dual carriage, minor road, highway etc).
- d) All river, road and mountain crossings shall also be recorded.

3.4.3.2 OPGW Inspection

- a) Visually check the condition of all the down lead cables, ensure that the clamping assemblies on each tower are still secured and the spacing between clamps is 1-2m apart.
- b) Check that the dome joint access loop is secured onto the tower above the anti-climbing device.
- c) Check the condition of the fibre optic cable suspension and dead end assembly attachments.
- d) Check the fibre optic cable / line for missing vibration dampers.
- e) Visually check the suspension clamps for any signs of rust (see figure 1).



Figure 1: Suspension Clamp

- f) Check fibre optic cable for broken strands, abnormal conditions like excessive sagging irregular clearances between the power line conductor and the fibre cable.
- g) Check if the joint boxes (un-insulated only) are still mounted / secured on the tower / pole and the earth bonding the joint boxes to the towers, is in place and secured.
- h) Visually check the fibre cable, towers / poles and or dome joints etc for vulture's presence / nesting / roosting.
- i) Visually check the fibre cable, towers / poles and or dome joints etc for monkeys or baboons presence.
- j) Check that the fibre optic line is equipped with bird guards on the tower (see figure 2).

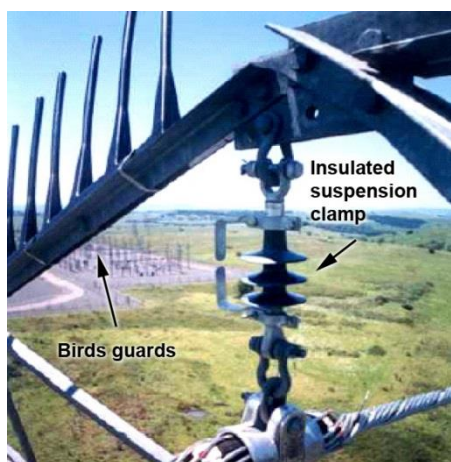


Figure 2: Bird guards & Insulated Suspension Clamp

- k) Check the condition of the vegetation within 5 meter radius of the dome joint to ensure that the vegetation will not produce fire that can cause damage to the dome joint.
- l) Visually inspect the power line for any signs of vandalism in the highly populated areas.
- m) Where applicable check the tower earthing to be in place and free from any damage.

3.4.3.3 ADLASH Inspection

- a) Check fibre optic cable for abnormal conditions like excessive sagging and irregular clearances between the power line conductor and the fibre cable.

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- b) Check the fibre optic cable / line for loose and missing vibration dampers (see figure 3).

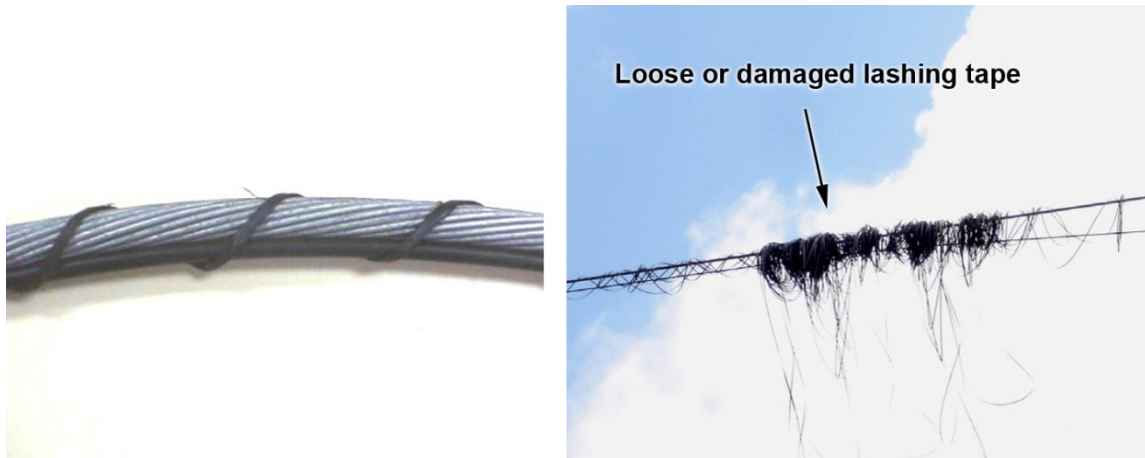


Figure 3: Fibre Optic Cable secured on the earth wire

- c) Visually check the suspension clamps for any signs of rust.
- d) Check the fibre optic cable for broken lash tape that has uncoiled or damaged and coming loose (refer to figure 3 above).
- e) Visually check tower top clamps to be in place and secure, and ensure that there are three clamps on either side of the earth wire (see figure 4).

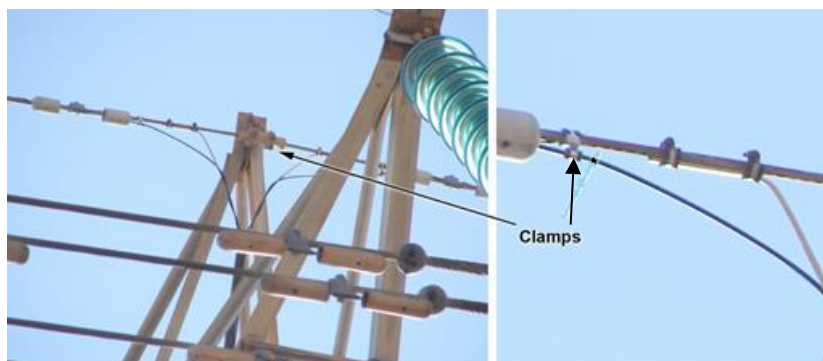


Figure 4: Clamps

- f) Check the fibre Optic cable for dry band arcing damage to sheath.
- g) Visually check the condition of all the down lead cables, ensure that the clamping assemblies on each tower are still secured and the spacing between the clamps is 1-2m apart (see figure 5).
- h) Check for loose fibre dielectrics support rods and uncoiled fibre
- i) Check that the clamps holding the mast bypass-fibre are in place, secure and there is no chafing against tower members (see figure 5).

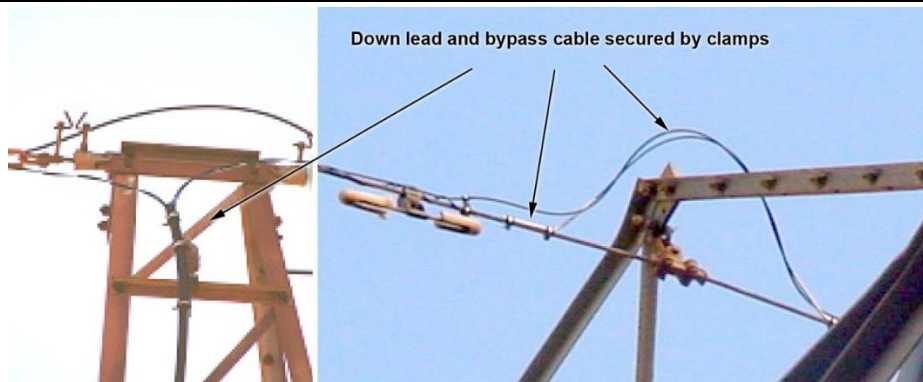


Figure 5: Down Lead and Bypass Cable

- j) Ensure that joint boxes protective metal tube is in place and free of rust (see figure 6).



Figure 6: Joint Box

- k) Check the attachments hardware of the HDPE protection pipes for corrosion and spacing (2-3m apart) (refer to figure 6 above).
- l) Check that the joint boxes are securely mounted by three clamps (see figure 7).



Figure 7: Joint Box Example (Insulated)

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- m) Ensure that joint boxes are installed above the anti-climbing device.
- n) Ensure that the earth bonding attaching the joint boxes (non-insulated box) and the tower is in place and intact (see figure 8).
- o) Visually check the fibre cable, towers / poles and or joint boxes etc for vulture's presence / nesting / roosting.
- p) Visually check the fibre cable, towers / poles and or joint boxes etc for monkeys or baboons presence.

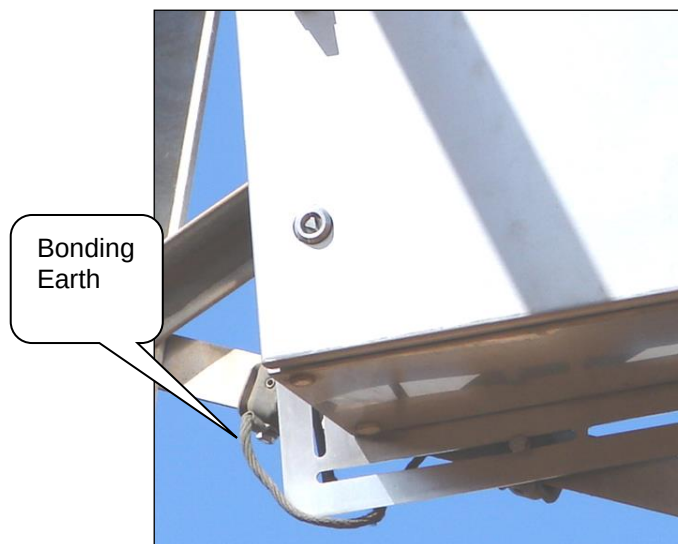


Figure 8: Joint Box Bonding Earth

- q) Check that the fibre optic line is equipped with bird guards on the tower.
- r) Check the condition of the vegetation within 5m radius of the box to ensure that the vegetation will not produce fire that can cause damage to the box.
- s) Visually inspect the power line for any signs of vandalism in the highly populated areas.
- t) Check the tower earthing to be in place and free from any damage.

3.4.3.4 ADSS Inspection

- a) Check the condition of the fibre optic cable suspension and dead end assembly attachments.
- b) Check fibre optic cable for damage ie protruding Kevlar, excessive sagging and / or irregular clearances between the power line conductor and the fibre cable.
- c) Check the condition of tower at attachment points.
- d) Ensure that the fibre optic cable mid span height is above hooking height.
- e) Check the fibre Optic cable for dry band arcing damage to sheath where possible (see figure 9).
- f) Ensure that each span has vibration dampers on both sides of tower (ie. spiral dampers).
- g) Visually check the suspension clamps for any signs of rust.
- h) Check the spans for sagging and / or cable clashing signs.

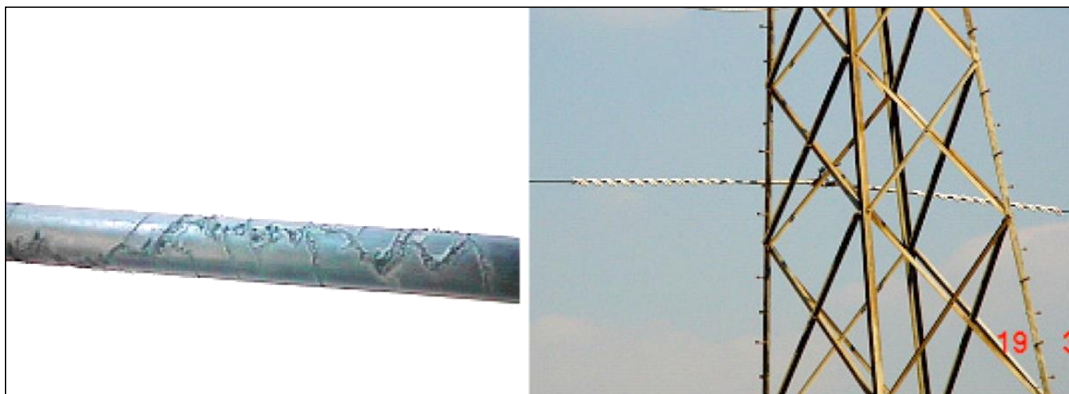


Figure 9: Arcing Damage and Spiral Dampers

- i) Check and report vegetation growth which may expose fibre optic cable to fire risk to the extent that the cable may burn.
- j) Ensure that the dome joints are free of deformities, the mounting is secured and three securing clamp in place (see figure 10).



Figure 10: Dome Joints

- k) Visually check the condition of all the down lead cables, ensure that the clamping assemblies on each tower are still secured and the spacing between clamps is 1-2m apart.
- l) Ensure that dome joints are installed at height that risk of fire or vandalism is minimized.
- m) Visually check the fibre cable, towers / poles and or dome joints etc for monkeys or baboons presence.
- n) Check the condition of the vegetation within 5 meter radius of the dome joint to ensure that the vegetation will not produce fire that can cause damage to the dome joint.
- o) Visually inspect the fibre optic cable for any signs of vandalism in the highly populated areas.
- p) Check the tower earthing to be in place and free from any damage.

3.4.3.5 Ducted Fibre cable installations Inspections

All ducted fibre installations, including the ducted cable between the gantry and switch room or fibre cable that is run along power cable routes or standalone ducted fibre cable runs shall be inspected periodically for any signs of physical damage.

The following checks need to take place:

- a) Check that the duct cable steel down pipe is clamped or secured properly.
- b) Check the duct cable steel pipe for corrosion, severe physical damage.
- c) Ensure that duct cable / steel pipe is not damaged at ground entry (See Figure 11).
- d) Where the corrugated 110mm duct PVC pipe is exposed ensure that the duct cable steel pipe entry is sealed with foam.
- e) Ensure that the dome joint is secured and the lid is in place.

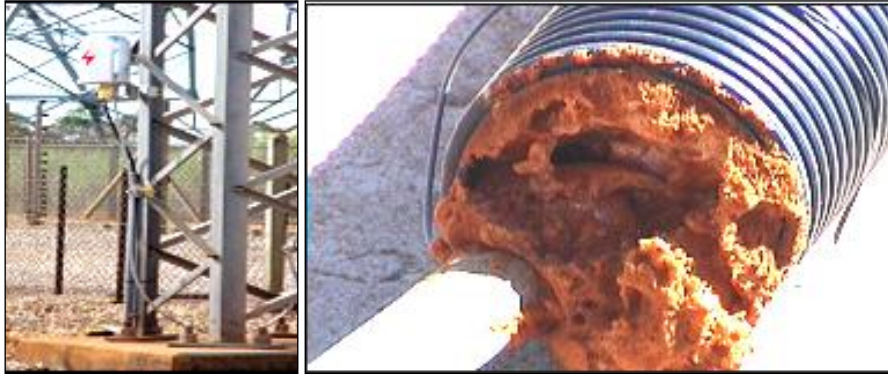


Figure 11: Joint Box and PVC pipe

3.4.4 Task Completion

Note: Ensure that work site is cleaned when the work is completed.

- a) Report or safely remove any fibre Optic waste / redundant material
- b) Remove all personnel and equipment from the site
- c) Dispose off the waste material in terms of Eskom's environmental policy / local procedure.
- d) Restore site / gates to original state.
- e) Complete all relevant documentation – works order and on-site risk assessment documentation

3.5 Modifications

Not applicable.

3.6 Testing

Not applicable.

3.7 Forms and Records Documents

- a) The completed report / feedback shall be returned to the NS Plant department together with the Work Order via Work co-ordinator and a copy thereof shall be sent to or kept by the Service provider (ie PPM, Contractor).
- b) The data is to be analysed and corrective action initiated where required and this could be in the form of repair, partial refurbishment or replacement.
- c) The completed reports / forms must be returned to respective departments for record keeping.
 - Works order
 - Operating Instruction form / Workers register / Permit

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- Risk Assessment
- In / Out commission sheet / Stores return

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Amelia Mtshali	Senior Manager (Design Base & Outage CoE)
Andre Bekker	Manager (AM & O Eng)
Mihla Khumalo	Specialized and Maintenance Manager (GOU)
David Mngqwazana	Specialized and Maintenance Manager (FS OU)
Lumka Godlwana	Technical Support Manager (LOU)
Lwazi Nzama	Technical Support Manager (KZN OU)
Rodney Pretorius	Technical Support Manager (NW OU)
Nolan Ockhuis	Technical Support Manager (WC OU)
Lanese Barth	Technical Support Manager (NC OU)
Nomkhosi Zondo	Technical Support Manager (MOU)
Thembuz Mbali	Technical Support Manager (EC OU)
Ntsebeng Makana	Technical Support Manager (FS OU)
Mphathutshedzeni Mudau	Technical Support Manager (G OU)

5. Revisions

This revision 0 of Task Manual 240-125121130 is the first of this document.

Date	Rev	Compiler	Remarks
Aug 2022	2	DM Ntombela	Changed the date on the front page of this document, reviewed normative references, used the new TM format and added the following sections: “3.1 Previous Maintenance Information / Records” “3.4.2 Risk Assessment”; and “3.4.2.1 Pandemic related specific safe work assessment”. Included the Task Observation form as Annex B. Removed Annex B: Impact assessment form
March 2018	1	Archie Jaykaran	The document stabilized
Aug 2017	Draft 0.1	DM Ntombela	Change to new Document Number 240-125121130 And reformatted the template.
Mar 2011	0	DM Ntombela	Document approved as DMN_34-2172

6. Development team

This Task Manual was previously prepared by:

Name	Designation	Region
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Jacob Mwale	MEW Manager	DX
DM Ntombela	Consultant	PDE-DBO
M Lakhan	Officer Technical Support	KZN OU
D Le Roux	Officer Technical Support	WC OU
FJ Brits	Senior Supervisor	FS OU
B Uys	Senior Supervisor	NC OU
J Van Wyngaard	Officer Technical Support	EC OU
Sifiso Maphalala	Senior Supervisor	M OU
Eric Shorwane Komane	Senior Supervisor	G OU
Moses Mathonsi	Senior Supervisor	M OU
Samuel Meyer	Technician	L OU
Tshepo Tshabalala	Officer Technical Support	L OU
Rodney Pretorius	Manager Technical Support	NWOU

7. Acknowledgements

The GMWP care group would like to thank the former WG members below for their contribution:

HJ Martens	Officer Technical Support	WC OU
GPN Kruger (Chairperson)	OFS	Western Region
DJ Strauss	FSE	Western Region
DFB Lötter	OFS	Western Region
E Fraser	FSE	North Western Region
T Barnard	SHE Officer	Eastern Region
SJ van Jaarsveld	OFS	Eastern Region
PA Pretorius	OFS (MEW)	Central Region
HCJ Nuttall	Senior Supervisor	Northern Region
S Spies	OFS (TSG)	Central Region
F de Bruin	Senior Supervisor (TSG)	Central Region
SA Delport	SHE Officer	Northern Region
P. Ramosili	F S E	North West Region

Annex A – OPGW Fibre Cable check-sheet

(Normative)

	FORM TITLE		OPGW Fibre Cable check-sheet									
	FORM NUMBER		240-125121130			REVIEW DATE		August 2027				
	DOCUMENT TITLE		FIBRE OPTIC LINE Maintenance									

Service Centre: _____ Line Section: _____

Work Performed By: _____ Assisted by: _____

Signature: _____ Date ____ / ____ / ____

Position		Earth Peak and Down lead						Joint Box				Observations
Landmark Type	Tower Number	Dead end / Suspension assembly	Down lead Cables	Box access loop	Attachment Condition	Cable Condition	Downlead Clamps	Box Mounting	Box Condition	Fire Risk	Informal Settlements	Observations
		In place no deformities, broken strands	Hold together from the top	Above anti climbing and secured onto tower members	Suspension / dead end assembly condition	Broken strands abnormal sagging	Securely held onto tower all there (typical 1 to 2 meter separation)	Securely mounted and earthed to tower (Unless insulated)	Rusting, cracking, missing, broken, burnt	Is there any risky vegetation within a 5m radius of the box	Are there any in the vicinity of the line and tower	

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Annex B – ADLASS Fibre Cable Check-sheet

(Normative)

	FORM TITLE		ADLASS Fibre Cable check-sheet														
	FORM NUMBER		240-125121130					REVIEW DATE			August 2027						
	DOCUMENT TITLE		FIBRE OPTIC LINE Maintenance														

Service Centre: _____ Line Section: _____

Work Performed By: _____ Assisted by: _____

Signature: _____ Date ____ / ____ / ____

1. Every other Tower – Lashing tape tightness, clamps in place, mast bypass fibre not tight / chaffing against tower members.

2. Every Span – torn lashing tape, loose lashing tape. 3. Joint Box towers – as per Tick sheet below.

Position		Earth Peak and Down lead						Joint Box					Environment					
Landmark Type	Tower Number	Di Electric s	HDPE Tube	Tower Top clamps	Down lead Clamps	Attachment s	Lash tape	Box Mounting	Box Condition	Box Height	Earth Lug	Protective metal tubes	Vulture s	Bird Guards	Fire Risk	Monkey and Baboon	Informal Settlement s	
		Out / off Broken fibre has uncoiled	All clamps are in place dielectric s Still clamped	Three Clamps on either side of earth wire	Securely held onto tower, all there (typical 1 – 2 meter separation)	Clamps in place, mast bypass fibre not tight / chaffing against tower members	Lashing tape tightness (torn lashing tape, loose lashing tape)	Securely mounted by three clamps	Rusting, cracking, missing, broken, burnt	Risk of Fire, vandalism (related to vegetation and settlements)	Attached to tower and box	Still there, rusting	Are there any vultures in the vicinity of the box	Does the tower have bird guards	Is there any fire risk prone vegetation within 5m radius of the box	Are there any monkey s or baboons in the vicinity of the box	Are there any in the vicinity of the line or tower	

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Annex C – ADSS Fibre Cable Check-sheet

(Normative)

		FORM TITLE		ADSS Fibre Cable Check-sheet															
		FORM NUMBER		240-125121130				REVIEW DATE				August 2027							
		DOCUMENT TITLE		FIBRE OPTIC LINE Maintenance															

Service Centre: _____
 Work Performed By: _____
 Signature: _____

Line Section: _____
 Assisted by: _____
 Date: ____ / ____ / ____

Position		Attachment		Span					Joint Box					Environment					Observations
Landmark Type	Tower Number	Condition	Position	Vibration dampers	Sag	Sheath Break or imperfections	Vegetation	Midspan Height	Dead end assembly	Down Lead Clamps	Box Mounting	Box Height	Box Condition	Vultures	Monkeys / Baboons	Fire Risk	Hooking Risk	Informal settlements	
		Suspension dead end assembly condition, mast bypass fibre not tight chaffing against tower members	Check condition of tower attachment point	On both sides of tower typically spiral dampers	Is there any risk of cables clashing	Exposed yellow Yarn (Kevlar)	Growth that may expose span to fire risk such that cable burns	Relative to accidental hooking and risk of fire	In Place no deformities / broken strands	Securely held onto tower, all there (typically 1 – 2 m separation)	Securely mounted by three clamps	Risk of Fire Vandalism (relative to vegetation and settlement)	Missing, cracking, broken, burnt	Are there any vultures in the vicinity of the box	Are there any monkeys or baboons in the vicinity of the box	Is there any fire risk prone vegetation within 5m radius of the box	Farmin g under neath line or roads etc	Are there any in the vicinity of the line or tower	

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Annex D – Gate, Access Roads and River Crossing Register

(Normative)

	FORM TITLE		Gate, Access Roads and River Crossing Register			
	FORM NUMBER	240-125121130	REVIEW DATE		August 2027	
	DOCUMENT TITLE		FIBRE OPTIC LINE Maintenance			

Service Centre: _____ Line Section: _____

Work Performed By: _____ Assisted by: _____

Signature: _____ Date: ____ / ____ / ____

Date	Farm Name	Nearest Tower Number	GPS Co-Ordinates	Type of Crossing Road, River or Gate	Name of Road or River	COMMENTS (Gate open or closed, make mention of general conditions such as ground type, weather related influences to terrain etc)

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Annex E – Task Observation

(Informative)

	Task Observation Template	Template Identifier	240-43921804	Rev	Latest
		Document Identifier	240-125121130	Rev	1
		Effective Date	As per Template Doc		
		Review Date	As per Template Doc		

1.	Task Observer Name:		Task Observed / Scope of Work:							
	Section / Department:		Location:							
	Occupation:		Is there a procedure for this task?							
	Date:		Procedure Ref. No.:							
	Time with task:		Work Order No.:							
2.	REASON FOR THE OBSERVATION									
	Planned		Accident Repeater		Experienced Worker		Risk Taker		Follow-up	
	Name of employee/s being observed:									
3.	TASK OBSERVATION									
	Did employee adhere to the procedure / practise requirements?				Could Substandard Acts and Conditions observed lead to:					
	Did the employee use the prescribed PPE				Injury					
	Did the employee adhere to safety specifications as per activity performed at the time				Occupational Health Illnesses					
	Tools & Equipment:			Costs (Delays)						
	Used correctly			Poor Quality (Non-conformance)						

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	In good and safe condition			Environment (Damage, Pollution, Wildlife)		
	Test certificates valid and available			Public Liability		
	Pre-task Planning (Toolbox Talk):			Work Site (Clean and Tidy)		
	Work Instruction / Task Manual used			Live saving Rules (Transgression)		
	Complete workers register					
	Risk assessment been done					
	Valid work permit available					
4.	NON COMPLIANCE PRACTICES OBSERVATION					
	Working at unsafe speed			Failure to worn		
	Using unsafe equipment			Taking chances		
	Using equipment unsafely			Failure to identify hazards		
	Unsafe loading, placing & lifting			Failure to secure / lock-out		
	Taking unsafe position			Safety sign ignored		
	Safety rules ignored					
	NOTE: ALL OBSERVED CLASS HAZARDS SHALL REQUIRE IMMEDIATE INTERVENTION					
5.	OBSERVED DEVIATIONS / NON-CONFORMANCES					
6.	AT RISK BEHAVIOURS					
7.	PROPOSED CONTROLS					
	Compile a procedure for this task			Issue a standing instruction		
	Revise present procedure			Change work methods		
	Retrain employees			Professional referral		

	Engineering revision			Coaching		
8.	ANALYSIS					
	IAC – Inadequate capability		ABU – Abuse or misuse / equip / drug or alcohol		MAIN – Inadequate maintenance	
	KNO – Lack of knowledge		NAT – Natural factors		EQU – Inadequate equipment	
	SKI – Lack of skill		LEA – Inadequate leadership		STA – Inadequate work / training standards	
	STR - Stress		ENG – Inadequate engineering		WEA – Wear and tear	
	MOT – Improper motivation		PUR – Inadequate purchasing		CON – Inadequate control	
9.	DISCUSSION BETWEEN SUPERVISOR / OBSERVER AND EMPLOYEE					
	EMPLOYEE EXPLANATION FOR RISK BEHAVIOUR					
	AGREEMENT TO CHANGE AT RISK BEHAVIOUR					
10.	FOLLOW-UP ACTION				WHEN / WHO	
11.	SIGNATURES					
	Person being observed				Date	
	Task Observer				Date	