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Title: **MAINTENANCE INSPECTION AND SUPPLEMENTAL TREATMENT OF TREATED WOOD UTILITY POLES**

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1. Introduction

This task manual is necessary to guide wood poles inspectors, Field staff and Maintenance contractors on how to execute the inspection and the supplemental treatment of treated wood utility poles. Furthermore, the document will cover the requirements related to the inspection and the supplemental treatment of treated wood utility poles.

2. Supporting clauses

2.1 Scope

This standard covers the field inspection of in-service utility wood poles (excluding cross-arms), to determine damage to the poles by physical or biological factors (or both), and the supplemental treatments to be used to prolong the serviceability of utility wood poles.

2.1.1 Purpose

This document shall be used in conjunction with the standard 240-61187283: Maintenance Strategy for Wood Poles. This task manual shall be used by a qualified inspector to execute the tasks as outlined in this document.

2.1.2 Applicability

This document shall apply throughout Eskom Holdings Limited Divisions.

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] Act No. 85: Occupational health and safety act and regulations.

[3] SANS 753: Pine poles, cross arms and spacers for power distribution

[4] SANS 754: Eucalyptus poles, cross arms and spacers for power distribution

[5] R250: Electrical Machinery Regulations

[6] 240-61187283: Maintenance Strategy for Wood Poles

[7] 240-75883854: Protocol for testing of new and existing chemicals as life extension treatments for Eskom wooden utility poles standard

[8] ESKASAAU7: Quality requirements for procurement of assets, goods and services

[9] SCSPVABS6: Technical evaluation of suppliers for products and/ or services

[10] SCSPVABF3: Occupational health and safety requirements to be met by contractors

[11] SCSASAAW8: Contractors working in close proximity to live apparatus

2.2.2 Informative

[12] 32-9: Definition of Eskom documents

[13] 32-644: Eskom documentation management standard

[14] 474-65: Operating manual of the Steering Committee of Wires Technologies (SCOWT)

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2.3 Definitions

2.3.1 General

Definition	Description
Air/ground line area	The critical area extending to 500 mm above and 250 mm below the ground line.
Approved supplemental treatment	An approved acceptable internal and external treatment consisting of chemicals designed to protect the air/ground line area against fungal decay (refer to Annex F for requirements).
Check scraper	A sharp instrument used to externally probe the outside layer of the pole.
Client	The Eskom OU requesting the inspection and supplemental treatment of its utility poles.
Compaction	The replacement of the excavated soil around a pole. Compacting it with a mechanical tool weighing not less than 10 kg and to such an extent that the surface level of excavated area is equal to the undisturbed soil of the area. No vegetation is to be included in the backfill. The layers of fill during compaction shall not be more than 150 mm.
Core sample	A sample consisting of either a cylindrical piece of wood extracted using an increment borer or shavings extracted using a drill bit.
Crack	A crack in a pole is where the pole is split and where the split is parallel to the grain of the wood. Cracks separated by a solid wood bridge of at least 5 mm are considered as separate cracks. A crack is defined as a crack where the wood separation is at least 5 mm wide. A crack is only to be measured where it is longer than the diameter of the pole at the position of the crack.
Drill bit	A twist type or screw drill bit consisting of a long shank with a maximum cutting diameter of 12 mm, capable of drilling a hole at least 300 mm deep.
Excessive crack(s)	Cracks are deemed excessive when one of the following applies: when there are four or more cracks at any cross section on the pole where the sum of the widths of the cracks at a particular cross section is > 55 mm; Where an individual crack is wider than 25 mm at any point on the length of the crack. An excessive crack is only to be considered where it is longer than the diameter of the pole at the position of the crack.
Plastic plug	Used for plugging above ground inspection and treatment holes. The plug is screwed into a 12 mm diameter hole drilled in the pole. It is manufactured from low-density black polyethylene containing 2% carbon black and UV protection. The overall length is 43 mm, the small tip diameter is 10 mm and the large tip diameter is 19 mm. The thread pitch is 5 mm and the thread depth is 0.5 mm. It has a square recess in the big end to facilitate removal.
Qualified inspector	An inspector of poles is considered qualified and accredited when he has: 1. Undertaken and passed suitable training 2. Been audited twice within three months of passing the training by the Eskom approved training authority.
Recorded poles	Poles that are recorded in an inspection process.
Serviceable pole	A pole that is classified as class 2. These poles must be treated internally, a class 3 and certain class 4 poles may be stubbed and then classified as a class 2 pole but must be treated internally as per annex .C.

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Definition	Description
Shell thickness	The thickness (in mm) of the remaining sound part of a wooden pole after it was subjected/exposed to fungal decay/rot
Shell thickness indicator	A tool that is designed specifically to extract wood fibre from the holes drilled, to probe for decay and insect attack and that shall be graduated in centimetres to measure the remaining shell thickness.
Sound pole	A pole that has no apparent internal or external form of degradation and be classified as a class 1 pole.
Stubbing of poles	The process whereby a class 3 or class 4 pole is supported with an approved stubbing system. This stubbing system is to be approved by Eskom. The approved stub is attached to the in situ pole and is capable of carrying the required load of a new pole. A stubbed class 3 and class 4 pole will then be classified as a class 2 pole on completion and marked accordingly. All stubbing is a permanent solution and need not be replaced with new poles.
Unsound pole	A pole that has been rejected after assessment and that shall be replaced. An unsound pole is a class 3 or 4 pole that will not be stubbed

2.3.2 Disclosure classification

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

2.4 Abbreviations

Abbreviation	Description
AR	Approved chemical rod/s
BIL	Basic Insulation Level
CAP	Committee for Accepted Products
GM	General Manager
LAP	List of Accepted Products
LES	Line Engineering Services
n/a	not applicable
ORHVS	Operating Regulations for High Voltage Systems
OU	Operating Unit
SETA	Sector Education and Training Authority

2.5 Roles and responsibilities

2.5.1 Responsible Person

The relevant Responsible Person appointed in terms of the Occupational Health and Safety Act shall be accountable for ensuring compliance with this standard and that the correct inspection techniques and pole repairs as a result of the inspections are undertaken.

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2.5.2 Plant Manager

The Plant Manager shall be responsible for ensuring that the areas under his control implement the requirements of this document; that the records of the inspection are kept after completion of the inspection; and that each contract awarded should be audited by an auditor, either an independent auditor or an in house trained Eskom auditor (D.1).

2.5.3 Expected Outcomes of Planned inspection programme

The purpose of a planned inspection programme is:

a) To identify unserviceable poles in the system.

b) To apply remedial treatment, on a cyclic basis, internally (or externally if required) to the pole to extend the life of the pole.

c) To identify poles that can be stubbed.

d) To identify poles that must be replaced with new poles.

2.6 Process for monitoring

Not applicable.

2.7 Related/supporting documents

This document supersedes the standard DST_34-334: Maintenance Inspection and Supplemental Treatment of Treated Wood Utility Poles.

3. Document content

The main contents and the requirements of this document are outlined in the sections below.

3.1 Requirements

3.1.1 Inspection

3.1.1.1 Inspection of wooden poles

a) A qualified inspector shall inspect all poles, even if they appear to be in a good condition. An inspector of poles is considered qualified when the criteria in Annex D have been met.

b) An internal chemical shall be applied to all serviceable poles.

c) An approved external chemical shall be applied to the pole below the groundline when shell rot is present, if the pole is not deemed to be rejected and replaced.

d) The inspection and test procedures detailed in 3.1.1, 3.1.2, 3.1.3 or 3.1.4 and 3.1.6 shall be used to determine the extent of degradation, and whether a pole is sound, serviceable or unsound.

e) A pole that is assessed as being sound, serviceable or unsound (rejected) shall be marked in accordance with 3.1.8.

f) The results of each inspection must be recorded electronically using an Eskom approved device in a line pole inspection report. Additional reporting requirements may also be put in place by individual OU's.

g) An audit report may also be written for each line inspected and presented to the OU after the completion of the allocated work.

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3.1.1.2 Visual above ground inspection

Inspect the pole above the ground line and record the following information for each pole inspected:

a) The pole treater's name or code.

b) If no pole treater tag is visible, record this.

c) The year the pole was treated.

d) The species of the pole, e.g. (E63, E75 or P55; E for Eucalyptus, and P for Pine; 55 MPa Ultimate Stress or 63 Mpa).

e) Whether the pole was kiln or air dried (where indicated).

f) The length of the pole, if indicated on the pole tag.

g) Any lightning damage.

h) Infestation or activity from termite mud deposits on the pole or within splits or cracks on the pole.

i) Effect of carpenter bees. Look around the pole for the presence of bees that could have activity on the pole or within splits or cracks on the pole.

j) Cracks on the pole.

k) Any poles leaning.

l) Any decay visible above or below the ground level.

m) Any pole twisting (slight, medium or great); this is the degree the pole top has twisted in relation to the line of conductors (slight = up to 10°, medium = 10° to 20°, great = 20° to 50°).

n) The compaction of the soil around the pole.

o) Damage to stays or stay wires.

p) Mechanical damage to the pole in any way.

q) Woodpecker damage on the pole.

r) BIL down wires damaged or broken.

s) Tracking on the wood pole due to leakage current activity.

t) Veld fire damage on the wood pole.

u) Wood pole vandalised.

3.1.1.3 Hammer test

Note 1: The hammer test need not be done on a pole assessed as positively unsound.

The purpose of the hammer test is to locate exterior decay or interior pockets of decay at or above ground-line. The following procedure should be followed:

a) At ground-line, lightly tap the pole all around the circumference, at intervals not exceeding 25 mm, with a ball-peen or engineer's hammer of mass between 300 g and 500 g.

b) Continue by spirally tapping upwards around the pole to a height of normal reach, at intervals not exceeding 150 mm between two successive taps. One spiral circuit of hammer taps should be made for every 300 mm ascent.

Note 2: A change in tone of the taps will be noticeable as the hammer taps pass from sound to decayed areas.

This change in tone might not be distinctive, but it will be discernible.

Note 3: Setting poles in concrete, tarmac or other hardened surfaces affects the tone produced by tapping the pole.

Note 4: The hammer test might not be completely effective on a pole degraded by termite attack, owing to the presence of deposited sand.

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3.1.1.4 Excavation at a pole

a) The soil shall be removed around all poles ≥ 10 m long to a depth of 250 mm and poles ≤ 9 m long to a depth of 150 mm. This is to enable an inspection and assessment to be made on the physical state of the pole below the ground.

b) Remove the soil that is stuck to the pole by cleaning the exposed area with a wire brush, taking care not to remove any existing external degradation that still has to be assessed.

3.1.1.5 External inspection of groundline region

This is a critical area and it shall be thoroughly inspected in accordance with the following:

a) A check scraper shall be used to probe for external decay pockets and/or shell rot.

b) All the soil and/or decayed wood on or in the cracks or voids shall be scraped off.

c) During this process, carefully examine the surrounding soil and pole surface for evidence of any termite activity. Termites or termite tunnels/galleries can exist either in the soil or along the pole surface. Often termites will be visible, but will quickly disperse when exposed to sunlight.

d) Any external decay shall be measured by the depth of the decay determined by probing any decay pockets.

e) Information regarding external decay or termites shall be recorded.

3.1.1.6 Inspection of poles with cables

a) All poles with cables attached shall be excavated according to 3.1.1.4.

b) **Extreme care** shall be taken when excavating around the pole to ensure the cable is not damaged.

c) The **contractor shall take full responsibility** for any damage to any cable above or below the ground at inspected poles.

Note 1: Although the cable entry into the soil might be at one place, the cable might coil below the soil at varying depths and positions.

Note 2: Extreme care should be exercised at H-pole structures where cables come down one pole, as the cable might pass the other pole of the H-pole structure.

3.1.2 Inspection procedure of wooden poles ≥ 10 m long

a) Drill two 12 mm inspection holes: one at the groundline and one at 200 mm below the groundline. Drill the holes diametrically opposite to each other as per 0. The holes shall be drilled at 45° to the vertical. Drilling shall be directed towards the centre of the pole to 250 mm into the pole.

b) For poles classified as class 3 (refer to 3.1.6 which will be stubbed, drill an additional inspection hole 300 mm above the groundline. The hole shall be drilled at 45° to the vertical. Drilling shall be directed towards the centre of the pole to at least half the diameter of the pole (refer to C.2).

c) Carefully monitor the conditions during drilling and examine the characteristics of wood shavings for evidence of decay or termites. Signs of decay include a change in resistance to drilling or the colour of shavings; and a lack of fibre texture or a mushroom-type smell associated with the shavings. Shavings could also contain live termites or mud from their workings.

d) Using the shell thickness indicator, probe the hole for signs of decay and termites. Record the findings.

e) Where applicable, measure the thickness of the remaining wood (outer shell) and record the measurement.

f) In the case of poles with external decay, excavate to below the shell rot and inspect. Drill one inspection hole at the position where the deepest damage occurs, proceed according to 3.1.2e) and record the findings.

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3.1.3 Inspection procedure of wooden poles > 5 m and ≤ 9 m long

a) Drill one 12 mm inspection hole at 100 mm below the groundline as per C.3 and C.4. The hole shall be drilled at 45° to the vertical. Drilling shall be directed towards the centre of the pole to 150 mm depth.

b) Carefully monitor the conditions during drilling and examine the characteristics of wood shavings for evidence of decay or termites. Signs of decay include a change in resistance to drilling or the colour of shavings, a lack of fibre texture or a mushroom-type smell associated with the shavings. Shavings could also contain live termites or mud from their workings.

c) Using the shell thickness indicator, probe the hole for signs of decay and termites. Record the findings.

d) Where applicable, measure the thickness of the remaining wood (outer shell) and record the measurements.

e) In the case of poles with external decay, drill one inspection hole at the position where the deepest damage occurs and proceed according to 3.1.3a). If shell rot is > 150 mm deep, excavate to below the shell rot and inspect according to 3.1.3c) and d).

3.1.4 Inspection procedure of wooden poles ≤ 5 m long stubby poles

a) Drill one 12 mm inspection hole at groundline as per C.4. The hole shall be drilled at 30° to the vertical. Drilling shall be directed towards the centre of the pole to at least half the diameter of the pole.

b) Carefully monitor the conditions during drilling and examine the characteristics of wood shavings for evidence of decay or termites. Signs of decay include a change in resistance to drilling or the colour of shavings, a lack of fibre texture or a mushroom-type smell associated with the shavings. Shavings could also contain live termites or mud from their workings.

c) Using the shell thickness indicator, probe the hole for signs of decay and termites. Record the findings.

d) Where applicable, measure the thickness of the remaining wood (outer shell) and record the measurements.

e) In the case of poles with external decay, drill one inspection hole at the position where the deepest damage occurs and proceed according to 3.1.4a). If shell rot is > 150 mm deep, excavate to below the shell rot and inspect according to 3.1.4c) and d).

3.1.5 Inspection of poles on second cycle

a) The existing treatment holes are to be opened, two new approved chemical rods are to be inserted into each hole and the holes plugged with a removable plastic plug. No additional treatment holes should be drilled unless the number of treatment holes is less that this standard; then an additional hole shall be drilled to match this standard.

b) The existing inspection holes are to be reopened and inspected. Insert one approved chemical rod into each of the inspection holes and apply a new removable plastic plug.

c) The inspection label for this inspection as per 3.1.8 shall be placed next to the existing inspection label.

d) In the event of any treatment or inspection hole being inaccessible because of a stub in the way, an additional inspection/treatment hole shall be drilled, treated and plugged.

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3.1.6 Utility pole classification

3.1.6.1 Class 1 (sound poles)

Class 1 poles are utility poles that are inspected and do not show any signs of damage or decay, or any form of internal or external degradation. Cracks in the air/groundline area shall not exceed 15 mm and 5 mm in width for eucalyptus and pine poles respectively. The sum of the widths of all cracks around the groundline shall not exceed 40 mm and 15 mm for eucalyptus and pine poles respectively.

3.1.6.2 Class 2 (Serviceable Poles)

Class 2 poles are utility poles that have areas of biological degradation or physical damage. This shall be measured in accordance with the following criteria:

a) **For poles > 9 m long** the wood shell thickness shall be > 70 mm around the pole,

b) **For poles ≤ 9 m long** the wood shell thickness shall be > 50 mm.

c) External decay, mechanical, fire, lightning or any other surface damage ≤ 5 mm in depth and comprising not more than 15% of the circumference of the pole.

d) Individual cracks > 15 mm ≤ 20 mm wide for eucalyptus poles and > 5 mm ≤ 7.5 mm wide for pine poles.

e) The sum of the widths of all cracks around the groundline is > 40 mm and > 15 mm for eucalyptus and pine poles respectively.

f) Any untreated heartwood is exposed.

3.1.6.3 Class 3

a) All class 3 poles may either be stubbed or replaced. Once the stubbing contractor is complete, the pole shall be classified as a class 2 pole and be marked as such by the stubbing contractor.

b) Use the following criteria to identify poles that have air/groundline deterioration to such an extent that the pole cannot be considered functional without stubbing:

1) **For poles > 9 m long**, the wood shell thickness shall be > 40 mm but ≤ 70 mm.

2) **For poles ≤ 9 m long**, the wood shell thickness shall be > 30 mm but ≤ 50 mm.

3) External decay, mechanical, fire, lightning or any other surface damage ≤ 10 mm in depth and comprising not more than 25% of the circumference of the pole.

4) Individual cracks at the air groundline which are > 20 mm but ≤ 25 mm wide for eucalyptus poles and > 7.5 mm but ≤ 10 mm wide for pine poles.

5) The sum of the widths of all cracks around the groundline is > 40 mm and > 15 mm for eucalyptus and pine poles respectively.

Notes:

1) Poles with any termite activity (dead or alive) to be classified as a class 4 pole and replaced.

2) For class 3 poles that will be stubbed, drill an additional inspection hole at 300 mm above the groundline at 45° to the vertical. Probe the hole. If no sign of termite activity or wood rot is found 300 mm above the groundline, then mark the pole to be stubbed as per 3.1.8.2.

3) Once stubbing is complete, the pole shall be classified as a class 2 pole by the contractor.

4) In the case where there is decay or termite activity (alive or dead) at the point of inspection, **the pole is to be classified as a class 4 and replaced** and marked as per 3.1.8.3.

5) A class 3 pole may be stubbed with an appropriate approved stubbing system (as approved by PDE) provided that the criterion in 3.1.6.4 is not present and provided that there is no rot at 300 mm above the groundline.

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3.1.6.4 Class 4

Use the following criteria to identify poles that are to be classified as class 4:

a) Individual cracks at the air groundline which are > 25 mm and > 10 mm wide for eucalyptus and pine poles respectively

b) The sum of the widths of all cracks around the groundline is > 40 mm and > 15 mm for eucalyptus and pine poles respectively.

c) External decay, mechanical, fire, lightning or any other surface damage >10 mm in depth and comprising more than 25% of the circumference of the pole

d) Poles where there are active termites.

e) **Poles > 9 m long**, where the wood shell thickness is ≤ 40 mm around the pole.

f) **Poles ≤ 9 m long**, where the wood shell thickness is ≤ 30 mm.

g) Poles where there is any internal decay as determined by the inspection hole drilled at 300 mm above the natural groundline.

Note: For drilling an additional inspection hole, refer to 3.1.2b).

Note: Class 4 poles may be stubbed with an appropriate approved stubbing system for class 4 poles provided that the criterion in 3.1.6.4c)) is not present and provided that there is no rot at 300 mm above the groundline.

3.1.7 Required action resulting from pole classification

On completion of the inspection, all poles shall be compacted in 150 mm layers as per definition, no matter what class the pole is or whether the pole will be replaced or stubbed.

3.1.7.1 Required action for rural poles ≥ 10 m long (refer to 3.1.2)

3.1.7.1.1 Class 1 pole

a) On completion of the inspection, insert one chemical rod into each of the two drilled inspection holes (chemical approved in terms of Annex F), and push the rods down to the bottom of the holes. Plug each hole with a removable plastic plug (refer to 3.1.2 for inspection holes).

b) Drill three treatment holes evenly spaced around the circumference of the pole. These treatment holes are to be drilled at 50 mm above the groundline at 20° to the vertical. They are to be drilled to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom. Plug each hole with a removable plastic plug. Excavation to be to the depth of 200 mm from groundline.

3.1.7.1.2 Class 2 pole

a) On completion of the inspection, insert one chemical rod into each of the two drilled inspection holes (chemical approved in terms of Annex F), and push the rods down to the bottom of the holes. Plug each hole with a removable plastic plug (refer to 3.1.2 for inspection holes).

b) Drill three treatment holes evenly spaced around the circumference of the pole. These treatment holes are to be drilled at 50 mm above the groundline at 20° to the vertical. They are to be drilled to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push the rods down to the bottom of the holes. Plug each hole with a removable plastic plug.

c) Poles with external decay below groundline (not deemed to be rejected) shall be remedially treated externally with an approved chemical (refer to Annex F) from the air/groundline to 250 mm below the groundline. The quantity and method of chemical applied shall be in accordance with the manufacturer's specification and as tested in research as per Annex F. The chemical applied needs to have an impervious plastic shield around the chemical to prevent the chemical permeating into the surrounding soil.

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3.1.7.1.3 Class 3 pole to be replaced

a) All class 3 poles to be replaced shall be replaced **within nine months** after inspection.

b) No chemicals shall be added to the inspection holes.

3.1.7.1.4 Class 3 pole to be stubbed

a) A class 3 pole to be stubbed is to have an additional 12 mm inspection hole drilled at 300 mm above the groundline at 45° to the vertical to determine if there is any wood rot or termite activity. The pole may be stubbed if there is no rot or termite activity (dead or alive) at 300 mm above the ground line.

b) On completion of the inspection, insert **one chemical rod** into the inspection hole (chemical approved in terms of Annex F), and push the rod down to the bottom of the hole. Plug the hole with a removable plastic plug.

c) If there is any termite activity (dead or alive) or wood rot at 300 mm above the groundline, then the pole shall be classified as a class 4 pole to be replaced.

d) For class 3 poles that will be stubbed, drill three treatment holes evenly spaced around the circumference of the pole. These treatment holes are to be drilled at 300 mm above the groundline at 20° to the vertical. They are to be drilled to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom of the holes. Plug each hole with a removable plastic plug.

e) Poles with external decay below groundline shall be remedially treated externally with an approved chemical (refer to Annex F) from the groundline to 250 mm below the groundline. The quantity and method of chemical applied shall be in accordance with the manufacturer's specification and as tested in research as per Annex F. Once the chemical is applied to the pole externally, an impervious shield needs to be wrapped around the chemical to ensure that the chemical will not penetrate the surrounding soil. The shield shall be firmly attached to the pole by means of nails or staples.

f) Stubbing shall be done within nine months of the inspection.

g) Stubbed class 3 poles shall be classified as class 2 poles on completion of the stubbing and shall be re-inspected within 10 years.

h) For H-pole structures, any single pole deemed a class 3 shall make the structure a class 3 until the class 3 pole is stubbed or replaced.

i) The pole shall be marked according to 3.1.8.

3.1.7.1.5 Class 4 pole to be replaced

a) The pole shall be replaced **within six months** of being inspected.

b) For H-pole structures, any single pole deemed a class 4 shall make the structure a class 4 until the class 4 pole is replaced. The pole shall be marked according to 3.1.8.

3.1.7.1.6 Class 4 pole to be stubbed

a) A class 4 pole to be stubbed is to have an additional 12 mm inspection hole drilled at 300 mm above the groundline at 45° to the vertical to determine if there is any wood rot or termite activity. The pole may be stubbed if there is no rot or termite activity (dead or alive) at 300 mm above the ground line.

b) This inspection hole is to have one chemical rod inserted into the inspection hole (chemical approved in terms of Annex F) on completion of the inspection and pushed down to the bottom of the hole. Plug the hole with a removable plastic plug.

c) If there is any termite activity (dead or alive) or wood rot at 300 mm above the groundline then the pole cannot be stubbed. It shall be classified as a class 4 pole to be replaced.

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d) A class 4 pole may be stubbed with an appropriate approved stubbing system for class 4 poles (as approved by LES and published in a Technical Bulletin. If there is any termite activity (dead or alive) or wood rot at 300 mm above the groundline, then the pole shall be classified as a class 4 pole to be replaced. There shall also be minimum shell thickness of solid wood of 40 mm at 300 mm above the groundline. If shell thickness is less than 40 mm then the pole shall be replaced.

e) Poles with external decay below groundline shall be remedially treated externally with an approved chemical (refer to Annex F) from the groundline to 250 mm below the groundline. The quantity and method of chemical applied shall be in accordance with the manufacturer's specification and as tested in research as per Annex F. Once the chemical is applied to the pole externally, an impervious shield needs to be wrapped around the chemical to ensure that the chemical will not penetrate the surrounding soil. The shield shall be firmly attached to the pole by means of nails or staples.

f) Class 4 poles that will be stubbed with a class 4 type stub shall have three chemical treatment holes evenly spaced around the circumference of the pole 300 mm above the groundline (as per C.2). These are to be drilled at 20° to the vertical to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom of the holes. Plug each hole with a removable plastic plug.

g) Class 4 poles to be stubbed are to be stubbed within six months of being identified.

h) Stubbed class 4 poles shall be classified as class 2 poles on completion of the stubbing and shall be re-inspected within the 10-year cycle.

3.1.7.2 Required action for poles ≤ 9 m long (refer to 3.1.3)

3.1.7.2.1 Class 1 pole

a) On completion of the inspection, insert one chemical rod into the inspection hole (chemical approved in terms of Annex F), and push the rod down to the bottom of the hole. Plug the hole with a removable plastic plug.

b) Drill two treatment holes opposite each other and at right angles to the inspection hole. These treatment holes are to be drilled at 50 mm above the groundline at 20° to the vertical. They are to be drilled to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom of the holes. Plug each hole with a removable plastic plug.

3.1.7.2.2 Class 2 pole

a) Insert one approved chemical rod into the inspection hole, and push the rod down to the bottom of the hole. Plug the hole with a removable plastic plug (refer to 3.1.3 for inspection holes).

b) Drill two treatment holes opposite each other and at right angles to the inspection hole. These treatment holes are to be drilled at 50 mm above the groundline at 20° to the vertical. They are to be drilled to a depth of 250 mm into the pole. Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom of the holes. Plug each hole with a removable plastic plug.

c) Poles with external decay below groundline shall be remedially treated externally with an approved chemical (refer to Annex F) from the groundline to below the lowest signs of shell rot appearing on the pole. The quantity and method of chemical applied shall be in accordance with the manufacturer's specification and as tested in research as per Annex F.

d) Once the chemical is applied to the pole externally, an impervious shield shall be wrapped around the chemical to ensure that the chemical will not penetrate the surrounding soil.

e) The shield shall be firmly attached to the pole by means of nails or staples.

3.1.7.2.3 Class 3 and 4 poles

All class 3 and 4 poles shall be replaced within nine months of being inspected.

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3.1.8 Marking of poles after inspection

Each pole shall be legibly and indelibly marked at a position 1.8 m above the groundline, vertically in line with the pole number, in one of the following ways.

All markings and tags shall remain on the pole and shall not be removed.

3.1.8.1 Class 1 and 2 poles (serviceable poles)

a) A round aluminium or galvanized steel tag shall be used.

b) The tag shall be between 25 mm and 30 mm in diameter.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached with a 15 mm galvanized nail.

e) The tag shall bear the following information:

1) 'Treated Int / Approved Chemical' (e.g. 'Treated Int / AR') (meaning Treated internally with approved rods).

2) The trade name or trademark of the contractor that did the inspection, e.g. 'ABC inspectors'.

3) The month and year in which the inspection took place, e.g. 02/2002.

4) The class of pole, e.g. 'class 2' or 'class 1'.

3.1.8.2 Class 3 poles

(Depending on the OU's requirements, follow either 3.1.8.2.1 or 3.1.8.2.2.)

3.1.8.2.1 Class 3 poles to be replaced

a) A square aluminium or galvanized steel tag shall be used for poles to be replaced.

b) The tag shall have sides between 25 mm and 30 mm.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached with a 15 mm galvanized nail.

e) All original markings and tags shall remain on the pole.

f) The tag shall bear the following information:

1) The words 'Reject'.

2) The trade name or trademark of the contractor that did the inspection, e.g. 'ABC inspectors'.

3) The month and year in which the inspection took place, e.g. 02/2002.

4) The class of pole, e.g. 'class 3'.

g) **One white line**, 50 mm wide, shall be painted horizontally around the pole, with an oil-based or acrylic paint. The line shall be ± 1.8 m above the groundline. This to indicate that the pole must be replaced. (The white line shall not be painted over the pole label or pole number, but just above it.)

3.1.8.2.2 Class 3 poles to be stubbed

a) A square aluminium or galvanized steel tag shall be used for poles to be stubbed.

b) The tag shall have sides between 25 mm and 30 mm.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached with a 15 mm galvanized nail.

e) All original markings and tags shall remain on the pole.

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f) The tag shall bear the following information:

1) The words 'Stubbed'.

2) The trade name or trademark of the contractor that did the inspection, e.g. 'ABC inspectors'.

3) Treated Int / Approved Chemical' (e.g. 'Treated Int / AR') (meaning Treated internally with approved rods). (only if to be stubbed)

4) The month and year in which the inspection took place, e.g. 02/2002.

5) The class of pole, e.g. 'class 3'.

g) **One yellow line**, 50 mm wide, shall be painted horizontally around the pole, with an oil-based or acrylic paint. The line shall be ± 1.8 m above the groundline. This to indicate that the pole must be stubbed. (The yellow line shall not be painted over the pole label or pole number, but just above it.)

3.1.8.3 Class 4 poles

(Depending on the OU's requirements, follow either 3.1.8.3.1 or 3.1.8.3.2.)

3.1.8.3.1 Class 4 pole to be replaced

a) A square aluminium or galvanized steel tag shall be applied to each pole, whether the pole will be replaced or stubbed.

b) The aluminium tag shall have side of between 25 mm and 30 mm.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached with a 15 mm galvanized nail. All original markings and tags shall remain on the pole.

e) The tag shall bear the following information:

1) The word 'Reject'

2) The trade name or trademark of the contractor that did the inspection, e.g. 'ABC inspectors'.

3) The year and month in which the inspection took place, e.g. 02/2002.

4) The class of pole, e.g. 'class 4'.

f) **Two white lines**, 50 mm wide, shall be painted horizontally around the pole, with an oil-based or acrylic paint. The line shall be ± 1.9 m above the groundline. This is to indicate that the pole must be replaced. (The white lines shall not be painted over the pole label or pole number, but just above it.)

g) All class 4 poles to be replaced shall be replaced within six months of the inspection.

3.1.8.3.2 Class 4 pole to be stubbed

a) A square aluminium or galvanized steel tag shall be applied to each pole after stubbing (this is over and above the initial inspection tag as per 3.1.8.3.

b) The aluminium tag shall have side of between 25 mm and 30 mm.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached with a 15 mm galvanized nail.

e) All original markings and tags shall remain on the pole.

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f) The tag shall bear the following information:

1) The word ‘Stubbed’.

2) The trade name or trademark of the contractor that did the inspection, e.g. ‘ABC inspectors’.

3) ‘Treated Int / Approved Chemical’ (e.g. ‘Treated Int / AR’) (meaning Treated internally with approved rods). (only if to be stubbed)

4) The year and month in which the inspection took place, e.g. 02/2002.

5) The class of pole, e.g. ‘class 4’.

g) **Two yellow lines**, 50 mm wide, shall be painted horizontally around the pole, with an oil-based or acrylic paint. The line shall be ± 1.9 m above the groundline. This is to indicate that the pole must be stubbed. (The yellow lines shall not be painted over the pole label or pole number, but just above it.)

h) Class 4 poles to be stubbed shall be stubbed with an approved class 4 stub system. The pole shall be treated as per 3.1.7.1.6 and marked as per 3.1.8.3.

i) These poles shall be marked as class 2 poles once stubbed with the appropriate label by the stubbing contractor on completion of the stubbing. The original label shall remain on the pole.

3.1.8.4 Poles treated with external treatment

a) Poles treated for shell rot with external treatment shall be marked with an additional label.

b) The aluminium or galvanized steel tag shall be round and between 25 mm and 30 mm in diameter.

c) The tag shall have a hole in the middle of the tag to facilitate attachment.

d) The tag shall be attached, with a 15 mm galvanized nail, horizontal to the other inspection label, and 50 mm away from the other label.

e) All original markings and tags shall remain on the pole.

f) The tag shall bear the following information:

1) The words ‘Treated Ext/Chemical applied (e.g. ‘Treated ext/Rem’) (meaning treated externally with approved chemical).

2) The trade name or trademark of the contractor that did the inspection, e.g. ‘ABC inspectors’.

3) The month and year in which the chemical was applied, e.g. 02/2002.

4) The class of pole, e.g. ‘class 3’.

3.1.9 Restoration of inspection area

After the inspection and remedial treatment is completed, the area around each pole shall be restored, as follows:

a) Backfilling shall be done by replacing the excavated material in 150 mm layers and compacting the soil by ramming the soil with a stamper, taking care that cables are not damaged. The minimum mass of the stamper shall be 10 kg. Vegetation matter shall not be included in the backfilling.

b) The area surrounding the pole shall be left in a clean and orderly state, and all debris shall be removed from the site.

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3.1.10 Recording

a) Full details of every inspected pole in the utility line shall be recorded on line pole inspection report forms.

b) A copy of the reports concerned and a summary sheet of the line shall be given to the person concerned as indicated in the contract. The contractor shall keep a copy of the records for a period of 12 years.

3.1.11 Stubbing of class 3 poles – single and H-pole structures

a) Stubbing shall be done in accordance with Annex E of this document.

b) All stub systems shall be planted as per suppliers' specification and be perpendicular to the line of conductors in the case for suspension (intermediate) structures and terminal structures.

c) For strain structures, the stubs shall be planted in line with the bisector stay of the structure.

d) A class 3 pole that is to be stubbed shall be stubbed within nine months after the inspection date.

3.1.12 Inspection and treatment of strut wooden poles

a) Drill one 12 mm inspection hole vertically at groundline and probe for deterioration.

b) Reject poles with < 60 mm shell thickness.

c) Insert one chemical rod into the inspection hole and plug with a removable plastic plug.

d) Paint one white paint line 50 mm wide at 1.8 m above the groundline on all rejected poles.

e) Drill two treatment holes either side of the pole if poles are not rejected 50 mm above the ground line. These treatment holes are to be drilled at 20° to a length of the pole. They are to be drilled to a depth of 250 mm into the pole.

f) Insert two chemical rods (approved in terms of Annex F) into each hole and push them down to the bottom of the holes.

g) Plug each hole with a removable plastic plug.

3.1.13 Inspection of 5 m poles

a) All service poles are to have one inspection hole drilled at the groundline at 20° to the vertical and one treatment rod inserted in the treatment hole.

b) Plug the hole with a removable plastic plug (refer to C.4).

c) The minimum thickness of sound wood required for the pole to remain serviceable is 30 mm. The 5 m pole shall be replaced if there is < 30 mm of sound wood.

4. Authorization

This document has been seen and accepted by:

Name and surname	Designation
Prince Moyo	Power Delivery Engineering GM
Andre Bekker	Manager, Design Base Maintenance
Archie Jaykaran	Power Delivery Maintenance SC Chairperson
Amelia Mtshali	Senior Manager, Design Base & Operating Unit Support
Riaz Vajeth	Senior Manager, Line Engineering Services

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5. Revisions

Date	Rev	Compiler	Remarks
March 2018	1	P Meruti	First issue of this Task Manual

6. Development team

The following people were involved in the development of this document:

- Pako Meruti
- Bruce Mclaren
- Zane Evan
- Bob Branfield
- Mohammed Rashid
- Ajith Persadh
- Andreas Beutel
- Riaz Asmal
- Ian Mcfadden
- Dan Dukhan
- Onkgopotse Maboe

7. Acknowledgements

- Barry Hill
- Sakkie Burger

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Annex A – Impact assessment

(Normative – for Eskom internal use only)

1) Guidelines

- All comments must be completed.
- Motivate why items are not applicable (N/A).
- Indicate actions to be taken, persons or organizations responsible for actions and deadline for action.
- Change control committees to discuss the impact assessment and, if necessary, give feedback to the compiler regarding any omissions or errors.

2) Critical points

2.1 Importance of this document e.g. is implementation required due to safety deficiencies, statutory requirements, technology changes, document revisions, improved service quality, improved service performance, and optimized costs.

Comment: Document required for maintenance of all wooden pole structures.

2.2 If the document to be released impacts on statutory or legal compliance, this needs to be very clearly stated and so highlighted.

Comment: We are required to do a 10-year inspection maintenance plan.

2.3 Impact on stock holding and depletion of existing stock prior to switch over.

Comment: N/A

2.4 When will new stock be available?

Comment: N/A

2.5 Has the interchangeability of the product or item been verified, i.e. when it fails, is a straight swap possible with a competitor's product?

Comment: The requirement in D.1 came into effect in 2010.

2.6 Identify and provide details of other critical (items required for the successful implementation of this document) points to be considered in the implementation of this document.

Comment: For new tenders in 2011, D.1 (all three points) to be required by all contractors and their inspectors.

2.7 Provide details of any comments made by the OU's regarding the implementation of this document.

Comment: N/A.

3) Implementation time frame

3.1 Time period for implementation of requirements.

Comment: As soon as the document is published.

3.2 Deadline for changeover to new item and personnel to be informed of DX wide changeover.

Comment: When the new tenders are given out.

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4) Buyer's guide and power office

4.1 Does the Buyer's Guide or Buyer's List need updating?

Comment: As and when the requirements of this document change

4.2 What Buyer's Guides or items have been created?

Comment: Buyer's Guide for Plastic plugs

4.3 List all assembly drawing changes that have been revised in conjunction with this document.

Comment: N/A

4.4 If the implementation of this document requires assessment by CAP, provide details under 5).

4.5 Which Power Office packages have been created, modified or removed?

Comment: N/A

5) CAP/LAP pre-qualification process-related impacts

5.1 Is an ad hoc re-evaluation of all currently accepted suppliers required as a result of implementation of this document?

Comment: N/A

5.2 If NO, provide motivation for issuing this Task Manual before Acceptance Cycle Expiry date.

Comment: N/A

5.3 Are ALL suppliers (currently accepted per LAP) aware of the nature of changes contained in this document?

Comment: N/A

5.4 Is implementation of the provisions of this document required during the current supplier qualification period?

Comment: No.

5.5 If Yes to 0, what date has been set for all currently accepted suppliers to comply fully?

Comment: N/A

5.6 If Yes to 0, have all currently accepted suppliers been sent a prior formal notification informing them of Eskom's expectations, including the implementation date deadline?

Comment: N/A

5.7 Can the changes made, potentially impact upon the purchase price of the material/equipment?

Comment: Very slightly.

5.8 Material group(s) affected by Task Manual (refer to Pre-qualification invitation schedule for list of material groups).

Comment: N/A

6) Training or communication

6.1 Is training required?

Comment: Yes, by SETA approved training body.

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6.2 State the level of training required to implement this document (e.g. awareness training, practical/on job, and module).

Comment: SETA accredited training

6.3 State designations of personnel that will require training.

Comment: SETA accredited training body

6.4 Is the training material available? Identify person responsible for the development of training material.

Comment: SETA accredited training body

6.5 If applicable, provide details of training that will take place (e.g. sponsor, costs, trainer, schedule of training, course material availability, training in erection/use of new equipment, maintenance training).

Comment: To be carried by inspectors

6.6 Was Technical Training Section consulted regarding module development process?

Comment: no.

6.7 State communications channels to be used to inform target audience.

Comment: Email and Tescod Process.

7) Special tools, equipment, software

7.1 What special tools, equipment, software, etc. will need to be purchased by the OU to effectively implement?

Comment: N/A

7.2 Are stock numbers available for the new equipment?

Comment: N/A

7.3 What will be the cost of these special tools, equipment, software?

Comment: N/A

8) Finances

8.1 What total costs would the OU's be required to incur in implementing this document? Identify all cost activities associated with implementation, e.g. labour, training, tooling, stock, obsolescence.

Comment: None.

Impact assessment completed by:

Name: Pako Meruti

Designation: Civil Engineer

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Annex B – Agreements between client and contractor

(Normative)

The following shall be agreed upon, in writing, between the client and the contractor carrying out the inspections and supplemental treatment:

a) Unless otherwise agreed, the stubbing and or replacement of unsound poles shall be the responsibility of the client.

b) Whether class 3 poles will be stubbed or replaced.

c) Whether class 4 poles are to be replaced or stubbed.

d) The contractor shall submit his quality policy and plan, including an internal auditing procedure.

e) Where the inspection sheets and summary reports are to be handed in.

f) On completion of a line inspection, the contractor shall supply a copy of the inspection sheets in electronic format and a summary report of the line inspection. These reports shall be handed in to the relevant persons one week after the completion of a section of the line or sections of the line as defined by the numerical pole numbering.

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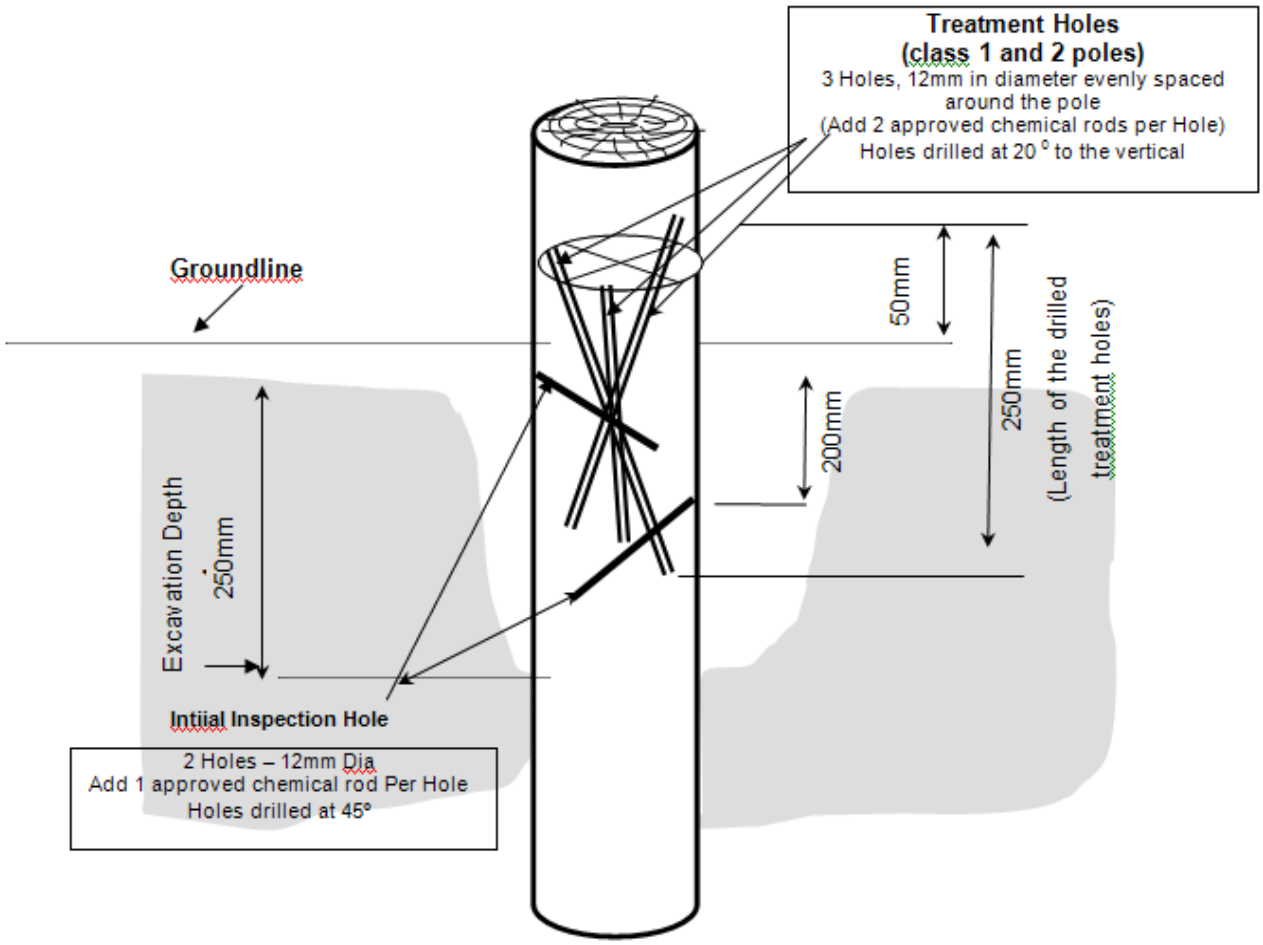
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Annex C – Internal pole inspection and treatment

(Normative)

C.1 For class 1 and 2 poles (rural poles ≥ 10 m long)

To be used in conjunction with the text of this Task Manual



Note 1: All poles shall be excavated and inspected as indicated in this annex. Refer to 3.1.1.1, 3.1.1.2, 3.1.1.3, 3.1.1.4 and 3.1.1.5 for more detail.

Note 2: Class 1 and 2 poles shall have an approved chemical applied internally below the ground. Refer to 3.1.7.1.1 and 3.1.7.1.2 for more detail.

Note 3: Where shell rot is present, an approved external chemical shall be applied. Refer to 3.1.7.1.2c) for more details.

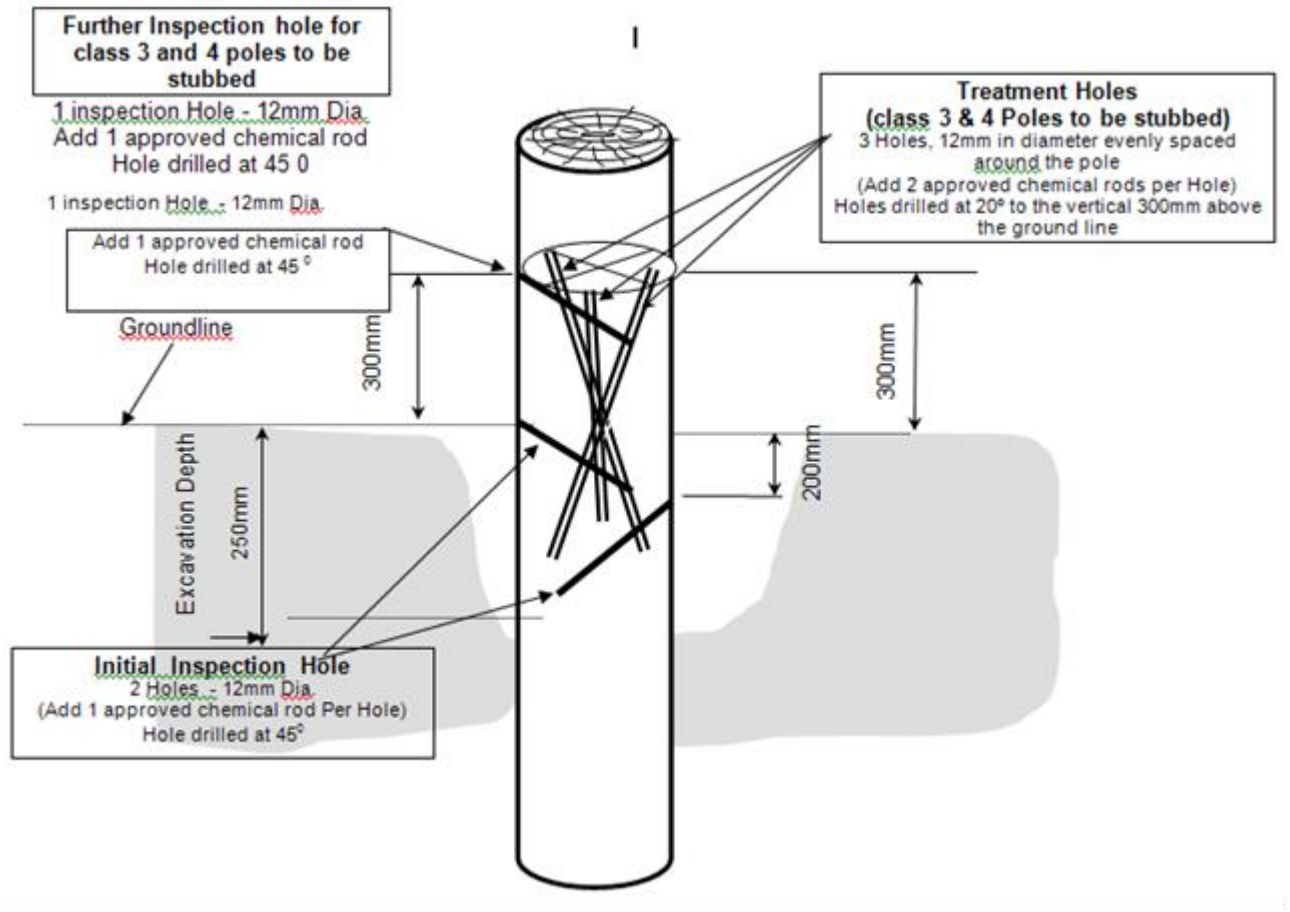
Note 4: All inspection and treatment holes shall be plugged with a removable plastic plug. Refer to 2.3.1, Definitions, for more details.

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C.2 For class 3 and 4 poles to be stubbed (rural poles ≥ 10 m long)

To be used in conjunction with the text of this Task Manual



Note 1: All poles shall be excavated and inspected as indicated in this annex. Refer to 3.1.1.1, 3.1.1.2, 3.1.1.3, 3.1.1.4 and 3.1.1.5 for more detail.

Note 2: Class 3 and 4 poles shall be stubbed to have an approved chemical applied internally. Refer to 3.1.7.1.4b) and d) for more detail.

Note 3: Where shell rot is present, an approved external chemical shall be applied. See 3.1.7.1.4e) for more details.

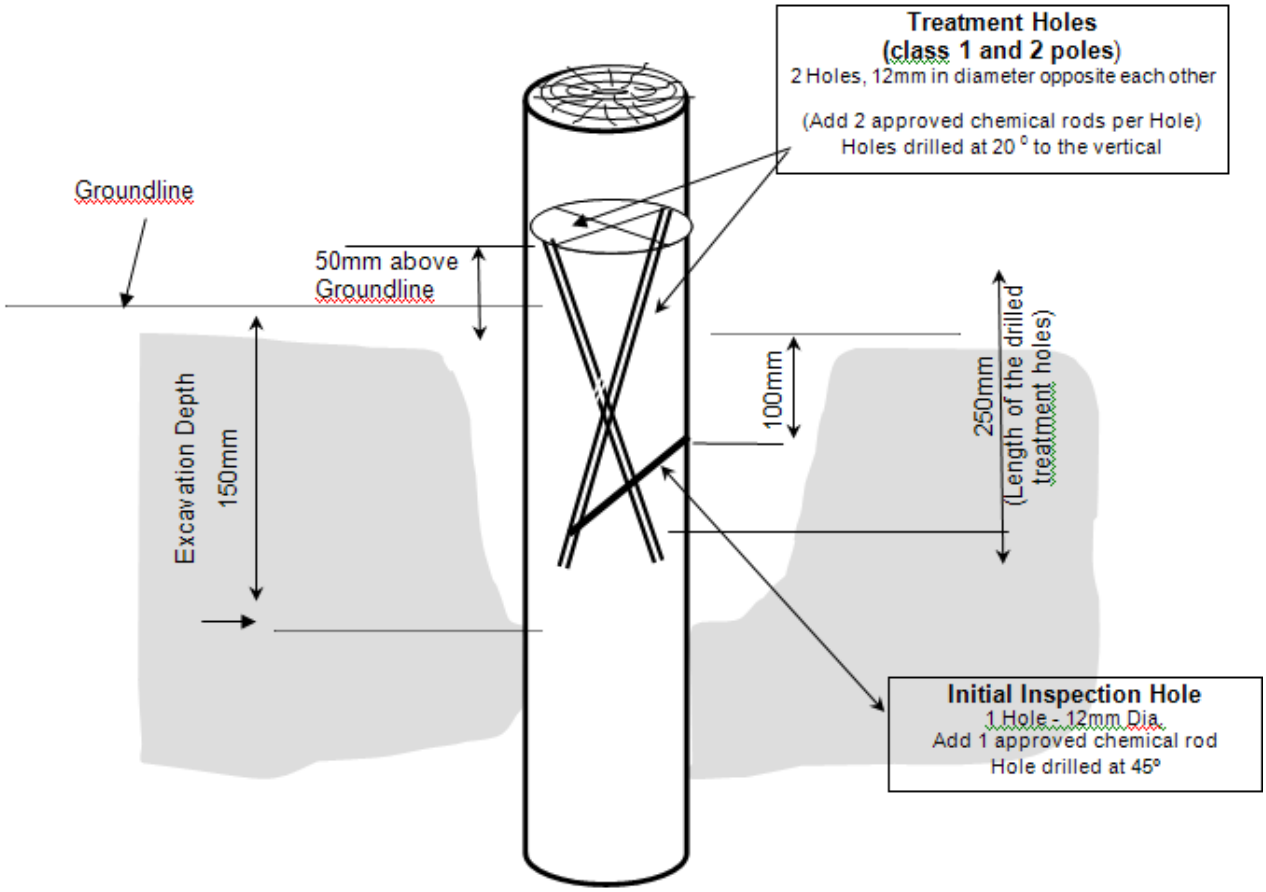
Note 4: All inspection and treatment holes shall be plugged with a removable plastic plug. Refer to 2.3.1, Definitions, for more details.

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C.3 For class 1 and 2 poles (township poles ≤ 9 m long)

To be used in conjunction with the text of this Task Manual



Note 1: All poles shall be excavated and inspected as indicated in this annex. Refer to 3.1.1.1, 3.1.1.2, 3.1.1.3, 3.1.1.4 and 3.1.1.5 for more detail.

Note 2: Class 1 and 2 poles shall have an approved chemical applied internally below the ground. Refer to 3.1.7.2.1a) and b) and 3.1.7.2.2a) and b) for more detail.

Note 3: Where shell rot is present, an approved external chemical shall be applied. Refer to 3.1.7.2.2 c) for more details.

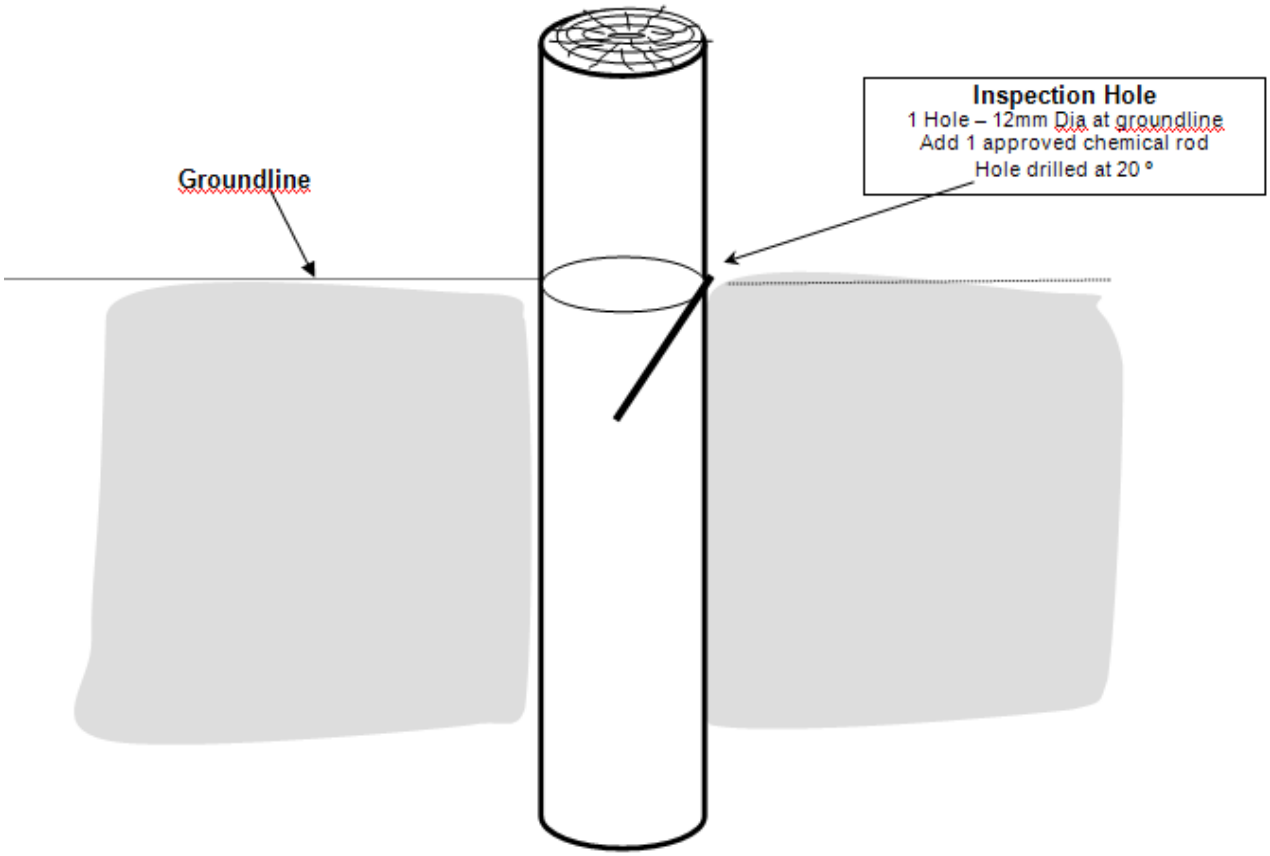
Note 4: All inspection and treatment holes to be plugged with a removable plastic plug. Refer to 2.3.1, Definitions, for more details.

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C.4 For 5 m stubby poles (township poles)

To be used in conjunction with the text of this Task Manual



Note 1: All service poles shall have one hole drilled at groundline at 20° to vertical.

Note 2: Serviceable service poles shall have an approved chemical rod applied internally at the groundline.

Note 3: The inspection hole shall to be plugged with a removable plastic plug. Refer to 2.3.1, Definitions, for more details.

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Annex D – Inspectors and inspection companies

(Normative)

D.1 Accredited inspectors

An inspector of wooden poles is considered qualified and accredited to work on Eskom Lines when:

a) Undertaken and passed suitable training

b) Been audited twice within three months of passing the training by an Eskom approved training authority.

c) Retraining by the approved training organisation is required every three years for the inspector to remain accredited.

d) The accredited inspector will undergo approval audits by an approved auditor (who has been trained and approved by an Eskom approved training organisation).

e) Each accredited inspector must have also completed the following modules of the Operating Regulations for High Voltage Systems (ORHVS) and must be in possession of a valid certificate:

- Module 1 Background to Regulations
- Module 2 Access and Supervision
- Module 3 Issue and Use of Keys

Note: All of the above will be paid by the contractor/inspector.

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Annex E – Pole stubbing

(Normative)

a) Only pole stubbing methods that are approved by LES and published in a Technical Instruction may be used.

b) Pole stubbing methods will only be approved if the following criteria are met:

1) The stubbing method is tested at an independent testing body approved by LES.

2) The loads applied to the test are submitted to LES for approval before the stub method is approved.

3) The test is witnessed by personnel of LES.

4) The class 3 stub shall be tested with the pole still in place below the ground and pulled with a 11m pole to the ultimate cantilever load of a 11m 160mm top pole as stated in SANS 754 and still supporting the pole with a maximum deflection similar to the sound pole testing of a 11m 160mm top. At 60% of the ultimate load of an 11m 160mm pole, the testing shall be released and there shall be no permanent set in the stub system.

5) The class 4 stub shall be tested with no pole below the ground and pulled with a 11m pole pulled to the ultimate cantilever load of a 11m 160mm top pole as stated in SANS 754 and still supporting the pole with a maximum deflection similar to the sound pole testing of a 11m 160mm top. At 60% of the ultimate load of a 11m 160mm pole, the testing shall be released and there shall be no permanent set in the stub system.

6) All poles that are stubbed shall be reclassified as a class 2 pole. The class 3 or 4 label shall be replaced with a class 2 label by the stubbing contractor. If a white line was painted around the pole to indicate a class 3 or 4 pole, this line shall be painted over with black paint that totally removes the white paint.

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Annex F – Supplemental treatment chemicals

(Normative)

a) Only chemicals that have been tested and researched by an independent research/test body that has been approved for testing and research by LES shall be considered for evaluation.

b) Testing of the chemical shall be a full-scale test and be tested at LES's approved testing areas.

c) After the testing, the product will be evaluated to see if the product can be used on Eskom's wooden poles remedial programme

d) No chemical may be applied as a remedial chemical to wooden poles until it has been tested and accepted according to the protocol 240-75883854 (destructive testing)

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Annex G – Recording of pole inspections

(Normative)

a) Results from the visual inspection and testing procedures shall be recorded in a Line Pole Inspection Report Form or electronic format as required by the OU.

b) The following minimum information shall be included in the Line Pole Inspection Report:

1) The information on the treater's tag, e.g. trademark of treater, and month and year of treatment.

2) The address and location of the pole (utility line number or name).

3) The pole number.

4) The terrain and vegetation where the pole is set.

5) The species of the pole (pine or eucalyptus).

6) The date of inspection and remedial treatment.

7) Forms of degradation and damage found.

8) The classification of the pole as assessed, e.g. class 1, 2, 3 or 4.

9) The treatment carried out on the pole (if classified as treatable).

10) For class 3 and 4 poles, indication of whether the pole will be replaced or stubbed

11) The identification of the inspector.

c) These forms shall be completed for every pole in every utility line inspected, and submitted to the utility body on a weekly basis once the work has begun and until such work is completed.

d) Abbreviations and codes used on the forms are listed in Annex Hand Annex I.

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Annex H – Key to abbreviations used on line reports

(Normative)

TERRAIN AND SOIL

CL	Clay
M	Marsh
N	Normal
RO	Rocky
S	Steep
SA	Sandy
V	Valley
WL	Wetland
PD	Poor Drainage

VEGETATION

A	Agricultural
F	Forestry
G	Grassland
I	Irrigation
R	Rural
T	Thorn veldt
U	Urban

OTHER

CON	Pole in Concrete
CP	Concrete Pole
ROC	Pole in Rocks
STE	Steel Pole
SS	Suspension Structure
ST	Strain Structure

POLE ATTRIBUTES

ID	Internal Decay
IND	Incipient Decay
HH	Hollow Heart
C	Cracks
EC	Excessive Cracks
MD	Mechanical Damage
TI	Termites
ACT	Active Termites
PL	Pole Leaning
IN	Insect damage
SR	Shell Rot
PT	Pole Twist
LD	Lightning Damage
WP	Woodpecker Damage
FD	Fire Damage
VE	Vegetation Encroachment
PTD	Pole Top Decay
PTS	Pole Top Split
DL	Delamination
UP	Under Planted Pole
OP	Over Planted Pole
PC	Pole Cut-off

POLE ACCESSORIES

BEW	Broken Earth Wire
BSW	Broken Stay Wire
CA	Cable
EW	Earth Wire
LI	Links
LS	Isolator
MB	Meter Box
SA	Surge Arrester
SB	Stub
SP	Stay-pole
SW	Stay-wire
TR	Transformer

SPECIES

E	Eucalyptus
P	Pine

ASSESSMENT CLASS

C1	Class 1
C2	Class 2
C3	Class 3
C3S	Class 3 (stubbed)
C4	Class 4
C4S	Class 4 stubbed

STRUCTURE TYPE

DV	Delta Vertical
DH	Delta Horizontal
H	Horizontal configuration
HP	H-pole (two-pole)
S	Staggered vertical
V	Vertical
W	Wishbone

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Annex I – Detailed wood inspection

(Normative)

a) These remarks could be used with the standard line report form using the symbols as shown.

b) The status of the pole could be recorded as follows:

- R = Reject
- T = Treated
- SB = Reinforce (Stubbing)
- Conventional symbols

Note: Cross section seen from top of pole.

Pole cross section		**Remarks**
1)		Shell rot up to 10 mm
2)		Shell rot > 10 mm
3)		Rotten sector
4)		Rotten sector
5)		Rotten sector
6)		Rotten sector
7)		Rotten butt
8)		Internal decay < 40 mm
9)		Internal decay > 70 mm
10)		Insect attack
11)		Severe checks/ cracks – mention extent in pole report
12)		Woodpecker attack
13)		Pole leaning (add dregrees)

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