

DOCUMENT NO.: KP1/13D/4/1/TSP/03/001-1



TREATED WOOD POLES.
Part 1: EUCALYPTUS POLES — SPECIFICATION

A Document of the Kenya Power & Lighting Company Plc.

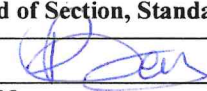
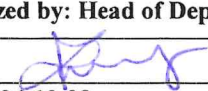
October 2026

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Part 1: EUCALYPTUS POLES -
SPECIFICATION

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01. Circulation List

COPY NO.	COPY HOLDER
1	Manager, Standards
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REVISION OF KPLC STANDARDS

In order to keep abreast of progress in the industry, KPLC standards shall be regularly reviewed. Suggestions for improvements to approved standards, addressed to the Manager, Standards Department, are welcome.

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02. Amendment Record

Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
Issue 6 Rev 1	2014-03-30	Included pole top diameter of 140mm for 10m poles for low voltage lines	Head of Section TS&S & Senior Wood Scientist	Head of Department, R&D
Issue 6 Rev 2	2015-02-19	Included requirement on maturity, testing capacity, nail plates & steel wire banding	Head of Section Standards Dev, CE & QA&C & Wood Scientist	Head of Department, Standards
Issue 6 Rev 3	2023-04-20	i. Clause 4.1.2: Maturity period and evidence ii. Clause 4.1.3: seasoning period and evidence iii. Clause 4.1.6: Hole drilling positions iv. Clause 4.2.4: Include ACQ as an alternative preservative v. Clause 4.3: Mandatory requirement for Strength Test Facility	Eng. S. Nguli	Dr. Eng. Peter Kimemia
Issue 6 Rev 4	2023-07-13	i. Clause 4.2.6.1: Added how the length shall be measured ii. Clause 4.4.3, Table 3: Colour coding: reintroduced top diameters of 140 mm and 160 mm for 10m poles. iii. Clause 4.5, Table 4: reintroduced top diameters of 140 mm and 160 mm for 10m poles. iv. Clause A.3: Amended the composition of the FAT team to include the user and a representative from Standards Department.	Rotich Benard	Dr. Eng. Peter Kimemia

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Rev No.	Date (YYYY-MM-DD)	Description of Change	Prepared by (Name & Signature)	Approved by (Name & Signature)
Issue 7 Rev 0	2026-03-10	Removed CCA as an alternative preservative in Clauses 4.3.4 and 4.3.5 due to health and environmental concerns arising from its arsenic component.	Rotich Benard	Eng. Faith Gicugu
Issue 7 Rev 1	2026-10-28	<p>i. Included Copper Azole (CA) as an alternative copper-based wood preservative alongside Alkaline Copper Quaternary (ACQ), in accordance with Clause 4.3.1 of KS 94.</p> <p>ii. Introduced a two-year transitional period from the date of issue of the specification to allow utilisation of existing CCA preservative stocks before complete phase-out in favour of ACQ and CA.</p>	Rotich Benard	Eng. Faith Gicugu

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FOREWORD

This Specification has been prepared by the Standards Department in collaboration with the Supply Chain – Logistics Department and Distribution Division, all of the Kenya Power and Lighting Company PLC (abbreviated as KPLC) and it lays down requirements for treated wooden poles (eucalyptus).

The specification stipulates the minimum requirements for treated wood poles of eucalyptus species acceptable for use in KPLC. It shall be the responsibility of the supplier to ensure adequacy of the design, good workmanship, good engineering practice and adherence to applicable standards, regulations and specifications in the manufacture of the treated wood poles for the Kenya Power and Lighting Company PLC.

Users of this KPLC specification are responsible for its correct interpretation and application.

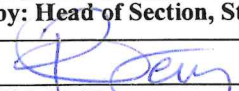
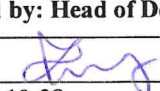
Other specifications in the series are:

KPLC1-3CB-TSP-03-001-2 - Treated Wood Poles. Part 2: Softwood Poles – Specification

KP1-3CB-TSP-03-001-3 - Specification for Pole Sleeve

The following are members of the team that developed this specification:

No	Name	Department
1.	Rotich Benard	Standards, IESR
2.	Philemon Langat	Quality Control, Supply Chain

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1. SCOPE

This specification covers treated wood poles of eucalyptus timber preserved with either of the following environmentally friendly copper-based wood preservatives and intended for use as upright supports for electric power transmission and distribution lines:

- a) Alkaline Copper Quaternary (ACQ)
- b) Copper Azole (CA)

2. REFERENCES

The following standards contain provisions, which, through reference in this text constitute provisions of this specification. Unless otherwise stated, the latest editions (including amendments) apply.

- AWPA P69-21: American Standard for the Field Use of Preservatives in Wood
- AWPA U1-21: American Standard for Use Category System: User Specification for Treated Wood
- KS 02-93 Glossary of terms used in timber
- KS 02-94 Kenya standard specification for Preservation of timber
- KS 516:2008 Kenya standard specification for Wood poles for power and telecommunications lines
- ISO 1461:2022: Hot dip galvanized coatings on fabricated iron and steel articles — Specifications and test methods
- ISO 9001:2015: Quality Management System-Requirements
- ISO/IEC 17025: General requirements for the competence of testing and Calibration laboratories

3. TERMS AND DEFINITIONS

For the purpose of this specification, the definitions given in the reference standards shall apply including the following:

- ACQ: Alkaline Copper Quaternary Compounds
- CA: Copper Azole
- TGL: Theoretical Ground Line

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4. REQUIREMENTS

4.1. SERVICE CONDITIONS

The treated wooden poles shall be suitable for use outdoors in tropical areas and harsh climatic conditions including areas exposed to:

- a) Altitudes of up to 2200m above sea level;
- b) Humidity of up to 95%;
- c) Average ambient temperature of +30°C with a minimum of -1°C and a maximum of +40°C
- d) Pollution: Design pollution level to be taken as "Heavy" (Pollution level III) for inland and "Very Heavy" (Pollution level IV) for coastal applications in accordance with IEC 60815.

4.2. PREPARATION AND SEASONING

4.2.1. Species

Wood Poles shall be of any species of wood given in KS 516 as shown in Table 1.

Table 1: Species of Wood

Standard or Trade Name	Scientific Name	Other Names
Iron Bark	<i>Eucalyptus paniculata</i>	Gum or Eucalyptus
Spotted Gum	<i>Eucalyptus citriodora</i> (corymbia citiodora) or <i>Eucalyptus maculata</i> (corymbia maculate)	Lemon Scented Gum or Eucalyptus
Tallow Wood	<i>Eucalyptus microcorys</i>	Spotted Gum or eucalyptus blue gum
Blue Gum	<i>Eucalyptus globulus</i>	Tasmanian blue gum or southern blue gum)
Regnans saligna gum	<i>Eucalyptus regnans</i> <i>Eucalyptus saligna</i> Or <i>Eucalyptus grandis</i>	Giant Gum (mountain ash) Blue gum (Saligna gum) Or River Red Gum

4.2.2. Felling

Only mature trees (≥ 15 years) shall be felled and the trees shall be cut as close to the ground level as possible. The ends shall be sawn to give a flat section and branches shall be dressed down flush with the trunk. The poles shall then be stacked in open crib formation on flat clear ground.

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Notes:

- 1) Full details on planting dates and felling dates shall be submitted with the tender as evidence of maturity (Templates for this shall be as provided by Quality Control Section).
- 2) Only approved poles/forest shall be harvested for treatment.

4.2.3. Moisture Content

The average moisture content of individual poles at the time of treatment shall not exceed 25%. Care shall be taken to ensure the poles are fully seasoned and shall not develop checks after treatment. For air seasoning, the minimum period shall be 6 months. Kiln dryers may be used to enhance seasoning.

Note: Documented evidence for seasoning period shall be submitted to KPLC before tender evaluation (Templates for this shall be as provided by Quality Control Section).

4.2.4. Defects

The poles shall be of sound wood, free from decay, insect attack, rot pockets and any damages caused by handling and processing that would affect the strength of the poles. Growth and seasoning defects (knots, spiral grain, end check, surface check and ring shakes) shall be limited to the requirements as set in KS 516:2008.

4.2.5. Straightness

A straight line from the center of the butt to the center of the tip shall lie entirely within the body of the pole. Poles shall be free from crooks that deviate more than 75mm from straightness in any 2m length as shown in KS 516:2008.

4.2.6. Dimensions, Hole Drilling and Cutting/Shaping

- 4.2.6.1. The length of the pole shall conform to the values specified in the tables in clause 4.5, with a tolerance of ± 75 mm. The length shall be measured from the butt end to the lowest cut slant of the top.
- 4.2.6.2. Holes drilled in the pole to support the fittings shall have a diameter of 18.0mm for pole size 10.0m, and 24.0mm for all other sizes, with a tolerance of ± 1 mm. Holes shall be on a straight line parallel to the axis drilled at 90°.
- 4.2.6.3. The set of MV and the LV holes shall be 90° spaced on the surface of the pole. The table below shows the required drilling positions, measured from the top of the pole for each pole category.

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Table 2: Hole Drilling Positions

STANDARD POLE LENGTH (M)	POSITION OF EACH HOLE FROM THE TOP OF THE POLE (mm)					
	MV		LV			
Hole No. ⇒	1	2	3	4	5	6
10	-	-	150	455	760	1065
11	150	530	1400	1705	2010	2315
12	150	759	1674	1979	2284	2589

4.2.6.4. The butt end of the pole shall be cut square to within 5°.The top end shall be cut to a slant angle of 60° (- 0 + 5°) to the longitudinal axis (longer side).

4.2.6.5. Shaping and cutting of poles as well as drilling of holes shall be carried out before impregnation. Poles shall be shaved free of the bark, and branches shall be cut off neatly in the direction of growth and be dressed down flush with the trunk before impregnation.

4.3. IMPREGNATION

4.3.1. The poles shall have a minimum sap wood thickness of 15 mm as observed at each end of pole.

4.3.2. The average moisture content of the pole at the time of impregnation shall be as indicated in clause 4.2.3, being expressed as a percentage on dry weight before treatment.

4.3.3. Impregnation shall be carried out using the full cell (vacuum-pressure) process according to Kenya standard specification KS 02-94.

4.3.4. The preservative used shall be water-based formulations of either of the following environmentally friendly copper-based wood preservatives:

- a) Alkaline Copper Quaternary Compounds (ACQ);
- b) Copper Azole (CA).

4.3.5. The wood preservative formulations specified in Clause 4.3.4 shall be registered with the Pest Control Products Board (PCPB) of Kenya. A Certificate of Registration of a Pest Control Product, clearly indicating the active ingredients and their respective concentrations, together with a valid Certificate of Renewal, where applicable, shall be submitted as evidence of regulatory compliance. All proposed preservative formulations shall additionally be subject to technical evaluation and formal approval by Kenya Power's Wood Scientists prior to their use in the treatment of wooden poles.

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4.3.6. The preservative penetration shall be complete in the sapwood, and the specific sapwood retention shall not be less than the following:

- a) Alkaline Copper Quaternary (ACQ): 22 kg/m³.
- b) Copper Azole (CA): 11 kg/m³ of total active ingredients for heavy-duty ground-contact applications, subject to verification of suitability for eucalyptus utility poles.

4.3.7. The preservative retention shall be determined by chemical analysis of the treated sapwood and expressed in kilograms of active preservative ingredients per cubic metre (kg/m³) of treated sapwood.

4.3.8. The treated poles shall undergo complete preservative fixation to ensure that they are safe for handling, transportation and storage before delivery. The fixation period shall not be less than 72 hours after preservative impregnation, or such longer period as may be required for complete fixation of the preservative used.

4.3.9. Notwithstanding the requirements of Clause 4.3.4, a transitional period of two (2) years from the date of issue of this specification shall be allowed for the utilisation of existing stocks of Chromated Copper Arsenate (CCA) wood preservatives. During this period, CCA may continue to be used for the treatment of eucalyptus poles, provided that the preservative complies with the applicable regulatory and technical requirements. No new stocks of CCA shall be procured during the transitional period. Upon expiry of the transitional period, only the preservatives specified in Clause 4.3.4 shall be permitted.

4.4. BANDING AND COLOUR CODING

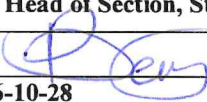
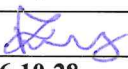
4.4.1. Banding

4.4.1.1. Each end of each pole shall be banded by one band of galvanized mild steel strapping of width not less than 19mm and thickness not less than 1.2mm. The strapping is to be firmly tensioned into position by the use of a suitable strapping machine capable of applying a tensile force of not less than one-half of the ultimate tensile strength of the strapping being used.

4.4.1.2. Each band is to be nailed to the pole at four different positions evenly located on the pole using galvanized clout nails of not less than 3mm diameter and length not less than 38mm.

4.4.1.3. Two straps of hot dip galvanized steel wire of diameter of at least 3.15mm with a tensile strength of at least 450 Mpa shall similarly be used (at each end of the pole) in place of the flat steel strap.

4.4.1.4. The bands shall be applied at 100mm ± 10mm away from each end of the pole.

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4.4.1.5. The banding shall be done before seasoning and dressing of the poles and prior to treatment.

4.4.2. Nail Plates

4.4.2.1. Both ends of each pole shall be covered by anti-split plate (gang nails plate). The nail plate shall be made of galvanized steel with a zinc coating of at least 610 g/m².

4.4.2.2. The plate shall have a minimum thickness of 1.2mm and have a minimum nail length of 14mm. The size of the plate shall be such that the area covered by the plate is at least 60% of the area of applicable pole end.

4.4.2.3. Each nail shall be fully embedded in the pole end and no nail shall be bent. The nail plate shall be so positioned in the middle of a cut end that its edges do not protrude over the round face of the timber.

4.4.3. Colour Coding

The nail plate used on the poles shall be coded to facilitate size identification during handling and storage. The paint used for colour coding shall be indelible and in accordance with the table below:

Table 3: Colour Codes

STANDARD POLE LENGTH (M)		COLOUR OF PAINT
10.0	182.5 TGL (140mm top diameter)	BLACK
	202.5mm TGL (160mm top diameter)	PINK
	222.5mm TGL(180mm top diameter)	GREEN
11.0		NAVY BLUE
12.0		YELLOW
14.0		RED
15.0		SKY BLUE
16.0		WHITE
18.0		ORANGE

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4.5. DIMENSIONS AND STRENGTH VALUES FOR POLES

Table 4: Dimension and Strength Values

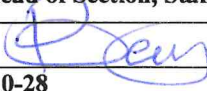
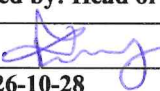
LENGTH m	MINIMUM TOP DIAMETER (mm)	MINIMUM DIAMETER AT THEORETICAL GROUNDLINE (mm)	DISTANCE OF THEORETICAL GROUNDLINE (TGL) FROM BUTT (m)	FORCE REQUIRED TO CAUSE A FIBRE STRESS OF 55MPa (CANTILEVER LOADING) kN
10.0	140	182.5	1.8	4.15
	160	202.5		5.67
	180	222.5		7.52
11.0	180	227.5	1.8	7.13
12.0	180	232.5	1.8	6.85
14.0	200	262.5	2.0	8.20
15.0	220	287.5	2.0	9.93
16.0	220	292.5	2.0	9.71
18.0	200	282.5	2.0	7.65

Note:

- 1) The manufacturer/treatment plant MUST have Strength Test Facility and necessary equipment to achieve this objective.
- 2) Test samples shall be selected as detailed in table 5.
- 3) Stage inspection is Mandatory in manufacturing process (Templates for this shall be as provided by Quality Control Section and shall be as developed in conjunction with Standards Department).

5. TESTS AND INSPECTION

- 5.1 The treated wooden poles shall be inspected and tested in accordance with the requirements of this specification, KS 02-94 and KS 516 2008. It shall be the responsibility of the supplier to perform or to have performed the tests specified.
- 5.2 The poles shall be tested against the relevant minimum dimensions and strength values as per clause 4.5 among other parameters as per this specification and applicable standards.
- 5.3 **Sampling**
 - 5.3.1 Lot: In a consignment, 500 poles or a part thereof of the same overall length, same dimensions and belonging to the same batch of manufacture shall be grouped together to constitute a lot.
 - 5.3.2 For ascertaining the conformity of the poles in the consignment to the requirements of this specification, samples shall be tested from each lot separately.

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- 5.3.3 The number of poles to be selected from the lot shall depend on the size of the lot and shall be according to the sampling table below.
- 5.3.4 All the poles selected shall be tested for defects, physical dimensions and straightness. A pole failing to satisfy one or more of these requirements shall be considered as defective. All the poles in the lot shall be considered as conforming to these requirements if the number of defective poles found in the sample is less than or equal to the corresponding acceptance number given in Table 5.
- 5.3.5 The lot having been found satisfactory according to 5.3.4 shall be further tested for ultimate load of the poles. For this purpose, the number of poles given in Table 5 shall be tested. These poles may be selected from those already tested according to 5.3.4 and found satisfactory.
- 5.3.6 All these poles tested for ultimate load shall satisfy the corresponding specification requirements. If one or more poles fail, twice the number of poles required for ultimate load tests shall be selected from the lot again and subjected to this test. If there is no failure among these poles, the lot shall be considered to have satisfied the requirements of this test. If there is failure then the entire lot shall be rejected.

Table 5: Test Sample Size

No. of poles in the lot	Sample size	Defects and Dimensional Requirements acceptance number	Ultimate load test
Up to 100	10	1	1
101 to 200	15	1	1
201 to 300	20	2	1
301 to 500	30	3	2

6. MARKING

- 6.1 Each pole shall be marked with the following information:
- The words '**PROPERTY OF KPLC**';
 - Manufacturer's name or trade mark;
 - Date of treatment, comprising the first two digits of the month followed by the last two digits of the year separated by a slash;
 - The number of the Kenya Standard to which the pole is manufactured, in this case, KS 516 & KS 02-94;
 - Length of the pole (in metres);
 - Top diameter (in mm);
 - Hazard class (In this case H4);

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- h) Species of timber;
- i) Preservative used and applicable standard;
- j) Ground line
- k) Marking for serialization and traceability.

All the markings shall be legible and permanent.

- 6.2 The marking in 6.1 above shall be on a plate made of aluminium and of at least 60mm x 60mm x 1.2mm in dimensions.
- 6.3 The aluminum plate shall be secured to the pole by at least four galvanized steel wire nails of at least 50mm length.
- 6.4 The aluminum plate shall be placed at a depth of 3mm from the surface of the pole and positioned 3.5m from the butt end of the pole.

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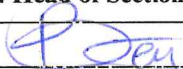
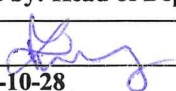
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APPENDICES

APPENDIX A: TESTS AND INSPECTION (Normative)

- A.1. Copies of Type Test Certificates and Type Test Reports issued by a third party testing laboratory that is accredited to ISO/IEC 17025 shall be submitted with the tender for the purpose of technical evaluation. A copy of the accreditation certificate for the testing laboratory shall be submitted with the tender (all in English Language). Any translations of certificates and test reports into English language shall be signed and stamped by the Testing Authority.
- A.2. Copies of Test Reports to be submitted shall include the following tests as per KS 02-94 and KS 516:
- (i) Ultimate Strength Test
 - (ii) Preservative Penetration Test;
 - (iii) Dimensions Test
 - (iv) Preservative Retention Test
 - (v) Knots' Test
 - (vi) Splits and Checks Tests
 - (vii) Marking for Serialization and Traceability
 - (viii) Banding
 - (ix) Straightness Test
 - (x) General Defects Tests
- A.3. The poles shall be subjected to acceptance tests at the manufacturer's premises before dispatch. KPLC shall appoint a cross-functional team of officers/engineers that shall include the User and a representative from Standards Department. Consignments presented for inspection shall not be less than 2,000 poles unless the order quantity is less. The sampling and testing shall be as per clause 5. The acceptance tests to be witnessed shall include, but not limited to, the following tests:
- (i) Dimensional and physical Checks
 - (ii) Straightness and defects checks,
 - (iii) Preservative retention
 - (iv) Strength Tests
 - (v) Moisture Content
 - (vi) Details of standard and reference equipment& preservative used in treatment
 - (vii) All other tests as detailed in this specification
- A.4. On receipt of the treated wooden poles, KPLC will inspect them and may perform or have performed any of the relevant tests in order to verify compliance with the specification. The supplier shall replace/rectify without charge to KPLC, wooden poles that upon examination, test or use fail to meet any of the requirements in this specification.

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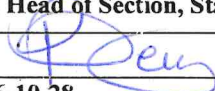
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APPENDIX B: QUALITY MANAGEMENT SYSTEM (Normative)

- B.1. Supplier shall submit quality assurance plan (QAP) that shall be used to ensure that the poles material, manufacture, workmanship, tests, service capability, maintenance and documentation, will fulfil the requirements stated in the contract documents, standards, specifications and regulations.
- B.2. The Manufacturer's Declaration of Conformity to reference standards and copies of quality management certifications including copy of valid and relevant ISO 9001: 2015 certificate (or for locally treated poles, the Diamond Mark of Quality from Kenya Bureau of Standards) shall be submitted with the tender for evaluation.
- B.3. Details on manufacturing capacity shall be submitted with the tender shall include detailed list of manufacturing facilities, number and capacity of each cylinder, drying kiln and total monthly production of the whole plant.
- B.4. Details on testing capacity shall be submitted with the tender shall include quantities and calibration status of all necessary test and measuring equipment and shall include spectrometric analyzer, moisture meter, and strength testing facility, hydrometer, increment borer, calipers and band strapping machine.
- B.5. Details on manufacturer's experience to be submitted with the tender shall include list of previous customers and reference letters from at least four of the previous customers.

APPENDIX C: DOCUMENTATION AND DEMONSTRATION (Normative)

- C.1 The bidder shall submit its tender complete with technical documents for tender evaluation. The technical documents to be submitted (all in English language) for tender evaluation shall include the following:
 - a) Fully filled clause by clause guaranteed technical particulars (GTP) signed by the manufacturer;
 - b) Copies of the Manufacturer's catalogues, brochures, drawings giving all relevant dimensions, Schematic Diagram and technical data;
 - c) Sales records for the last five years and at least four customer reference letters;
 - d) Details of manufacturing capacity and the manufacturer's experience;
 - e) Copies of required test/calibration reports of testing/calibrating laboratory accredited to ISO/IEC 17025;
 - f) Copy of accreditation certificate to ISO/IEC 17025 for the testing/calibrating laboratory;

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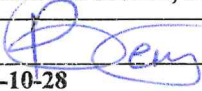
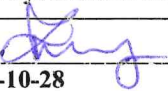


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- g) Manufacturers letter of authorization, ISO 9001 certificate, and other technical documents required in the tender.
- h) Manufacturer's warranty and guarantee; subject to 60 months from date of delivery to KPLC stores
- C.2. The successful bidder (supplier) shall submit the following documents/details to KPLC for approval before manufacture:
- a) Fully-filled clause by clause Guaranteed Technical Particulars (GTP) signed by the manufacturer, specific values shall be filled in. Terms like "Yes", "Agree", "Complied" **shall not be acceptable;**
 - b) Quality assurance plan (QAP) that will be used to ensure that the design, material, workmanship, tests, service capability, maintenance and documentation will fulfil the requirements stated in the contract documents, standards, specifications and regulations.
 - c) Test Program to be used after manufacture,
 - d) Marking details and method to be used in marking the poles,
 - e) Manufacturer's undertaking to ensure adequacy of the design, good workmanship, good engineering practice and adherence to applicable standards, regulations and specifications in the manufacture of the poles for KPLC,
 - f) Quality Control documents to ensure poles are Mature, correct seasoning and proper Testing

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APPENDIX D: GUARANTEED TECHNICAL PARTICULARS (Normative)

(to be filled and signed by the Manufacturer and submitted together with relevant copies of the Manufacturer's catalogues, brochures, drawings, technical data, copies of complete type test reports and accreditation certificate to ISO/IEC 17025 for the third party testing laboratory for tender evaluation, all in English Language).

TENDER NO. BIDDER'S NAME & ADDRESS

CLAUSE NUMBER	DESCRIPTION	KPLC REQUIREMENT	BIDDER'S OFFER
	Name & address of Manufacturer	state	
	Country and forest where the trees were grown	state	
	Country of manufacture	state	
	Manufacturer's Letter of Authorization	attach	
	Manufacturer's warranty and guarantee for the offered treated wooden poles	attach	
	Capacity of manufacturer (number of poles produced in a day)	specify	
	List & contact addresses of previous customers of manufacturer for similar poles (last five years)	list	
	Reference letters from at least four of the previous customers	attach	
1	Scope - Wood preservative used	Specify whether ACQ or CA	
2	Reference Standards	State	
3	Definitions	State	
4.1	Service conditions	State	
4.2	Preparation and Seasoning		
4.2.1	Species	state	
4.2.2	Felling	Maturity (≥ 15 years)	state
		Documented evidence of the same	state
		Date of planting	state
		Date of felling	state
4.2.3	(a) Moisture content	specify	
	(b) Documented evidence of seasoning	provide	
	(c) Seasoning period (≥ 6 months)	state	
4.2.4	Defects	specify	
4.2.5	Straightness	specify	

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CLAUSE NUMBER	DESCRIPTION	KPLC REQUIREMENT	BIDDER'S OFFER
4.2.6	Dimensions, Holes Drilling and Cutting. Shaping		
4.2.6.1	Length	state	
4.2.6.2	Hole drilling	specify	
4.2.6.3	Hole drilling positions	state	
4.2.6.4	Butt & top end cutting angle	specify	
4.2.6.5	Shaping and cutting before treatment	state	
4.3.	Impregnation		
4.3.1	Sapwood thickness (mm)	state	
4.3.2	Moisture content at Impregnation (%)	specify	
4.3.3	Impregnation (process & standard)	specify	
4.3.4	Type of wood preservative offered	Specify either ACQ or CA	
	The preservative a water-based, copper-based formulation	Specify	
4.3.5	PCPB Registration status of the proposed preservative formulation with the PCPB registration certificate	Specify	
	Active ingredients and their respective concentrations (%) as indicated in the registration certificate	Attach valid certificate	
	Valid PCPB Renewal Certificate of the preservative registration	Specify and attach certificate	
		Attach where applicable	
4.3.6	Preservative penetration into sapwood	Specify	
4.3.6(a)	Minimum ACQ retention (kg/m ³)	≥22, if ACQ is offered	
4.3.6(b)	Minimum CA retention (kg/m ³)	≥11, if CA is offered	
	CA suitability for eucalyptus utility poles	Provide supporting evidence	
4.3.7	Retention determination method	Specify	
4.3.8	Minimum fixation period (hours)	Specify	
	Complete fixation before delivery	Specify	
4.3.9	The transitional period allowed for utilization of existing stocks of CCA	Specify period in years	
4.4	Banding and Colour Coding		
4.4.1	Banding		
4.4.1.1	Band/Strap Spec & application	state dimensions	
4.4.1.2	Size of galvanized clout nails	state	
4.4.1.3	No. of straps and dimensions and strength	specify	
4.4.1.4	Point of application	state	

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CLAUSE NUMBER	DESCRIPTION	KPLC REQUIREMENT	BIDDER'S OFFER
4.4.1.5	Time of banding	state	
4.4.2	Nail Plates		
4.4.2.1	(i) Provision of anti –split plates. (ii) Material and level of galvanization (iii) Dimension of the plate (iv) area of coverage	state	
4.4.2.2	Nail plate spec. & coverage	state	
4.4.3	Colour coding	specify	
4.5	Dimensions And Strength Values For Poles		
4.5	Length	state	
	Minimum top diameter	specify	
	Minimum diameter at theoretical ground line	specify	
	Theoretical ground line diameter from butt	specify	
	Force required to cause a fiber stress of 55MPa (cantilever loading), kN	specify	
	Testing bench and Accessories	state	
5.0	SAMPLE TESTING		
5.1	Test standards	list	
5.2	Test Reports/Routine/acceptance tests (also indicate quantities to be presented for inspection)	specify	
5.3	Sampling		
5.3.1	Sampling : sample size and Lot selection	state selection criteria	
5.3.2-5.3.3	Lot Testing	specify	
5.3.4-5.3.6	Test procedure and acceptance/rejection criteria	state compliance	
6.1 (a) to (k)	Marking (indicate parameters to be marked, method of marking & position of marking)	state	
6.2.	Material and dimensions of Name plate	state	
6.3	Method of securing name plate	specify	
6.4	Fixing of name plate	specify	
	APPENDICIES		
A	TESTS AND INSPECTION (Normative)		
A.1	Copies of Type Test Reports, Valid Accreditation Certificate of Testing laboratory	Provide	
	A copy of the accreditation certificate for the testing laboratory	Provide	
A.2	Tests in the submitted copies of Type Test Reports, Valid Accreditation Certificate of Testing laboratory	List	

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CLAUSE NUMBER	DESCRIPTION	KPLC REQUIREMENT	BIDDER'S OFFER
A.3	Test to be witnessed by KPLC during FAT and equipment to carry out the tests	List	
A.4	Inspection at KPLC and replacement of wooden poles that upon examination, test or use fail to meet any of the requirements in this specification	Specify	
B	Quality Management System and Capacity		
B.1	Quality Management System (QAP) certificate	Submit	
B.2	Copies of quality management certifications including copy of valid and relevant ISO 9001: 2015 certificate (or for locally treated poles, the Diamond Mark of Quality from Kenya Bureau of Standards) shall be submitted with the tender for evaluation	Submit	
B.3	Production capacity – number produced in a month	State	
	Number of cylinders	specify	
	Availability of drying kiln		
B.4	List and calibration details of test and measuring equipment	list	
B.5	Previous similar Customers	list	
C	Documentation		
C.1	Documents submitted with tender for evaluation	list	
C.2	Documents to be submitted for approval before manufacture	list	

Manufacturer's Name, Signature, Stamp and Date

****Note**

*All guaranteed values **MUST** be clearly stated. Words like 'agreed', 'Yes', 'confirmed', 'As per KPLC specifications', etc. shall not be accepted and shall be considered non-responsive.*

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