



The Kenya Power & Lighting Co. Ltd.
Central Office – P.O. Box 30099, Nairobi, Kenya
Telephone – 254-02-3201000-Telegrams 'ELECTRIC'- www.kenyapower.co.ke
Stima Plaza, Kolobot Road

Our Ref: KP1/6A.1/PT/1/18/A69

26th July 2018

Dear Sir/ Madam:

AMENDMENT NO. 4 TO ICB NO: KP1/6A.1/PT/1/18/A69 FOR PROCUREMENT OF DESIGN, SUPPLY, INSTALLATION AND COMMISSIONING OF TRANSMISSION SUBSTATIONS AND LINES- (AFD) PROJECT DATED 10TH APRIL, 2018

The following amendments are made to the specific provisions of the issued bidding document for Procurement of Design, Supply, Installation and Commissioning of Transmission Substations and Lines - (AFD) Project.

Save where expressly amended by the term of the addendum,

the Principal Bidding Document shall continue to be in full force and effect. The provision of this addendum shall be deemed to have been incorporated in and shall be read and construed as part of the Principal Bidding Document

1. VOL I- Section III: Evaluation and Qualification Criteria

- a) Clause 5. qualification Criteria for Joint venture on Environmental, Social, Health and Safety (ESHS) have been amended to read as follows;

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
5. Environmental, Social, Health and Safety (ESHS)¹							
5.1	ESHS Certifications	<p>Availability of a valid ISO certification or internationally recognized equivalent (equivalency to be demonstrated by Bidder):</p> <ul style="list-style-type: none"> - Quality management certificate ISO 9001 - Environmental management certificate ISO 14001 - Health and safety certificate OHSAS 18001 	Must meet requirement	Must meet requirement	N/A	N/A	<p>Form CER</p> <p>Form CER</p> <p>Form CER</p>
5.2	ESHS Documentation	Availability of in-house policies and procedures acceptable to the Employer for ESHS Project Areas management	Must meet requirement	Must meet requirement	N/A	N/A	Form ESHS and supporting documentation
5.3	ESHS Experience	Experience of 3 construction contracts over the last 8 years, where major ESHS measures were carried out or are on progress satisfactorily and in compliance with international standards.	Must meet requirement	Must meet requirement	N/A	N/A	Form EXP-ESHS with supporting documents (in particular documents supporting the ESHS implementation shall be provided)
5.4	Specific ESHS Knowledge Transfer Specific Experience	Experience of one (1) construction contract in developing and emerging countries over the last five (5) years in which the ESHS knowledge transfer to a local partner or the ESHS capacity building of the Employer's country staff was carried out satisfactorily	Must meet requirement	Must meet requirement	N/A	N/A	<p>Form EXP-ESHS with supporting documents</p> <p>The Bidder shall submit a piece of evidence supporting the ESHS knowledge transfer or capacity building.</p>

¹ Those ESHS qualification criteria may be reduced or deleted if the worksites management is of minor E&S impact

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
5.5	Dedicated Personnel	Availability of in-house personnel dedicated to ESHS issues: Environmental and Social Manager; Health and Safety Manager.	Must meet requirement	Must meet requirement	N/A	N/A	Organizational chart evidencing ESHS filled positions

2. Vol I- Section IV: Bidding Forms

Manufacturer’s authorization form provided in amendment 1 reads in part, “We hereby extend our full guarantee and warranty in accordance with **Clause 28 of the General Conditions of Contract**, with respect to the Goods offered by the above firm”.

This has been amended to read: “We hereby extend our full guarantee and warranty in accordance with **Clause 11 of the Bid data sheet**, with respect to the Goods offered by the above firm” (Copy of amended manufacturer’s authorization form is attached as **Appendix 1**).

3. Vol I - Section IV Bidding Forms- Price Schedules

Price schedules for Lot 1 (Narok-Bomet 132kv Line and Lot 2(Kipevu-Mbaraki) have been amended as per attached Appendix II

VOLUME II-LOT 2: KIPEVU-MBARAKI TRANSMISSION SUBSTATION AND LINES

18.2 SCOPE AND EXTENT OF DEFINITE WORK

This clause (in amendment No.1) that stated that “*the first portion of the 132kv line at Kipevu side i.e. from the **Take-off tower at Kipevu to AP2 across the sea shall be on 175mm² aluminium conductor carbon fiber reinforced (ACFR). The length of the distance is approximately 700 meters. Also in this same section of the line, the 33kv double circuit to be carried on the monopoles shall also be on 175mm² aluminium conductor carbon fiber reinforced (ACFR).***

The other section of the line remains unchanged and shall be on 175mm² (Lynx) ACSR conductor”

Has been amended to read; “approximately 6.5Km of 132kv single circuit three-phase transmission line on self-supporting monopoles with single (30/7) 175mm² (Lynx) ACSR conductor per phase and single OPGW earthwire from the existing Kipevu 132kV substation to the proposed 132KV Mbaraki Substation. The self-supporting monopoles shall also be designed to carry double circuit 33kv line on ACSR 150mm² conductor along 80% of the Line length. The estimated duration for the project is 24(Twenty Four) calendar months from the date of the contract award.

The first portion of the 132kv line at Kipevu side i.e. from the **Take-off tower at Kipevu to AP2 across the sea** shall be on 175mm² aluminium conductor carbon fiber reinforced

(ACFR). The length of the distance is approximately 700 meters. Also in this same section of the line, the 33kv double circuit to be carried on the monopoles shall also be on 175mm² aluminium conductor carbon fiber reinforced (ACFR).

The section of 132kv overhead line from AP2 (at AA Transporters Company) to AP8 (at KPA gate 11) shall be on 132kv Single Core 800mm² XLPE Copper underground Cable.

The other section of the line approximately 5.0km remain unchanged and shall be on 175mm² (Lynx) ACSR conductor as specified in the bidding document and amendments issued.

The cable shall follow same route that was to be followed by the overhead line, shown to bidders during the pre-bid site meeting on 11th and 12th, May 2018.

The undergrounded section of the line that is approximately 1.4Kms, shall not have the 33kv double circuit to be carried on the monopoles constructed.

In the undergrounded sections, angle points have been scrapped and Angle Point No.8 in the issued bidding documents becomes Angle Point No.3 in the amended angle points' numbering.

The **angle points coordinates remains same** as per issued bidding document and clarifications.

Single mode 48 core underground fibre optic cable shall be installed alongside the cable.

The Power cable shall be installed complete with cable support structures, termination and Jointing kits, sealing ends, surge arrestors and any other required accessories at the transition monopole towers.

Additionally the following sub clauses have been added.

18.2.1 Definite Scope of the underground cable section (AP2 to AP3 (AP8))

- a) Revised drawing for the line route is provided in the amendment with revised preliminary angle numbers. AP8 in the earlier issued route drawing now becomes AP3 in the revised drawing and its location has been moved slightly beyond KPA gate 11 towards AP9.
- b) The cable shall follow same route/Wayleave as provided in the issued proposed route drawings that was shown to bidders during the pre-bid site meeting. The cable runs along the Kismayu and a section of Shimanzi road.

The power cable shall cross following facilities, roads and railway as described here in;

1) Road crossings

The cable have at least 6 (Six) road crossing points namely,

- i. AA transporters access road/gate –Approximately 4000mm
- ii. 2nos. Oil Libya access road/gate – Approximately 6000mm each
- iii. Vivo access road and ground railway line- Approximately 4000mm
- iv. KPA access road/gate- Approximately 9000mm

- v. Kismayu road- Approximately 6000mm
- vi. EATL Company Service road-Approximately 6000mm

2) Railway crossings

- i. Two (2) crossing points at Ground railway track- Approximately 4000mm each
- ii. Overpass bridge for underground railway line-A approximately 12000mm

3) Facility crossings

- i. LPG gas one crossing point
- ii. Water Pipe one crossing point
- iii. Foam and water pipes for fire hydrant one crossing point

These facilities are at maximum depth of 2.0m from the ground surface

18.2.2 Power Cable installation along the road reserve

Where the power cable is not crossing road, railway or any other service facility it shall be laid on reinforced concrete cable (RC) trench of adequate dimensions that shall be adequately drained. The Concrete trenches shall have reinforced concrete slabs or covers and shall use corrosive sulphate resistant Portland or pozzolana Cement with minimum strength of 42.5KN/m².

- a) The cables trenches shall be adequate to accommodate the cables with a spare capacity of 15%.
- b) The trench walls shall have grooves for fitting the covers, and the covers shall flush with top of the trench walls.
- c) The top of the cable trench shall be not less than 150mm above the finished ground level. Finished grounding shall not allow flooding on the cable trench.
- d) Metallic barriers made of heavy gauge GI hollow tubes of the right size subject to approval by the employer shall be installed along the entire length of the cable to prevent damaging of the trench by trailers and Lorries. The GI barriers zinc coating shall not be less than 100 microns, and shall be painted red and yellow with weather outdoor resistant paint
- e) The three cores shall be laid in the same trench in horizontal formation, the width of the trench shall be such that the inter-axial spacing between the cables, shall be at least 150mm. There shall be a clearance of at least 150mm between axis of the end cables and the sides of the trench walls.
- f) The minimum depth of the trench shall not be less than 1200mm.
- g) The trenches shall be excavated in reasonably straight lines, wherever there is a change in the direction, a suitable curvature shall be adopted complying with internationally accepted standards. Where gradients and changes in depth are unavoidable, these shall be gradual.
- h) Adequate precautions shall be taken not to damage any other existing services parallel to the cable trench cable during excavation.

- i) Wherever cable markers or protective covers or bare cables are encountered, further excavation shall not be carried out without the approval of the employer.
- j) Existing property, if any, exposed during trenching shall be temporarily supported adequately to avoid damage and shall be reinstated to their original position after trench construction.
- k) The horizontal separation distance between the cable trench and other parallel existing service installations shall be at least 600mm except for gasoline and LPG pipes that shall be 3000mm.
- l) The cable trench quality and workmanship shall meet the specifications of Civil and building works as provided in clause 17, Volume II of issued bidding document.

18.2.3 Laying of cable in reinforced concrete cable trench

The trench shall then be provided with a layer of clean, dry sand cushion of not less than 150mm in depth, before laying the cables in the trench. The cables shall be covered with clean sand after laying them on the trench. Thickness of the sand shall not be less than 150mm on either side of cable trench and 300mm on top of the cables.

- a) Extra loop cable at the time of installation, approximately 10m of surplus cable shall be left on each terminal end of the cable and on each side of the underground joints. The surplus cable shall be left in the form of a loop.
- b) In case of jointing of the cable, the phase joints shall be staggered by 200m to 300m in the cable trench and joint manholes shall be adequately sized to allow maintenance activities.
- c) The excavated ground along the cable trenches shall be back-filled and compacted with excavated earth to its original form and to the approval of the employer
- d) After the cable installation, trenches drilled through roadways or other paved areas shall be restored to the same density and materials as the surrounding area and re-paved in accordance with the relevant building specifications to the satisfaction of the employer.
- e) Where road beams or lawns have been cut out of necessity, or kerb stones displaced, the same shall be repaired and made good, to the satisfaction of the employer and all the surplus earth or rock shall be removed from site.

18.2.4 Power Cable installation across road, railway and other facilities

- a) Ground Railway and Road crossing**
 - i. Where the power cable is crossing ground railway track and road or Underground Gasolines/LPG pipes and Water/Foam Pipes installation shall be by Horizontal Directional Drilling for the portion under these facilities.
 - ii. The bored hole shall be at least 3000mm beyond the outer rails or 3000m beyond the toe of embankment, whichever is the further.
 - iii. Across the roads the drilled hole shall emerge not less than 3000m from the end of road reserve.

- iv. Heavy duty GI anti-corrosive treated pipes of at least 10mm thick shall be pulled through drilled hole, and then Power cable shall then be pulled through this conduit.
- v. The diameter of the bored hole shall not exceed the outside diameter of the pipe by more than 50mm.
- vi. The depth of the bored hole from the surface shall be as per Kenya railway Corporation and Kenya Urban road authority requirements/guidelines. However in any case minimum depth of the bored hole from the ground surface shall not be less than 1500mm.

The complete installation shall be constructed in such away to be able to withstand weight imposed on it by crossing trains or trailers/lorries and earthmovers without collapsing.

b) Gasoline &LPG and Water/Foam pipes crossing

- i. The cables shall be laid on reinforced concrete cable (RC) trench 1500mm above the existing services (Gasoline, foam and water pipes) of adequate dimensions that shall be adequately drained.
- ii. The Concrete trenches shall have reinforced concrete slabs or covers and shall use corrosive sulphate resistant Portland or pozzolana Cement with minimum strength of 42.5KN/m². The cables trenches shall be adequate to accommodate the cables with a spare capacity of 15%.
- iii. The reinforced concrete trench shall be have at least following minimum dimensions 700mm (deep) x 1000mm(width) x150mm (thick walls) and 500mm (floor slab)
- iv. The floor of the RC trench shall be laid on a 500mm thick mass of concrete slab that shall be constructed from a depth of 700mm below the ground surface i.e. the top of the floor slab shall be approximately 200mm below the ground surface.
- v. The minimum length of the cable trench at the crossing of these services shall be 6000mm and it shall rise gently above the rest of the cable trench by approximately 500mm.
- vi. The trench shall be provided with a layer of clean, dry sand cushion of not less than 150mm in depth, before laying the cables in it. The cables shall be covered with clean sand after laying them on the trench. Thickness of the sand shall not be less than 50mm on either side of cable trench and 200mm on top of the cables.
- vii. Trench walls shall have grooves for fitting the slab covers, and the covers shall flush with top of the trench walls. These reinforced concrete trench covers shall be same as those used in the rest of the trench sections.

18.2.5 Underground rail track crossing through an over pass bridge.

- i. The power cable shall cross the underground railway track alongside the overpass railway bridge on a stainless steel perforated heavy gauge cable tray. The cable tray

shall be installed complete with tray covers. The Cable trays and covers shall be coated with anti-corrosive compound to enable them last for 50 years without corroding.

- ii. The cable tray shall be supported with hot dip galvanised high tensile strength steel cannels of correct sizes across the bridge.
- iii. The cable tray shall extend at least 3000mm from edge of the bridge embankment, where the cable shall enter the concrete cable tray
- iv. The cable tray shall be fabricated out of slotted/perforated stainless steel sheets as channel sections. The channel sections shall be supplied in convenient lengths and assembled at site to the desired lengths. The minimum thickness of the perforated sheets shall be at least 3.0mm
- v. The jointing between the sections shall be made with coupler plates of the same material and thickness as the channel section.
- vi. The width of the cable tray shall be chosen so as to accommodate all the cable cores plus 15% additional width for future expansion.
- vii. Factory fabricated bends, reducers, tee/cross junctions, etc. shall be provided as per good engineering practice. The radius of bends, junctions etc. shall not be less than the minimum permissible radius of bending of the size of cable to be carried by the cable tray.
- viii. The cable tray shall be suspended across the overpass railway bridge with the help of high tensile strength hot dip galvanised angle channels. The perforated cable tray shall be bolted on to the angle channels by use of stainless bolts.
- ix. The three cores of the cable shall be laid horizontally through separate heavy duty 10mm PVC pipes which shall be laid on the cable tray and fastened to it at appropriate distance. The separation distance between the PVC conduits shall be at least 50mm.
- x. The horizontal separation distance between the cable tray and other existing service installations on the overpass bridge shall be at least 600mm.

18.2.6 Power cable testing

All required tests in the issued bidding document on power cable shall be carried out as per IEC standards after laying and before commissioning of the cable.

In addition the cables shall be tested for continuity, Overvoltage withstand and insulation resistance before laying.

18.2.7 Route markers

- a) Route markers shall be provided along the cable route at about 0.5m away from the edge of the trench or as approved by the employer and generally at intervals not exceeding 100m.
- b) Route markers shall also be provided to identify change in the direction of the cable route and at locations of underground joints.
- c) Route markers shall be made out of concrete slabs of approved type and shall stand at least 200mm above the ground.
- d) The markers shall bear following words permanently embossed/engraved on it in capital letters.

DANGER HIGH VOLTAGE

KPLC 132kV HT Cable

18.2.8 Reinstatement

- a) In built up areas the contractor shall restore the excavated land to its original condition. Road reserves and all work sites shall be levelled and left clean and tidy. Debris, trees, stumps and excess soil dug from the excavation shall be removed from site during and after trench construction. All materials, stakes, plant and equipment used during installation/construction shall be removed and all work sites left in a safe condition.
- b) The disturbed ground shall be levelled and reinstated to such a condition as not to constitute a hazard and shall be the same as the original unexcavated land/surface.
- c) In all other cases the backfilled earth along the trench shall be compacted to the same density as the surrounding soil. Ground around the trench shall be reinstated to their original level and/or in accordance with requirement for footpaths/pavement by the county government urban road authority.
- d) Restoration of surface includes restoration of the footpath for all type of materials, e.g.
- e) Bitumen, Brick/Cabro paving, liquid limestones, road Kerbs etc. If pavements or any constructed portions of any road reserve are broken to any particular extent without prior approval of county government representatives no payment will be made to the contractor and the contractor will be charged with the restoration costs.
- f) Where cemented footpath slabs have been removed to allow cable trench excavation, they will be replaced and reinstated in accordance with the urban road authority requirements.

18.2.9 Stainless steel/ Galvanised Guard net

Earthed stainless steel or galvanised guard net shall be installed at following facilities below the overhead lines to arrest the live conductors in case it snaps.

The guard net shall be made of stainless steel wire mesh or any other high grade hot dip galvanised wire mesh subject to employer's approval.

The steel guard net shall be suspended on the monopole by use of stainless steel or galvanised catenary wires. The catenary system shall be stainless steel or galvanised and having a thickness of at least 10mm.

No	Facility/Services	Approx. distance (metre)
1	Kenya power Mbaraki office Parking yard	40
2	World food program parking yard	70
3	GBHL Conveyor belt shed	60
4	GBHL Parking yard	50
5	Signon Freight & Logistic Parking yard	40
6	Crossing of Shimanzi road	35

Yours faithfully,

For: KENYA POWER & LIGHTING COMPANY LIMITED.



Joyce Ochieng

AG. GENERAL MANAGER, SUPPLY CHAIN