TURKANA COUNTY GOVERNMENT

MINISTRY OF NATURAL RESOURCES AND CLIMATE CHANGE

TENDER NO: TCG/EPM/2419130/2026/2027

PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR PV SYSTEM AT THE GOVERNOR'S OFFICE, PUBLIC SERVICE AND TREASURY BUILDING, TURKANA COUNTY GOVERNMENT

AUGUST, 2026

Prepared by:

DIRECTORATE OF ENERGY, PETROLEUM AND MINERAL RESOURCES

MINISTRY OF NATURAL RESOURCES AND CLIMATE CHANGE
P.O BOX 11-30500,
LODWAR

INVITATION FOR QUOTES

TENDER NO: ……

The COUNTY DEPARTMENT OF NATURAL RESOURCES AND CLIATE CHANGE request for Quotes from eligible tenderers for PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR PV SYSTEM AT THE GOVERNOR'S OFFICE, PUBLIC SERVICE AND TREASURY BUILDING, TURKANA COUNTY GOVERNMENT; whose specifications are detailed in the Tender specification. Selected eligible bidders are requested to submit their quotes through Government procurement IFMIS portal.

Please Note:

i. Prices quoted should be net inclusive of all taxes, must be in Kenya Shillings and shall remain valid for at least (120) days from the closing date of the tender.

ii. Bidders must submit a proposed Works Programme, failure to which the tender will be non-responsive. Please note that the Contract period will be 12 weeks.

iii. Completed tender document should be submitted through procurement IFMIS PORTAL in folder form indicating Company name

iv. Turkana County Government reserves the right to accept or reject in part or in whole any tender without giving reasons.

FORM OF TENDER

TO: COUNTY SECRETARY,
TURKANA COUNTY,
P.O BOX 11-30500,
LODWAR.

TENDER NO: ……

FOR PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR PV SYSTEM AT THE GOVERNOR'S OFFICE, PUBLIC SERVICE AND TREASURY BUILDING, TURKANA COUNTY GOVERNMENT

1. In accordance with the Instructions to Tenderers, Conditions of Contract, Specifications and Bills of Quantities for the execution of the above named Works, we, the undersigned offer to supply, install and complete such Works and remedy any defects therein for the sum of:
   Kshs…….. ***[Amount in figures]***
   Kenya Shillings……..……...
   ……..
   …… ***[Amount in words]***

We undertake, if our tender is accepted, to commence the Works as soon as is reasonably possible after the receipt of the Project Manager's notice to commence, and to complete the Whole of the Works comprised in the Contract within the time stated in the Appendix to Conditions of Contract.

2. We agree to abide by this tender **for a period of 60 days from the date of tender scoring,** and shall remain binding upon us and may be accepted at any time before the expiry of that period.
3. Unless and until a formal Agreement is prepared and executed this tender together with your written acceptance thereof, shall constitute a binding Contract between us.
4. We understand that you are not bound to accept the lowest or any tender you may receive.
   Dated this …… day of ……20…..
   Signature ……in the capacity of …….
   duly authorized to sign tenders for and on behalf of:

   …….. ***[Name of Tenderer]***
   of…….. ***[Address of Tenderer]***
   PIN No. ……..
   VAT CERTIFICATE No. ……

   Witness: Name …….
   Address …….
   Signature ……

1. PRELIMINARY/MANDATORY EVALUATION

a) Form of Tender **MUST** be duly filled and signed

b) Bidders **MUST** attach copies of:

No	Requirement	YES/NO
1	Copy of Certificate of Incorporation/Registration	
2.	Copy of Valid Tax Compliance Certificate of the bidding Company (will be verified through KRA TCC Checker)	
3	Copy of e- Tims registration acknowledgement receipt from KRA.	
4.	Valid business permit from Turkana County or any other County Government in Kenya	
5.	Copy of CR 12 **or** Copy of ID for Sole proprietors	
6.	solar PV Technician license T1/T2/T3 OR NCA 7 Electrical category	
7.	Attach AGPO certificate for youth category	
8.	TENDER SECURING DECLARATION FORM	

TECHNICAL REQUIREMENTS

a) The Technical scoring criteria will be as follows based on the information given in Section H:-

	Specifications	Requirements	Maximum Marks
1	Key Personnel	1.Supervisors – • Qualified Supervisors must possess a relevant Degree/Diploma with at least 5 years experience in Renewable Energy or Electro-Mechanical installation works supervision with at least 3 years being in Solar PV installation. (**Signed CV's by the Supervisors and copies of Academics Certificates MUST be submitted).**	20
		2.Qualified Technicians must possess a relevant Diploma/Artisan with at least 5 years experience in Renewable Energy or Electro-Mechanical installation works with at least 2 years being in Solar PV installation. (**Signed CV's by the Technicians and copies of Certificates {Trade Test for Artisans} MUST be submitted).**	20
2	Work schedule	3.A proposed Works Program (Gantt chat)- 10 mks	10
3	Contracts completed in the last five years	4.Number of related projects (5)No -attach completion certificate. 2mks each	10

		5.Value of related projects done per year 1million- 5 million- 5mks Above 5 million- 10mks	10
4	Financial reports (Certified Audited Accounts for 2 years. Year 2024 and 2025	6.Turnover (Equivalent to 100 % of Contract Sum)	10
		7.Cash flow (Positive and Equivalent to 25% of Contract Sum)	5
		8.Net Assets of Ksh 500,000	5
	Bank Statement	9.Provide Bank Statement for the last 6 (Six) Months. 5	5
	Credit Reference	10.Provide Credit Reference Letter from a Bank. Should be certified by the Bank.	5
			maximum 100%

Note.

- Qualified Supervisors must possess a relevant Degree/Diploma with at least 5 years experience in Electro-Mechanical installation works supervision with at least 3 years being in Solar PV installation. (**Signed CV's by the Supervisors and copies of Certificates MUST be submitted).**
- Qualified Technicians must possess a relevant Diploma/Artisan with at least 5 years experience in Electro-Mechanical installation works with at least 2 years being in Solar PV installation. (**Signed CV's by the Technicians and copies of Certificates {Trade Test for Artisans} MUST be submitted).**
- **Only those bids having a score of 70% and above will be considered for further evaluation**

GENERAL SPECIFICATIONS OF MATERIALS AND WORKS

2.1 General
2.2 Standard of Materials
2.3 Workmanship
2.4 Procurement of Materials
2.5 Record Drawings
2.6 Regulations and Standards
2.7 Fused Switchgear and Isolators
2.8 Conduits and Conduit Runs
2.9 Conduit Boxes and Accessories
2.10 Labels
2.11 Earthing
2.12 Cables and Flexible Cords
2.13 Cable Supports; Markers and Tiles
2.14 PVC Insulated Cables

Cable Ends and phase Colours

2.15 Cable Insulation Colours
2.16 Sub-circuit Wiring
2.17 Insulation
2.18 Lighting Switches
2.19 Sockets and Switched sockets
2.20 Fused Spur Boxes
2.21 Connectors
2.22 Lampholders
2.23 Position of Points and Switches
2.24 Current Operated Earth leakage circuit breaker
2.25 Steel Conduits and Steel Trucking

2.1 RECORD DRAWINGS

These diagrams and drawings shall show the completed repairs including sizes, runs and arrangements of the installation. The drawings shall be to scale not less than 1:50 and shall include plan views and section.

The drawings shall include all the details which may be useful in the operation, maintenance or subsequent modifications or extensions to the installation.

Three sets of diagrams and drawings shall be provided, all to the approval of the Engineer.

One coloured set of line diagrams relating to operating and maintenance instructions shall be framed and, mounted in a suitable location.

2.2 REGULATIONS AND STANDARDS

All work executed by the Contractor shall comply with the current edition of the "Regulations" for the Electrical Equipment of Buildings, issued by the Institution of Electrical Engineers, and with the Regulations of the Local Electricity Authority.

Where the two sets of regulations appear to conflict, they shall be clarified with the Engineers. All materials used shall comply with relevant Kenya Bureau of Standards Specification.

2.3 FUSED SWITCHGEAR AND ISOLATORS

All fused switchgear and isolators whether mounted on machinery, walls or industrial panels shall conform to the requirements of KS 04 – 226 PART: 1: 1985.

All contacts are to be fully shrouded and are to have a breaking capacity on manual operations as required by KS 04 – 182: 1980.

Fuse links for fused switches are to be of high rupturing capacity cartridge type, conforming to KS 04 – 183: 1978.

Isolators shall be load breaking/fault making isolators.

Fused switches and isolators are to have separate metal enclosures. Mechanical interlocks are to be provided between the door and main switch operating mechanism so arranged that the door may not be opened with the switch in the 'ON' position. Similarly; it shall not be possible to close the switch with the door open except that provision to defeat the mechanical interlock and close the switch with the door in the open position for test purposes. The 'ON' and 'OFF' positions of all switches and isolators shall be clearly indicated by a mechanical flag indicator or similar device. In T.P & N fused switch units, bolted neutral links are to be fitted.

2.4 CONDUIT BOXES AND ACCESSORIES

All conduit outlets and junction boxes are to be of either malleable iron and of standard circular pattern of the appropriate type to suit saddles being used or super high impact PVC manufactured to KS 04 – 179: 1983.

Small circular pattern boxes are to be used with conduits up to and including 25mm outside diameter. Rectangular pattern adaptable boxes are to be used for conduits of 32mm outside diameter and larger. For drawing in of cables in exposed runs of conduit, standard pattern through boxes are to be used:

Boxes are to be not less than 50mm deep and of such dimensions as will enable the largest appropriate number of cables for the conduit sizes to be drawn in without excessive bending.

Outlet boxes for lighting fittings are to be of the loop-in type where conduit installation is concealed and the Contractor shall allow one such box per fitting, except where fluorescent fittings are specified when two such boxes per fitting shall be fitted flush with ceiling and if necessary fitted with break joint rings. Pattresses shall be fitted where required to outlets on surface conduit runs.

Adaptable boxes are of PVC or mild steel (of not less than 12swg) and black enameled or galvanized finish according to location. They shall be of square or oblong shape location. They shall be of square or oblong shape complete with lids secured by four 2 BA brass roundhead screws; No adaptable box shall be less than 75mm x 75mm x 50mm or larger than 300mm x 300mm x 75mm and shall be adequate in depth in relation to the size of conduit entering it. Conduits shall only enter boxes by means of conduit bushes.

2.5 LABELS

Labels fitted to switches and fuse boards;-

(i) Shall be Ivorine engraved black on white.

(ii) Shall be secured by R.H brass screws of same manufacturing throughout.

(iii) Shall be indicated on switches:-
   a) Reference number of switch
   b) Special current rating
   c) Item of equipment controlled

(iv) Shall indicate on MCB panels
   a) Reference number
   b) Type of board, i.e.; lighting, sockets, etc,.
   c) Size of cable supplying panel
   d) where to isolate feeder cable

(v) Shall be generally not less than 75mm x 50mm.

2.6 EARTHING

The earthing of the installation shall comply with the following requirements;-

(i) It shall be carried out in accordance with the appropriate sections of the current edition of the Regulations, for the Electrical Equipment of Buildings issued by Institute of Electrical Engineers of Great Britain.

(ii) At all main distribution panels and main service positions a 25mm x 3mm minimum cross sectional area Copper tape shall be provided and all equipment including the lead sheath and armouring of cables, distribution boards and metal frames shall be bonded thereto.

(iii) The earth tape in Sub-clause (ii) shall be connected by means of a copper tape or cable of suitable cross sectional area to an earth electrode which shall be a copper earth rod (see later sub-clause).

(iv) All tapes to be soft high conductivity copper, untinned except where otherwise specified and where run underground on or through walls, floors, etc., it shall be served with corrosion resisting tape or coated with corrosion compound and braided

(v) Where the earth electrode is located outside the building a removable test link shall be provided inside the building as near as possible to the point of entry to the tape, for isolating the earth electrode for testing purposes.

(vi) Earthing of sub-main equipment shall be deemed to be satisfactory where the sub-main cables are M.I.C.S. or conduit with separate earth wire, and installation is carried out in accordance with the figures stated in the current edition of the I.E.E Regulations.

(vii) Where an earth rod is specified (see Sub-clause (iii) it shall be proprietary manufacture, solid hand drawn copper of 15mm diameter driven into the ground

to a minimum depth of 3.6m. It shall be made up to 1.2m sections with internal screw and socket joints and fitted with hardened steel tip and driving cap.

(viii) Earth plates will not be permitted

(ix) Where an earth rod is used the earth resistance shall be tested in the manner described in the current edition of the IEE Regulations, by the Contractor in the presence of the Engineer and the Contractor shall be responsible for the supply of all test equipment.

(x) Where copper tape is fixed to the building structure it structure it shall be by means of purpose made non-ferrous saddles which space the conductor away from the structure a minimum distance of 20mm. Fixings shall be made using purpose made plugs; No fixings requiring holes to be drilled through the tape will be accepted.

(xi) Joints in copper tape shall be tinned before assembly riveted with a minimum of two copper rivets and seated solid.

(xii) Where holes are drilled in the earth tape for connection to items of equipment the effective cross sectional area must not be less than required to comply with the IEE regulations.

(xiii) Bolts, nuts and washers for any fixing to the earth tape must be of non-ferrous material.

(xiv) Attention is drawn to the need for the earthing metal parts of lighting fittings and for bonding ball joint suspension in lighting fittings.

2.7 CABLES AND FLEXIBLE CORDS

All cables used in this Contract shall be manufactured in accordance with the current appropriate Kenya standard Specifications which are as follows:-

P.V.C. Insulated Cables and Flexible Cords	-	Ks 04-192:1988
Pvc Insulated Armoured Cables	-	Ks 04-194:1990
Armouring of Electric cables	-	Ks 04-290:1987

The successful Contractor will, at the Engineers discretion be required to submit samples of cables for the Engineers approval; the Engineer reserves the right to call for the cables of an alternative manufacture without any extra cost being incurred.

PVC insulated cables shall be 500/1000 volt grade. No cables smaller than 1.5mm² shall be used unless otherwise specified. The installation and the finish of cables shall be as detailed in later clauses. The colour of cables shall conform to the details stated in the "Cable Braid and insulation Colours" Clause.

Where cables rise from floor level to switchgear etc., they shall be protected by P.V.C. conduit, to a height of 600mm from finished floor level, whether the cable is run on the surface or recessed into the wall.

2.8 CABLE SUPPORTS, MARKERS AND TILES

All PVC/SWA/PVC cables run inside the building shall be fixed in rising ducts or on ceilings by means of die cost cables hooks or clamps, or appropriate size to suit cables, fixed by studs and back nuts to their channel sections.

Alternatively, fixing shall be by BICC claw type cleating system with die-cast cleats and galvanized mild steel back straps or similar approved equal method. For one or two cables run together the cleats shall be fixed a special channel section supports or back straps described above which shall in turn be secured to walls or ceilings of ducts by rawbolts.

In excessively damp or corrosive atmospheric conditions special finishes may be required and the Contractor shall apply to the Engineer for further instructions before ordering cleats and channels for such areas.

The above type of hooks and clamps and channels or cleats and blackstraps shall also be used for securing cables in vertical ducts.

Cables supports shall be fixed at 600mm maximum intervals, the supports being supplied and erected under this Contract. Saddles shall not be used for supporting cables nor any other type of fixing other than one of the two methods described above or other system which has received prior approval of the Engineer;

Cables are to be kept clear of all pipe work and the Contractor shall work in close liaison with other services Contractors.

The Contractor shall include for the provision of fixing of approved type coloured slip on cables end markers to indicate permanently the correct phase and neutral colours on all ends.

Provision shall be made for supplying and fixing approved non-corrosive metal cable markers to be attached to the outside of all PVC/SWA/PVC cables at 15mm intervals indicating cable size and distinction.

Where PVC/SWA/PVC cables are outside the building they shall be laid underground 750mm deep with protecting concrete interlocking cover tiles laid over which shall be provided and laid under this Contract.

All necessary excavations and reinstatement of ground including sanding or trenches will be carried out by the Contractor, unless otherwise stated.

2.9. PVC INSULATED CABLES

Shall be of non-braided type as CMA reference 6491 x 600/1000/1000 volt grade cables, or equal approved.

PVC cables shall conform to the details of the "Cables and Flexible cords" and "Cable Braid and Insulation Colours" clauses.

2.20 CABLE ENDS AND PHASE COLOURS

All cable ends connected up in switchgear, MCB panels etc. shall have the insulation carefully cut back and the ends sealed with Hellerman rubber slip on cable end markers. The markers shall be of appropriate phase colour for switch and all other live feeds to the details of the "Cable Insulation Colours" clause. Black cable with black end markers shall only be used for neutral cables.

2.21 CABLE INSULATION COLOURS

Unless otherwise stated in later clauses the insulation colours shall be in accordance with the following table.

Where other systems are installed the cable colours shall be in accordance with the details stated in the appropriate clause.

SYSTEM	INSULATION COLOUR	CABLE END MARKER
Main and Sub-Main		
a) Phase	Red	Red
b) Neutral	Black	Black
1) Sub-Circuits		
Single Phase		
a) Phase	Red	Red
b) Neutral	Black	Black

2.22 SUB-CIRCUIT WIRING

For all lighting and sockets wiring shall be carried out in the "looping in" system and there shall be no joints whatsoever. No lighting circuits shall comprise more than 20 points when protected by 10A MCB. Cables with different cross-section area of copper shall not be used in combination.

Lighting circuits P. V.C. cable 1.5mm² for all lighting circuits indicated on the drawing.

Power circuits P.V.C cable (minimum sizes).

(i) 2.5mm² for one, two or three 5Amp sockets wired in parallel.

(ii) 2.5mm² for one 15Amp socket.

(iii) 2.5mm² for maximum often switched 13 Amp sockets wired from 30 Amp MCB.

The wiring sizes for lighting circuits and sockets are shown on the drawings. In such cases, the sizes shown on the drawings shall prevail over the sizes specified.

Wiring sizes for other appliances shall be shown on the drawing or specified in later clauses of this specification.

2.23 INSULATION

The insulation resistance to earth and between poles of the whole wiring system, fittings and lumps, shall not be less than the requirements of the latest edition of the I.E.E Regulations. Complete tests shall be made on all circuits by the Contractor before the installations are handed over.

A report of all tests shall be furnished by the Contractor to the Engineer. The Engineer will then check test with his own instruments if necessary.

2.24 LIGHTING SWITCHES

These shall be mounted flush with the walls, shall be contained in steel or alloy boxes and shall be of the gangs' ratings and type shown in the drawings. They shall be as manufactured by M.K. Electrical Ltd., or other equal and approved to KS 04 – 247: 1988

2.25 SOCKETS AND SWITCHED SOCKETS

These shall be flush pattern in steel/pvc box and shall be of the gangs and type specified in the drawings.

They shall be 13- Amp, 3-pin, shuttered, switched and as manufactured by "M.K. Electrical Co. Ltd.", or other approved equal to KS 04 – 246: 1987

2.26 FUSED SPUR BOXES

These shall be flush, D.P switched as in steel/pvc box and of type and make specified in the drawings complete with pilot light and as manufactured by "M. K. Electrical Company Ltd", or other approved equal. KS 04 – 247: 1988

2.27 CONNECTORS

Shall be specified in the drawings and appropriate rating. These shall be fitted at all conduit box lighting point outlets for jointing of looped P.V.C cables with flexible cables of specified quality.

2.28 LAMPHOLDERS

Shall be of extra heavy H.O skirted and shall be provided for every specified lighting fitting and shall be B.C;, E.S;, or G.E.S as required. All E.S. and G.E.S. holders shall be heavy brass type (except for plain pendants where the reinforced Bakelite type shall be used). The screwed cap of the E.S and G.E.S. holders shall be connected to the neutral.

Where lamp holders are supported by flexible cable, the holders shall have "cord grip" arrangements and in the case of metal shades earthing screws shall be provided on each of the holders.

The Contractor must order the appropriate type of holder when ordering lighting fittings, to ensure that the correct types of holders are provided irrespective of the type normally supplied by the manufacturers.

2.29 LAMPS

All lamps shall be suitable for normal stated supply voltage and the number and sizes of lamps detailed on the drawings shall be supplied and fixed. The Contractor must verify the actual supply voltage with the supply authority before ordering the lamps.

Tungsten filament lamps shall be manufactured in accordance with KS 04 – 112:1978 for general service lamps and KS 04 – 307:1985 for lamps other than general services. Tubular fluorescent lamps shall comply with KS 04 – 464:1982

Pearl lamps shall be used in all fittings unless otherwise specified.

2.30 POSITIONS OF POINTS AND SWITCHES

Although the approximate positions of all points are shown on the drawings, enquiry shall be made as to the exact positions of all M.C.B panels, lighting points, socket outlets etc, before work is actually commenced. The Contractor must approach the Architect with regard to the final layout of all lights on the ceiling and walls.

The Contractor must consult with the Engineer in liaison with the Clerk of Works, or the General Foreman on site regarding the positions of all points before fixing any conduit etc. The Contractor shall be responsible for all alterations made necessary by the non-compliance with the clause.

2.31 CURRENT OPERATED EARTH LEAKAGE CIRCUIT BREAKER

Current operated earth leakage circuit breaker shall conform to B.S.S. 4293:68 rated at 240 volts D.P. 50 cycles A.C. Mains.

The breaker shall be provided with test switch and fitted in weather proof enclosure for surface mounting. The rated load current and earth fault operating current shall be as specified in the drawings. These shall be as manufactured by Crabtree, Siemens or other equal and approved.

2.32 STEEL CONDUITS AND STEEL TRUNKING

Conduits shall be of heavy gauge class "B" welded to Standard specification KS 04-180:1985. In no case will conduit smaller than 20mm diameter be used on the works. Conduits installed within buildings shall be black enameled finish except where specified otherwise. Where installed externally or in damp conditions they shall be galvanized. Conduit fittings, accessories or equipment used in conjunction with galvanized conduits shall also be galvanized or otherwise as approved by the service engineer.

All trucking shall be made electrically continuous by means of 25 x 3mm copper links across each joint and where the trucking is galvanized, the links shall be made by galvanized flat iron strips.

All trucking fittings (i.e. Bends tees, etc.) shall leave the main through completely clear of obstructions and continuously open except through walls and floors at which points suitable fire resisting barriers shall be provided as may be necessary. The inner edge of bends and tees shall be chamfered where cables larger than 35mm² are employed.

Where trucking passes through ceilings and walls the cover shall be solidly fixed to 150mm either side of ceilings and floors and 50mm either side of walls.

Screws and bolts securing covers to trucking or sections of covers together shall be arranged so that damage to cables cannot occur either when fixing covers or when installing cables in the trough.

Where trucking is used to connect switchgear of fuse boards, such connections shall be made by trucking fittings manufactured for this purpose and not by multiple conduit couplings.

Where vertical sections of trucking are used which exceed 4.5m in length, staggered tie off points shall be provided at 4.5m intervals to support the weight of cables.
Unless otherwise stated, all trucking systems shall be painted as for conduit.

Where a wiring system incorporates galvanized conduit and trucking, the trucking shall be deemed to be galvanized unless specified otherwise.

The number of cables to be installed in trucking shall be such as to permit easy drawing in without damage to the cables, and shall in no circumstances be such that a space factor of 45% is exceeded.
Conduit and trucking shall be mechanically and electrically continuous. Conduit shall be tightly screwed between the various lengths so that they butt at the socketed joints. The internal edges of conduit and all fittings shall be smooth, free from burrs and other defects. Oil and any other insulating substance shall be removed from the screw threads; where conduits terminate in fuse-gear, distribution boards, adaptable boxes, non-spouted switchboxes, etc., they shall, unless otherwise stated, be connected thereto by means of smooth bore male brass bushes, compression washers and sockets. All exposed threads and abrasions shall be painted using an oil paint for black enameled tubing and galvanizing paint for galvanized tubing immediately after the conduits are erected. All bends and sets shall be made cold without altering the section of the conduit. The inner radius of the bed shall not be less than four (4) times the outside diameter of the conduit. Not more than two right angle bends will be permitted without the inter-position of a draw-in-box. Where straight runs of conduit are installed, draw-in-boxes shall be provided at distances not exceeding 15mm. No tees, elbows, sleeves, either of inspection or solid type, will be permitted.

Conduit shall be swabbed out prior to drawing in cables, and they shall be laid so as to drain of all condensed moisture without injury to end connections.

Conduits and trucking shall be run at least 150mm clear of hot water and steam pipes, and at least 75mm clear of cold water and other services unless otherwise approved by the services engineer.
All boxes shall conform to KS 04 – 668: 1986, to be of malleable iron, and black enameled or galvanized according to the type of conduit specified. All accessory boxes shall have threaded brass inserts.
Box lids where required shall be heavy gauge metal, secured by means of zinc plated or cadmium plated steel screws.
All adaptable boxes and lids of the same size shall be interchangeable.
Boxes used on surface work are to be tapped or drilled to line up with the conduit fixed in distance type saddles allowing clearance between the conduit and wall without the need for setting the conduit.
Where used in conjunction with mineral insulated copper sheathed cable, galvanized boxes shall be used and painted after erection.
Draw-in boxes in the floors are generally to be avoided but where they are essential they must be grouped in positions approved by the services engineer and covered and by the suitable floor traps, with non-ferrous trays and covers.
The floor trap covers are to be recessed and filled in with a material to match the floor surface.
The Contractor must take full responsibility for the filling in of all covers, but the filling in material will be supplied and the filling carried out by the main building contractor.
Where buried in the ground outside the building the whole of the buried conduit is to be painted with two coats of approved bitumastic composition before covering up.

Where run on the surface, unpainted fittings and joints shall be painted with two coats of oil bound enamel applied to rust and grease free metalwork.

a) TECHNICAL SPECIFICATIONS FOR EQUIPMENT AND ACCESSORIES FOR SOLAR PV SYSTEM:

b) LED Fluorescent Fitting
c) Switches/sockets/deep Patrice boxes – all Metallic
d) Joint Boxes
e) Solar Lithium Ion Battery
f) Monocrystalline Solar Module
g) Inverter - GroWatt/Morning star/victron
h) Charge Controller(Flexxy Outback)/Morning star
i) consumer unit(avells)
j) isolators/ fuses – Andeli/avells
k) Wooden Screws
l) Tower Clips
m) Mini-Trunking
n) 20 SQ MM PVC Conduit H/G
o) Wooden Boxes 12" x 12":

BILLS OF QUANTITIES

PROPOSED SUPPLY, INSTALLATION, TESTING AND COMMISSIONING OF SOLAR PV SYSTEM AT THE GOVERNOR'S OFFICE, PUBLIC SERVICE AND TREASURY BUILDING, TURKANA COUNTY GOVERNMENT

SCHEDULE 1: ELECTRICAL LIGHTING

Item No	Description	Unit	Qty	Rate	*Amount (Kshs.)*
	Supply,install,test and commission to BS 7671:2001 Standard the following as described below:				
1.00	**LIGHTING INSTALLATIONS**				
1.01	Lighting outlet point comprising wiring in 3x1.5mm sq. single core PVC insulated copper cables drawn in 20 mm diameter heavy gauge PVC conduits concealed in floors and walls and complete with all the necessary accessories				
	i) One way switched	No	36		
	ii) Two way switched	No	10		
	iii) Outdoor Lighting points	No	10		
1.02	**10A, 500V metal clad switches flush mounted on walls as CRABTREE or approved equivalent.**				
	i) One gang one way, Cat. No. 4070	No.	16		
	ii) One gang two way, Cat. No. 4170	No.	8		
	iii) Two gang two way, Cat. No. 4172	No.	2		
1.03	**The following lighting fixtures to be complete with the LED drivers and complete fitting as per description and symbols:**				
	i) 1x80W max280 T5 LFL IP65 flourescent light with diffuser as philips or approved equivalent	No.	46		
	ii) 100W LED Flood lights As Philips or an approved equivalent	No.	12		
	Total Amount Carried Forward to Summary				

SCHEDULE 2: SMALL POWER

Item No	Description	Unit	Qty	Rate	*Actual work done(Kshs.)*
	SMALL POWER INSTALLATION ***Supply,install,test and commission as per BS 7671:2001 the following as described below:***				
1.01	13A ring mains socket outlets comprising wiring in 3x2.5mm sq. single core PVC insulated copper cables drawn in 25 mm diameter heavy gauge PVC conduits concealed in floors and walls and complete with all the necessary accessories	No	40		
1.02	13A twin switched white moulded case socket outlet plates as CRABTREE, Cat. No. 4306 or approved equivalent (Clean power)	No	20		
1.03	30A Battery Fuse and Carrier, Wall Mounted	No.	1		
1.04	200A Inverter Fuse and Carrier, Wall Mounted	No.	1		
1.05	Isolator Switch 100A	No.	1		
1.06	Provide a mini-trunking of the appropriate sizes as approved by the Engineer.	No.	20		
1.07	Loop in boxes and accessories	No.	2		
	Sub-total carried forward to Summary				

SCHEDULE 3: SOLAR ACCESSORIES INSTALLATION					
Item No	**Description**	**Unit**	**Qty**	**Rate**	**Amount**
	Supply,install,test and commission as per Solar Standards and Regulations of Kenya the following as described below for Rooftop Solar Pv System:				
1.00	575Watts solar panels as Jinko or approved equivalent by the Engineer.	No	100		
1.10	10kVA Jinko Off-grid Inverter Charger with capability of acting as both inverter and charger controller or its approved equivalent as directed by the Engineer.	No	5		
1.11	Welded, galanized solar mounting structure installed at an angle of 15 degrees at either the rooftop or ground following the axis of the sun for maximum insolation.	Item	100		
1.19	MC4 Connectors	Pairs	36		
1.20	Submains comprising 6 mm sq DC cables laid in 50mm diameter Heavy duty conduit from Solar PV Modules to the Batteries and other accessories complete with cable lugs, glands, ties and all the necessary accessories.	LM	50		
1.23	50mmϕ for solar power link duct from solar panels combiner box to the charge controller	LM	40		
	Total Amount For Solar Installation Carried Forward to Price Summary Page				

SCHEDULE 4: BALANCE OF SYSTEM					
Item No	**Description**	**Unit**	**Qty**	**Rate**	**Amount**
	Supply,install,test and commission as per BS 7671:2001 the following as described below:				

1.15	Submains comprising 4core 16 mm sq XLPE/SWA/PVC armoured copper cable laid in 100mm diameter Heavy duty conduit from PV Inverter to the AC Combiner Box complete with cable lugs, glands, ties and all the necessary accessories to be used for connecting other premises.	LM	200		
1.17	AC Distribution Box together with protective devices.	No.	6		
1.18	Automatic changer over switch complete with manual by pass switch, including cabling and outgoing MCCB's for the existing generator set and KPLC.	No.	6		
	Total Amount Carried Forward to Price Summary Page				

-	**SCHEDULE 5: STORAGE SYSTEM**	-	-	-	-
Item No	**Description**	**Unit**	**Qty**	**Rate**	**Amount**
	Supply,install,test and commission as per BS 7671:2001 the following as described below:				
1.15	48V 10kWh Lithium Ion Battery as Victron with Battery Management System or approved equivalent as directed by the engineer.	No.	5		
1.15	Battery Rack designed with an aeration to allow for cooling of the batteries.	Item	6		
1.17	Battery Connectors	No.	12		
	Total Amount Carried Forward to Price Summary Page				

SCHEDULE 6: EARTHING

1.00	Earth inspection concrete chamber 300mm x 300mm x 300mm with an air tight inspection cover to approval	No.	1		
1.10	15mm nominal diameter by 1800mm threaded copper bond earth rod as Cat. No. RC 020,	No.	1		
1.11	Driving stud for the item 2.11 above	No.	1		
1.12	Earth electrode rod-to-cable clamps item 2.11 above	No.	1		
1.13	6.0mm^{2}SC/PVC/SWA/PVC earth copper cable c/w appropriate cable lugs	LM	20		
	Total Amount Carried Forward to Price Summary Page				

-	**PC AND PROVISIONAL SUM**	-	-	-	-
Item No	**Description**	**Unit**	**Qty**	**Rate**	**Amount**
1.00	Provide a Provisional sum of Two Hundred and Fourty Thousand Shillings Only **(KShs. 240,000**) For Project Manager's Expense and Documentation.	Item	1		
1.12	Provide a provisional sum for the Branding on the system showing Department of Energy, Petroleum and Mining, Turkana County Government as the sponsor of the project	Item	1		
1.13	Provide a provisional sum for the erection of Steel sign post at the gate showing Department of Energy, Petroleum and Mining, Turkana County Government as the sponsor of the project	Item	1		

	Total Amount Carried Forward to Price Summary Page				**240,000.00**

PRICE SUMMARY PAGE

Item No.	Description	Total Amount
1.0	Electrical Lighting	
2.0	Small Power Distribution	
3.0	Solar Accessories	
4.0	Balance of System	
5.0	Storage System	
6.0	Earthing System	
7.00	PC AND PROVISIONAL SUM	240,000.00
GRAND SUMMARY		

Amount in words: Kenya Shillings ……
……..
Tenderer's Signature ……..
Address …….
…….
Date ……..
Witness Signature ……..
Address …….
…….

Date ……..

Note: Each price or unit rate inserted in the Bills of Quantities shall be a realistic estimate of the cost of completing the works described under the particular item including allowance for overheads, profits and the like. NO advance payment should be made prior to completion of Installation works or to any works outside the tender specifications. Miscellaneous Items total Quantities to be 1.
A Sample of materials to be used ought to be brought to the department for approval before the contractor goes ahead to supply and replace the components.
SOLAR LITHIUM ION BATTERIES TO BE USED FOR POWER STORAGE.