

# Annex 1 – PART 2

PROPOSED KESRA CONFERENCE ROOM REFURBISHMENTS

AT

KESRA MOMBASA CAMPUS

FOR M/s KENYA SCHOOL OF REVENUE ADMINISTRATION (KESRA)

ELECTRICAL & SECURITY SERVICES INSTALLATIONS

BILLS of QUANTITIES

(ALL RATES TO BE INCLUSIVE OF 16% V.A.T AS APPLICABLE).

S. 12/12 - 1 year

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
P.00	<u>GENERAL ITEMS</u>				
A	Allow for the printing of all MEP design drawings issued by the Engineer before commencement of works on A1 size paper to be displayed on site during the project period.	Sum	1		
B	Allow for the preparation of all MEP "As Built" Drawings and handover documentation including test results compilation in 3 No. A1 Hard Copies + 1 CD ROM (To a scale of 1:50).	Sum	1		

	TOTAL CARRIED TO MAIN SUMMARY PAGE.				

**ELECTRICAL & SECURITY SERVICES INSTALLATIONS**

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
E1.01.00	<p><b><u>BILL NO. 1 ELECTRICAL AND SECURITY SERVICES</u></b></p> <p><b><u>MAIN ELECTRICAL DISTRIBUTION SYSTEM INSTALLATIONS</u></b></p> <p>Supply and deliver to site fittings, equipment and materials for the Distribution System. Allow for storage on site all materials, fittings and equipment as stated below. Install, connect up-up complete including all conduits, supports, fixings, sleeves and accessories required for distribution system. Include for earthing requirements and connections and other item not detailed but required for the satisfactory completion and operation of the installation. The reference standard shall be the latest edition of the IET Wiring Regulations BS 7671.</p> <p>Equipment and accessories manufacturers shall be reputable brands with more than 10 years experience in the electrical industry. Datasheets MUST be presented for all equipment and accessories listed here.</p> <p>Note: All Power Distribution Boards and Cables shall be subject to inspection and approval by the Engineer.</p> <p>Circuit breaker coordination and selectivity shall be determined on site.</p> <p>Supply and Install the following:</p> <p><b><u>Isolators, Cables and Cable Management</u></b></p> <p>The contractor shall reference the provided electrical schematic during installation.</p>				

E1.01.01	4 Core 16 sq.mm XLPE insulated and sheathed copper cable + Earth , inclusive of all terminals, cable lugs, glands and shrouds, clipped on slab soffit from existing electrical DB to New Conference Area DB position on route approved to be approved on site (New Conference DB Incomer) (Provisional)	Lm	35		
E1.01.02	3 Core 6 sq.mm PVC insulated and sheathed copper cable, inclusive of all terminals, cable lugs, glands and shrouds (Outgoer to Bypass and to UPS Consumer Unit)	Lm	20		
E1.01.03	1 Phase - 2 Pole UPS Manual Bypass Switch	No.	1		
E1.01.04	250mm (Width) X 25mm (Depth) dual compartment perforated white powder coated cable tray complete with all cable retainers, bends, Ts etc. and mounting accessories as required based on the engineer's drawings (Provisional)	Lm	30		
TOTAL CARRIED FORWARD.					

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
	<u>Electrical Distribution continued...</u>				
	TOTAL BROUGHT FORWARD				
E1.01.05	2 compartment molded PVC surface trunking, 180mm x 65mm, complete with lids/covers, base unit/main carrier including all manufacturers preformed internal and external angles, couplers and end caps and all cable retainers in white surface finish. See Crabtree MAXPAK for reference.	Lm	25		
E1.01.06	Provide twin module knockouts on above trunking as required	No.	5		
E1.01.07	Provide single module knockouts on above trunking as required	No.	5		
	<u>Distribution Boards and Accessories</u>				
	Note: Earthing of the Distribution Boards shall be to IET BS7671 guidance notes on Earthing & Bonding requirements. Allow in the rates for all circuit labelling. The DB and feeder designations must be implemented with a uniform labelling system.				

E1.01.08	Surface/Recess mount, 10 Way TPN electrical distribution board with 125A rated copper busbar. The DB shall be fitted complete with a 80A 4 Pole MCB and a 100mA 80A 4 Pole RCCB as Main Isolators. The board shall come c/w an inbuilt 100/5A CT, 415V, 50HZ Calibrated Energy Meter (Raw Power Distribution Board).	No.	1		
E1.01.09	Recess mount, 6 Way SPN electrical consumer unit with 80A rated copper busbar. The consumer unit shall be fitted complete with a 45A 2 Pole MCB and a 45A 2 Pole 30mA RCCB as Main Isolators. (UPS Consumer Unit).	No.	1		
	Note: All MCBs specified herein shall be Type C - 6kA MCBs except where stated otherwise.				
E1.01.10	<u>MCBs</u>				
a	10A SP	No.	4		
b	20A SP	No.	8		
c	32A SP	No.	8		
d	45A SP	No.	1		
d	32A TP	No.	1		
f	Blanking plates for all spare ways.	No.	2		
TOTAL CARRIED TO COLLECTION PAGE.					

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
E1.02.00	<u>BILL NO. 2 ELECTRICAL AND SECURITY SERVICES</u> <u>POWER POINTS WIRING AND INSTALLATIONS</u> Supply and deliver to site materials, fittings and accessories, install, connect-up complete and commission the installation. Include in the rates for supply, installation and connecting up all cables including all required conduits, supports, fixings, sleeves and accessories for power point, install complete all conduits, supports, fixings, sleeves and accessories for voice and data points. Accessories manufacturers shall be such as BRITISH GENERAL (BG), CRABTREE, MK, SCHNEIDER or CLIPSAL and to approved quality. The reference standard shall be the latest edition of the IET Wiring Regulations BS 7671				

**Note!** All fittings shall be subject to inspection and approval before installation.

Supply and Install the following:

Sockets, Switches and Plugs

E1.02.01	13 Amp standard twin socket outlet plates in <u>white</u> surface finish	No.	40
E1.02.02	13 Amp non-standard twin socket outlet plates in <u>red</u> surface finish c/w 2 No. non-standard plugs	No.	6
E1.02.03	20A DP switch outlet plate labelled 'Isolator for Fire Alarm' fully compliant with BS 60669-2-4:2005 provisions in <u>white</u> surface finish c/w isolation key switch as MK Code No. K4780WHI (For Fire Alarm Panel)	No.	1
E1.02.04	20A DP switch outlet plate with neon indicator in <u>white</u> surface finish	No.	8
E1.02.05	32 Amps (1P+N+E) IP66 SPN Lockable Rotary Isolator Switch and Face Plate c/w 3 Pin Industrial Plug & Socket for Outdoor AC Equipment plugging. (Refer to the provided Electrical Schematic)	No.	1
E1.02.06	Floor Box c/w cut-outs to accommodate 2 No. Standard Twin Socket Outlets, 1 No. Dual Data Outlet.	No.	14

Conduits and Wiring

E1.02.07	13 Amps RING socket outlet points, wired at an average distance of 5 metres point to point, in 3 x 2.5mm <sup>2</sup> PVC insulated and sheathed single core copper cables drawn in cable trays (provided elsewhere) and in 25mm diameter heavy gauge PVC conduits concealed in walls, floor and surface conduit installations clipped to the slab soffit with all PVC conduit boxes and accessories but excluding the socket outlet face plates.	No.	46
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**TOTAL CARRIED FORWARD.**

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
	TOTAL BROUGHT FORWARD				

E1.02.08	<i>RADIAL Three Phase Isolator points, wired in XLPE Insulated 4 Core 6 sq.mm + 6 sq.mm Earth, drawn in cable trays (provided elsewhere) and in 32mm diameter heavy gauge PVC conduits concealed in walls/floor/clipped to slab soffit as/where applicable with all PVC conduit boxes and accessories including terminations on equipment from Main DB to the outdoor AC unit position but excluding the Isolator.</i>	Lm	80	
E1.02.09	<i>DP Switch RADIAL outlet points, wired at an average distance of 20 metres in 3 x 2.5 mm<sup>2</sup> PVC insulated and sheathed single core copper cable, drawn in cable trays (provided elsewhere), and in 25mm diameter heavy gauge PVC conduits, concealed in walls/floor/ceiling void with all PVC conduit boxes and accessories including terminations on equipment but excluding the DP Switch.</i>	No.	9	
E1.02.10	<i>Audio &amp; Video System Points in 32mm diameter heavy gauge PVC conduits concealed in walls, floor and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated control/panel stations, but excluding all speakers, controllers and fittings.</i>	No.	10	
E1.02.11	<i>HDMI Points in 38mm diameter heavy gauge PVC conduits concealed in walls, floor and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated control/panel stations, but excluding all speakers, controllers and fittings.</i>	No.	4	
E1.02.12	<i>Fire Alarm System Points in 25mm diameter heavy gauge PVC conduits concealed in walls and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated panels but excluding all fire alarm system fittings.</i>	No.	8	
E1.02.13	<i>Data and Security System points in 25mm diameter heavy gauge PVC conduits concealed in walls and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated data cabinet positions, and inclusive of draw wires and blanking plates but excluding all Data and Security fittings/equipment.</i>	No.	18	
E1.02.14	<p>Allow for equipotential earth bonding of ALL exposed metal structures and equipment within the fit out. Include in the rates for all earth cables, earth lugs, fixings and all accessories required for the satisfactory execution of the earth bonding installations.</p> <p><b>Note:</b> All bonding shall be done using 16 sq.mmCPC.</p>	Item.	1	
E1.02.15	<i>Flush mount Adaptor Box, 200mm x 200mm x 50mm, complete with cable entry knock outs and half thread bushes for interfacing cable connections where required (Provisional).</i>	No.	6	
TOTAL CARRIED TO COLLECTION PAGE.				

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT i KES.
	<b>BILL NO. 3 ELECTRICAL AND SECURITY SERVICES</b> <b>LIGHTING SYSTEM INSTALLATIONS</b>				
E1.03.00	<p>Supply and deliver to site all materials, fittings and accessories. Install, connect-up complete to IEE Regulatory requirements and Electrical Codes of Practice, test and commission the installations. Include in the rates for Supply, installation and connecting complete all cables including all required conduits, supports, fixings, sleeves and accessories.</p> <p>Light fittings and lighting accessories manufacturers shall be reputable brands with more than 10 years experience in the international lighting industry. All fittings and accessories shall be subject to inspection and approval by the engineer before procurement and installation.</p> <p>Special note shall be taken to ensure that:-</p> <p>i) Earth conductors are drawn and terminated to all lighting switch boxes</p> <p>ii) Lighting fittings to be supplied complete with lamps, fixings brackets and accessories.</p> <p><b>Supply and Install the following:</b></p> <p><b>Conduits and Wiring</b></p>				
E1.03.01	<p>Lighting system points wired in 3 x 1.5 mm<sup>2</sup> PVC insulated and sheathed single core copper cables, drawn in cable trays (already provided for) and in 20mm diameter heavy gauge PVC conduits concealed in walls/within the ceiling voids, one and two way switched as provided, with links to the raw power distribution board inclusive of all PVC conduit boxes and accessories but excluding switch and light fittings.</p>	No.	50		
E1.03.02	<p>ditto but for Emergency Lighting System Points.</p> <p><b>Light Fittings and Accessories</b></p> <p><b>Supply and Install the following light fittings c/w accessories</b></p>	No.	7		
E1.03.03	<p>Type I Downlight as Cyclone LED Downlight by Light Green with the following specifications; 10W, 4000K, IP20, 98mm diameter. Code No. LG-CY10W-R or another brand of similar or higher quality.</p>	No.	42		
E1.03.04	<p>10mm PU 10W/m (in 5 Metre Rolls) 4000K LED Strip Light as 'LEME' Code No. LE-NF-JR10M</p>	No.	7		



E1.03.05	Ceiling mounted LED Non-Maintained emergency exit sign with 3 hour emergency back-up duration, self-test function, integrated emergency pack and laser etched acrylic for superior light distribution and appropriate legend (Down, Left or Right) as "OMS" or similar and approved.	No.	2		
	TOTAL CARRIED FORWARD.				

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
	TOTAL BROUGHT FORWARD				
E1.03.06	3 Watts non-maintained surface/recess mounted (as per drawings) LED emergency lighting fittings as PIERLITE, LED FIREFLY Code No. FFRLED c/w 3 hr. emergency back-up duration.	No.	5		
	<u>Switches and Controls</u> Supply and Install the following; (Reference for Switch Brand shall be as Vivace by Schneider)				
E1.03.07	3 Gang 2 Way Wide Rocker Switch in <i>white finish</i> .	No.	2		
E1.03.08	Coaxial Outlet Plate	No.	1		

	TOTAL CARRIED TO COLLECTION PAGE.			

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
E1.04.00	<p><u>BILL NO. 4 ELECTRICAL AND SECURITY SERVICES</u></p> <p><u>FIRE ALARM SYSTEM INSTALLATIONS</u></p> <p><i>Supply and Install all materials, equipment and accessories complete. Install, connect-up complete and commission the installation. Include in the rates for supply of all materials, cables and wiring accessories and connecting-up complete with Fire Tuff FP 200 cables including all conduits surface and concealed in the structure, raceways, supports, fixings, sleeves and necessary materials for the Addressable analog Fire detection and alarm System. The fire alarm system shall comply fully with requirements of NFPA standard 72 for protected premises signaling systems. Allow for any other item not specifically detailed but required for the satisfactory installation and operation of the system.</i></p> <p><b>NOTE:</b> <i>The models provided in this document shall serve only as a quality and design reference guide. The contractor is allowed to provide alternatives of similar specification.</i></p> <p><u>Supply, Install, Configure, Test and Commission the following:</u></p> <p>New Wiring into existing panel as follows:</p>				

E1.04.01	Smoke/Heat detector points wired in 1.5mm <sup>2</sup> FIRE TUFF single core copper cables drawn in 25mm diameter heavy gauge conduits concealed in walls and surface conduits installations within the ceiling void with PVC conduits boxes and accessories with links to the fire alarm panel - wiring to be done in accordance with zoning requirements.	No.	4		
E1.04.02	Conventional Photo-thermal Smoke detector complete with base as MENVIER MPT951.	No.	4		
TOTAL CARRIED TO COLLECTION PAGE					

ITEM	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT IN KES.
E1.05.00	<p><u>BILL NO. 5 ELECTRICAL AND SECURITY SERVICES</u></p> <p><u>AUDIO-VISUAL SYSTEM INSTALLATIONS FOR CONFERENCE ROOMS</u></p> <p>Supply, install, configure, test and commission complete the audio visual system as detailed in the specifications and to the particular requirements of the site. The contractor shall include in his rates for delivery of all materials to the project site, storage, general and specialized labour, test equipment, supports and fixings and all terminations, connectors, fittings and all accessories complete as necessary and required for the satisfactory completion and operation of the complete audio-visual system installations.</p> <p>Note:-</p>				

<p><i>The bidder shall be responsible for providing all equipment/accessories needed for the complete functioning of the Audio-Visual system whether included in this specification or not.</i></p> <p><i>CAT6A cable, where required, is already provided for elsewhere.</i></p> <p><i>The models provided in this document shall serve only as a reference guide for functionality, quality and design.</i></p> <p><b>Supply and Install the following:</b></p>				
E1.05.01	5000 Lumen Projector, WXGA, 3LCD, SSL complete with HDBaseT wall plate as NEC P525WL	No.	2	
E1.05.02	ZM 130 Inch Motorized Projection Screen c/w remote control, HD Fabric, vertical screen drop 2.4M. Viewing size: 133 inch 16:10.	No.	3	
E1.05.03	ZM Ceiling Mounting Bracket c/w all accessories	No.	2	
<u>Cabling &amp; Cabling Accessories</u>				
E1.05.04	SCP 1.8M - 4K Ultra HD HDMI Cable with ethernet, 4K@50/60 (2160p), 18Gbps, HDR, HEAC, Full 3D, HDCP2.2	No.	4	
E1.07.05	SCP 4.5M - 4K Ultra HD HDMI Cable High Speed with ethernet, 4K@50/60 (2160p), 18Gbps, HDR, HEAC, Full 3D, HDCP2.2	No.	2	
E1.07.06	Screenbeam SBWD960AEU 960 Wireless Display Receiver	No.	2	
E1.07.07	Matrix Switch 4X4 to enable simultaneous use of both projectors	No.	1	
TOTAL CARRIED TO COLLECTION PAGE				

ITEM	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT KES.
	<p><u>BILL NO. 6 ELECTRICAL AND SECURITY SERVICES</u></p> <p><u>UNINTERRUPTIBLE POWER SUPPLY SYSTEM INSTALLATIONS</u></p> <p><i>Supply, Install, Test and Commission the following:</i></p>				

E1.06.01	<p>3kVA Double-Conversion True On-Line 1- Phase 230V Rack Mount UPS System, 50Hz, 2-Wire + Ground wye input and output with inbuilt precision voltage regulation capability, zero transfer time capability, high input power factor, and DSP technology with generator support, fully equipped external maintenance bypass facility, dynamic battery management, 8 minutes back-up runtime, complete with power monitoring capabilities and advanced power management software, fully capable back-feed protection system, emergency power off button and dry interface for remote emergency shutdown. (Operating Temperature Range: 0° to +40° degrees Celsius; Storage Temperature Range: -15° to +50° degree Celsius). Manufacturer shall be as "APC" Symmetra or "Tripplite"</p>	No.	1	
	TOTAL CARRIED TO COLLECTION PAGE			

COLLECTION PAGE

# ELECTRICAL AND SECURITY SERVICES INSTALLATIONS COLLECTION PAGE

ITEM	DESCRIPTION	AMOUNT (IN KE
P.00	GENERAL ITEMS	
BILL NO. 1	MAIN ELECTRICAL DISTRIBUTION SYSTEM INSTALLATIONS	
BILL NO. 2	POWER POINTS WIRING AND INSTALLATIONS	
BILL NO. 3	LIGHTING SYSTEM INSTALLATIONS	
BILL NO. 4	FIRE ALARM SYSTEM INSTALLATIONS	
BILL NO. 5	AUDIO-VISUAL SYSTEM INSTALLATIONS FOR CONFERENCE ROOMS	
BILL NO. 6	UNINTERRUPTIBLE POWER SUPPLY SYSTEM INSTALLATIONS	
	TOTAL FOR ELECTRICAL & SECURITY SERVICES INSTALLATIONS CARRIED FORWARD TO MAIN SUMMARY PAGE	

State Total Amount in Words:

State Details of Contractors for MEP Works i.e. Name of Firm, NCA Registration No. and EPRA License No.,

Electrical Services Installations:

IT Services Installations:

Main Contractor's Signature & Rubber Stamp:

Date:







PROPOSED KESRA COMMON AREAS REFURBISHMENTS

AT

KESRA MOMBASA CAMPUS

FOR M/s KENYA SCHOOL OF REVENUE ADMINISTRATION (KESRA)

ELECTRICAL AND SECURITY SERVICES INSTALLATIONS

BILLS of QUANTITIES

(ALL RATES TO BE INCLUSIVE OF 16% V.A.T AS APPLICABLE).

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
P.00	<u>GENERAL ITEMS</u>				
A	Allow for the printing of all MEP design drawings issued by the Engineer before commencement of works on A1 size paper to be displayed on site during the project period.	Sum	1		
B	Allow for the preparation of all MEP "As Built" Drawings and handover documentation including test results compilation in 3 No. A1 Hard Copies + 1 CD ROM (To a scale of 1:50).	Sum	1		

	TOTAL CARRIED TO MAIN SUMMARY PAGE.				

ELECTRICAL & SECURITY SERVICES INSTALLATIONS					
ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
E1.01.00	<p><b>BILL NO. 1 ELECTRICAL AND SECURITY SERVICES</b></p> <p><b>MAIN ELECTRICAL DISTRIBUTION SYSTEM INSTALLATIONS</b></p> <p>Supply and deliver to site fittings, equipment and materials for the Distribution System. Allow for storage on site all materials, fittings and equipment as stated below. Install, connect up-up complete including all conduits, supports, fixings, sleeves and accessories required for distribution system. Include for earthing requirements and connections and other item not detailed but required for the satisfactory completion and operation of the installation. The reference standard shall be the latest edition of the IET Wiring Regulations BS 7671.</p> <p>Equipment and accessories manufacturers shall be reputable brands with more than 10 years experience in the electrical industry. Datasheets MUST be presented for all equipment and accessories listed here.</p> <p>Note: All Power Distribution Boards and Cables shall be subject to inspection and approval by the Engineer.</p> <p>Circuit breaker coordination and selectivity shall be determined on site.</p> <p>Supply and Install the following:</p> <p><b>Isolators, Cables and Cable Management</b></p> <p>The contractor shall reference the provided electrical schematic during installation.</p> <p>NOTE:- All circuits for the common areas shall generate from the Main Conference Rooms DB.</p>				
E1.01.01	<p>250mm (Width) X 25mm (Depth) dual compartment perforated white powder coated cable tray complete with all cable retainers, bends, Ts etc. and mounting accessories as required based on the engineer's drawings (Provisional)</p>	Lm	40		

E1.01.02	2 compartment molded PVC surface trunking, 180mm x 65mm, complete with lids/covers, base unit/main carrier including all manufacturers preformed internal and external angles, couplers and end caps and all cable retainers in white surface finish. <i>See Crabtree MAXPAK for reference.</i>	Lm	20	
E1.01.03	Provide twin module knockouts on above trunking as required	No.	6	
E1.01.04	Provide single module knockouts on above trunking as required	No.	6	
TOTAL CARRIED FORWARD.				

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
	TOTAL BROUGHT FORWARD				
	<u>Distribution Boards and Accessories</u> <i>Note: Earthing of the Distribution Boards shall be to IET BS7671 guidance notes on Earthing &amp; Bonding requirements. Allow in the rates for all circuit labelling. The DB and feeder designations must be implemented with a uniform labelling system.</i>				
	Surface/Recess mount, 6 Way TPN electrical distribution board with 4P 125A integrated Isolator. (Common Area Distribution board).	No.	1		
	<i>Note: All MCBs specified herein shall be Type C - 6kA MCBs except where stated otherwise.</i>				
E1.01.05	<u>MCBs</u>				
a	10A SP	No.	4		
b	20A SP	No.	5		
c	32A SP	No.	5		
d	Blanking plates for all spare ways.	No.	2		

	TOTAL CARRIED TO COLLECTION PAGE.			

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
	<u>BILL NO. 2 ELECTRICAL AND SECURITY SERVICES</u> <u>POWER POINTS WIRING AND INSTALLATIONS</u>  .02.00 <i>Supply and deliver to site materials, fittings and accessories, install, connect-up complete and commission the installation. Include in the rates for supply, installation and connecting up all cables including all required conduits, supports, fixings, sleeves and accessories for power point, install complete all conduits, supports, fixings, sleeves and accessories for voice and data points. Accessories manufacturers shall be such as BRITISH GENERAL (BG), CRABTREE, MK, SCHNEIDER or CLIPSAL and to approved quality. The reference standard shall be the latest edition of the IET Wiring Regulations BS 7671.</i>  <i>Note! All fittings shall be subject to inspection and approval before installation.</i>  Supply and Install the following:  <u>Sockets, Switches and Plugs</u> E1.02.01 13 Amp standard twin socket outlet plates in <u>white</u> -surface finish				
		No.	20		

E1.02.02	13 Amp non-standard twin socket outlet plates in <u>red</u> surface finish c/w 2 No. non-standard plugs	No.	2	
E1.02.03	20A DP switch outlet plate labelled 'Isolator for Fire Alarm' fully compliant with BS 60669-2-4:2005 provisions in <u>white</u> surface finish c/w isolation key switch as MK Code No. K4780WHI (For Fire Alarm Panel)	No.	1	
E1.02.04	20A DP switch outlet plate with neon indicator in <u>white</u> surface finish	No.	7	
	<u>Conduits and Wiring</u>			
E1.02.05	13 Amps RING socket outlet points, wired at an average distance of 5 metres point to point, in 3 x 2.5mm <sup>2</sup> PVC insulated and sheathed single core copper cables drawn in cable trays (provided elsewhere) and in 25mm diameter heavy gauge PVC conduits concealed in walls, floor and surface conduit installations clipped to the slab soffit with all PVC conduit boxes and accessories but excluding the socket outlet face plates.	No.	22	
TOTAL CARRIED FORWARD.				

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT S.
	TOTAL BROUGHT FORWARD				
E1.02.06	DP Switch RADIAL outlet points, wired at an average distance of 20 metres in 3 x 2.5 mm <sup>2</sup> PVC insulated and sheathed single core copper cable, drawn in cable trays (provided elsewhere), and in 25mm diameter heavy gauge PVC conduits, concealed in walls/floor/ceiling void with all PVC conduit boxes and accessories including terminations on equipment but excluding the DP Switch.	No.	7		
E1.02.07	Audio & Video System Points in 32mm diameter heavy gauge PVC conduits concealed in walls, floor and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated control/panel stations, but excluding all speakers, controllers and fittings.	No.	5		

E1.02.08	HDMI Points in 38mm diameter heavy gauge PVC conduits concealed in walls, floor and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated control/panel stations, but excluding all speakers, controllers and fittings.	No.	2		
E1.02.09	Fire Alarm System Points in 25mm diameter heavy gauge PVC conduits concealed in walls and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated panels but excluding all fire alarm system fittings.	No.	18		
E1.02.10	Data and Security System points in 25mm diameter heavy gauge PVC conduits concealed in walls and clipped to slab soffit, with all PVC conduit boxes and accessories, linking back to designated data cabinet positions, and inclusive of draw wires and blanking plates but excluding all Data and Security fittings/equipment.	No.	30		
E1.02.11	Allow for equipotential earth bonding of ALL exposed metal structures and equipment within the fit out. Include in the rates for all earth cables, earth lugs, fixings and all accessories required for the satisfactory execution of the earth bonding installations.  Note: All bonding shall be done using 16 sq.mmCPC.	Item.	1		
E1.02.12	Flush mount metallic Adaptor Box , 200mm x 200mm x 50mm in matt finish, complete with cable entry knock outs and half thread bushes for interfacing cable connections where required (Provisional).	No.	10		
TOTAL CARRIED TO COLLECTION PAGE.					

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT in KES.
	<u>BILL NO. 3 ELECTRICAL AND SECURITY SERVICES</u> <u>LIGHTING SYSTEM INSTALLATIONS</u>				

E1.03.00	<p>Supply and deliver to site all materials, fittings and accessories. Install, connect-up complete to IEE Regulatory requirements and Electrical Codes of Practice, test and commission the installations. Include in the rates for Supply, installation and connecting complete all cables including all required conduits, supports, fixings, sleeves and accessories.</p> <p>Light fittings and lighting accessories manufacturers shall be reputable brands with more than 10 years experience in the international lighting industry. All fittings and accessories shall be subject to inspection and approval by the engineer before procurement and installation.</p> <p>Special note shall be taken to ensure that:-</p> <p>i) Earth conductors are drawn and terminated to all lighting switch boxes</p> <p>ii) Lighting fittings to be supplied complete with lamps, fixings brackets and accessories.</p> <p>Supply and Install the following:</p> <p><u>Conduits and Wiring</u></p>				
E1.03.01	Lighting system points wired in 3 x 1.5 mm <sup>2</sup> PVC insulated and sheathed single core copper cables, drawn in cable trays (already provided for) and in 20mm diameter heavy gauge PVC conduits concealed in walls/within the ceiling voids, one and two way switched as provided, with links to the raw power distribution board inclusive of all PVC conduit boxes and accessories but excluding switch and light fittings.	No.	101		
E1.03.02	ditto but for Emergency Lighting System Points.	No.	16		
	<p><u>Light Fittings and Accessories</u></p> <p>Supply and Install the following light fittings c/w accessories</p>				
E1.03.03	50W, IP40 rated, 4000K, 1500mm (L) linkable linear recessed LED Light. See SERA Ref. No. STL288-1500-4000 for reference. An alternative of similar quality and specifications can be specified.	No.	10		
E1.03.04	Ditto but 40W, 1200mm (L) as SERA Ref. No. STL288-1200-4000	No.	42		
E1.03.05	Ditto but 20W, 600mm (L) as SERA Ref. No. STL288-600-4000	No.	20		
E1.03.06	Type I Downlight as Cyclone LED Downlight by Light Green with the following specifications; 10W, 4000K, IP20, 98mm diameter. Code No. LG-CY10W-R or another brand of similar or higher quality.	No.	14		
	TOTAL CARRIED FORWARD.				

ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
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TOTAL BROUGHT FORWARD

E1.03.07	Type III Downlight as Melody LED Downlight by Light Green with the following specifications; 5W, 4000K, IP20, 75mm diameter. Code No. LG-ML5W or another brand of similar or higher quality.	No.	6
E1.03.08	10mm PU 10W/m (in 5 Metre Rolls) 4000K LED Strip Light as 'LEME' Code No. LE-NF-JR10M	No.	1
E1.03.09	Allow a SUM of KES 30,000.00 per pendant for decorative pendants to the architect's specification.	No.	8
E1.03.10	Ceiling mounted LED Non-Maintained emergency exit sign with 3 hour emergency back-up duration, self-test function, integrated emergency pack and laser etched acrylic for superior light distribution and appropriate legend (Down, Left or Right) as "OMS" or similar and approved.	No.	2
E1.03.11	3 Watts non-maintained surface/recess mounted (as per drawings) LED emergency lighting fittings as PIERLITE, LED FIREFLY Code No. FFRLED c/w 3 hr. emergency back-up duration.	No.	6
<u>Switches and Controls</u>			
Supply and Install the following;			
(Reference for Switch Brand shall be as Vivace by Schneider)			
E1.03.12	6 Gang 2 Way Grid Switch in <i>white finish</i> .	No.	2
E1.03.13	3 Gang 2 Way Grid Switch in <i>white finish</i> .	No.	1
E1.03.14	2 Gang 2 Way Wide Rocker Switch in <i>white surface finish</i> .	No.	5
E1.03.15	1 Gang 1 Way Wide Rocker Switch in <i>white surface finish</i> .	No.	7
E1.03.16	Surface mounted 360 degrees PIR Presence and Occupancy Sensor.	No.	3
E1.03.17	Coaxial Outlet Plate	No.	1

	TOTAL CARRIED TO COLLECTION PAGE.	
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ITEM	DESCRIPTION	UNIT.	QTY.	RATE.	AMOUNT KES.
	<u>BILL NO. 4 ELECTRICAL AND SECURITY SERVICES</u> <u>FIRE ALARM SYSTEM INSTALLATIONS</u>				
E1.04.00	<i>Supply and Install all materials, equipment and accessories complete. Install, connect-up complete and commission the installation. Include in the rates for supply of all materials, cables and wiring accessories and connecting-up complete with Fire Tuff FP 200 cables including all conduits surface and concealed in the structure, raceways, supports, fixings, sleeves and necessary materials for the Addressable analog Fire detection and alarm System. The fire alarm system shall comply fully with requirements of NFPA standard 72 for protected premises signaling systems. Allow for any other item not specifically detailed but required for the satisfactory installation and operation of the system.</i>  <i>NOTE: The models provided in this document shall serve only as a quality and design reference guide. The contractor is allowed to provide alternatives of similar specification.</i>  <u>Supply, Install, Configure, Test and Commission the following:</u>				
E1.04.01	Allow for careful removal of existing detectors (approximately 10 No.), and retermination into existing panel.	No.	1		
E1.04.02	New Wiring into existing panel as follows: Smoke/Heat detector points wired in 1.5mm <sup>2</sup> FIRE TUFF single core copper cables drawn in 25mm diameter heavy gauge conduits concealed in walls and surface conduits installations within the ceiling void with PVC conduits boxes and accessories with links to the fire alarm panel - wiring to be done in accordance with zoning requirements.	No.	8		
E1.04.03	Ditto but for Manual Call Points.	No.	1		
E1.04.04	Fire alarm Sounder points wired in 2.5 mm <sup>2</sup> FIRE TUFF single core copper cables ditto.	No.	1		

E1.04.05	Conventional fire alarm manual call point as MENVIER MBG914 accessorized with mounting Bezels for MBG Call points as MBGBEZ and MBGHinged Cover as MBGHCC.	No.	1		
E1.04.06	Conventional fire alarm Sounder/Beacon with shallow base-Red as MENVIER MCD524/SB.	No.	1		
E1.04.07	Conventional Photo-thermal Smoke detector complete with base as MENVIER MPT951.	No.	1		
TOTAL CARRIED TO COLLECTION PAGE					

ITEM	DESCRIPTION	UNIT	QTY.	RATE	AMOUNT IN KES.
E1.05.00	<p><u>BILL NO. 5 ELECTRICAL AND SECURITY SERVICES</u></p> <p><u>CCTV SYSTEM INSTALLATIONS</u></p> <p><i>Supply, install, configure, test and commission complete the CCTV system as detailed in the specifications and to the particular requirements of the site. The contractor shall include in his rates for delivery of all materials to the project site, storage, general and specialized labour, test equipment, supports and fixings and all terminations, connectors, fittings and all accessories complete as necessary and required for the satisfactory completion and operation of the CCTV installations. The rate given shall allow for any/all licenses as may/will be required.</i></p> <p><b>Note:-</b>  <i>Equipment manufacturer shall be as "UNIVIEW" or "PROVISION"</i>  <i>The bidder shall be responsible for providing all equipment/accessories needed for the complete functioning of the CCTV system whether included in this specification or not.</i></p> <p><i>CAT6A cable is already provided for elsewhere.</i></p> <p><b>Supply and Install the following:</b></p>				

E1.05.01	8 Channel IP Network Video Recorder as the NVR302-E-P-B Series NVR complete with all features including support for P2P, UPnP, NTP, DHCP, PPPoE protocols, Ultra 265/H.265/H.264 video formats, 1-ch HDMI, 1-ch VGA, HDMI at up to 4K(3840x2160) resolution, up to 12 Megapixels resolution recording, HDMI and VGA independent outputs, 8 RJ-45 10M/100M self-adaptive Ethernet Interface, and ANR technology to enhance the storage reliability when the network is disconnected. The NVR shall be fitted c/w 2 No. 4TB SATA HDDs. The NVR <b>MUST</b> be ONVIF compliant.	No.	1	
E1.05.02	IP67 rated 4MP IP Indoor Motorized Dome Network Camera as the Uniview IPC3234LR3-VSPZ28-D or a variant of similar/equal quality and design. The camera shall be equipped with 1/3", 4.0 megapixel, progressive scan, CMOS, 2.8 ~ 12mm, motorized zoom lens, and all other features as applicable to the given model.	No.	3	
E1.05.03	Provide 24 inch CCTV screen for footage monitoring and review. NOTE: 1 No. PC provided in the reception area or marketing office shall also serve as a client PC for the CCTV system.	Item	1	
TOTAL CARRIED TO COLLECTION PAGE				

### COLLECTION PAGE

### ELECTRICAL AND SECURITY SERVICES INSTALLATIONS COLLECTION PAGE

ITEM	DESCRIPTION	AMOUNT (IN K)
P.00	GENERAL ITEMS	
BILL NO.1	MAIN ELECTRICAL DISTRIBUTION SYSTEM INSTALLATIONS	
BILL NO.2	POWER POINTS WIRING AND INSTALLATIONS	
BILL NO.3	LIGHTING SYSTEM INSTALLATIONS	

BILL NO.4	FIRE ALARM SYSTEM INSTALLATIONS	
BILL NO. 5	CCTV SYSTEM INSTALLATIONS	
TOTAL FOR ELECTRICAL & SECURITY SERVICES INSTALLATIONS CARRIED FORWARD TO MAIN SUMMARY PAGE		

State Total Amount in Words:

State Details of Contractors for MEP Works i.e. Name of Firm, NCA Registration No. and EPRA License No.,

Electrical Services Installations:

IT Services Installations:

HVAC Services Installations:

Plumbing, Drainage & Fire fighting Services Installations:

Main Contractor's Signature & Rubber Stamp:

Date:





**10. INFORMATION AND TECHNOLOGY (IT) SERVICE INSTALLATIONS**  
**– CONFERENCE ROOMS**

**A. BILL OF QUANTITIES**

No.	Item	QTY	Bidder's response	
			Unit cost	Total cost
1.	32U Network Cabinet	1		
2.	12 Core Multimode Armoured Fibre Cable	30		
3.	12 Port Multimode Modular Fibre ODF	1		
4.	1M LC-LC Multimode Fibre Patch cords	2		
5.	3M LC-LC Multimode Fibre Patch cords	4		
6.	CAT 6A UTP Ethernet Cable	5		
7.	CAT 6A 24-Port Ethernet Patch Panel	2		
8.	1M CAT 6A Ethernet Patch cords	20		
9.	3M CAT 6A Ethernet Patch cords	18		
10.	CAT 6A Single Gang Single Data Outlets	2		
11.	CAT 6A Single Gang Dual Data Outlets	2		
12.	1G Multimode SFP Transceiver Modules	1		
13.	24-Port Managed Access Switch	1		
14.	Access point	1		
15.	Labour	Lot		
16.	<b>Total Cost</b>			





## B. MINIMUM TECHNICAL SPECIFICATIONS

### INSTRUCTIONS TO BIDDERS:

1. Bidders are required to quote for Genuine Products which are brand new, internationally recognized and mature brands,
2. Bidders **MUST** attach Manufacturer data sheets for the product they propose to supply.
3. Bidders **MUST** append official company stamp and authorized signature on any attached technical data sheets.
4. Bidders **MUST** provide substantive responses **FOR ALL THE FEATURES** in the minimum technical specifications irrespective of any attached technical documents. Use of the words such **YES, COMPLIANT, NO, TICK, BLANK SPACES** etc. will be considered non-responsive and shall lead to bidder's disqualification.

#### 1. Minimum Technical Specifications for 32U Network Cabinet

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand	
2.	Form Factor	32 U floor standing standard data cabinet	
3.	Construction	Front door: with glass window Rear door: high-flow mesh Both doors keyed locks for security Heavy-duty solid sides Installed axial fan kits	
4.	Power outlets in the cabinet	6-Way universal PDU 3A/220 - 240 V AC earthed and fused with shutters	
5.	Cable manager	Installed with cable manager for both horizontal/ backbone cabling and patch cords. 4 (four) 1U Dual-sided Horizontal Cable Managers	





**2. Minimum Technical Specifications for 12 Core Multimode Armoured Fiber Cable**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years(bidder must specify brand )	
2.	Jacket characteristics & Material	Water Blocking Aramid Yarn Armoured PVC	
3.	Mode of operation	Multimode	
4.	Core density	12 cores	
5.	Attenuation (Max)	3.50 dB/km @ 850nm	
6.	Standards	Optical and mechanical performance: IEC 60794-2, IEC 60794-2-20, ISO 11801, EN 50173-1	

**3. Minimum Technical Specifications for 12 Port Multimode Modular Fiber ODF**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand	
2.	Mode of operation	Multimode	
3.	Port density	12 ports	
4.	Form Factor	1HU	
5.	Adapter Support	LC	
6.	Accessories	<ul style="list-style-type: none"><li>• Fibre optic adapters</li><li>• Blanks</li><li>• Pigtail connectors</li><li>• Splice tray</li><li>• Heat-shrink sleeves</li></ul>	



**4. Minimum Technical Specifications for 1M LC-LC Multimode Fiber Patch cords**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years.	
2.	Mode	Multimode <b>OM3 50/125</b>	
3.	Connector	Must be <b>LC-LC</b>	
4.	Length	1M	

**5. Minimum Technical Specifications for 3M LC-LC Multimode Fiber Patch cords**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years.	
2.	Mode	Multimode <b>OM3 50/125</b>	
3.	Connector	Must be <b>LC-LC</b>	
4.	Length	3M	

**6. Minimum Technical Specifications for CAT 6A UTP Ethernet Cable**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years (bidder must specify brand)	
2.	Category	CAT 6A UTP	
3.	Size	4-Pair solid, Gauge: 23 AWG	
4.	Operating frequency	500 to 550 MHZ	
5.	Standards	TIA/EIA 568 A/B, ISO/IEC 11801	



**7. Minimum Technical Specifications for CAT 6A 24-Port Ethernet Patch Panel**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized brand	
2.	Port Density	24 port	
3.	Cable Management	Rear Cable management bar installed	
4.	Labels	Printable labels MUST be available	
5.	Wiring	T568A/T568B compliant and easy to read	
6.	Contact materials	Plated phosphor bronze, stainless steel	
7.	Mounting	CEA-310-E 19-inch (482.6 mm) rack	
8.	Current rating	1.5 A	
9.	Contact resistance	20 mΩ	
10.	Insulation resistance	500 MΩ	
11.	Panel material	18 gauge cold rolled steel, black e-coated	
12.	Category and compatibility	CAT6A and downward compatible with CAT5e/CAT5	

**8. Minimum Technical Specifications for 1M CAT 6A Ethernet Patch cords**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years, must be of the same specifications with the Ethernet cable. (bidder must specify brand)	
2.	Category	CAT 6A 4-pair Ethernet cable	
3.	Length	1 M	
4.	Boot Color	Colour to match jacket	





**9. Minimum Technical Specifications for 3M CAT 6A Ethernet Patch cords**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years, must be of the same specifications with the Ethernet cable (bidder must specify brand)	
2.	Category	CAT 6A 4-pair Ethernet cable	
3.	Length	3 M	
4.	Boot Color	With colour matching jacket/ boot to labelling on the faceplates	

**10. Minimum Technical Specifications for CAT 6A Single Gang Single Data Outlets**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years (bidder must specify brand and model)	
2.	Assembly	CAT 6A single angled RJ45 outlet modules installed on Single gang face plates	
3.	Contact resistance	20 mΩ	
4.	Insulation Resistance	500 MΩ	
5.	Current rating	1.5 A PoE , PoE+	
6.	Contact Materials	Plated phosphor bronze, stainless steel	
7.	Plug compatibility	Compatible with RJ45 (8-position) plugs Should also be backward compatible to cat 5e	

**11. Minimum Technical Specifications for CAT 6A Single Gang Dual Data Outlets**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years (bidder must specify brand and model)	
2.	Assembly	CAT 6A dual angled RJ45 outlet modules installed on Single gang face plates	



No	Feature	Minimum Requirements	Bidder's response
3.	Contact resistance	20 mΩ	
4.	Insulation Resistance	500 MΩ	
5.	Current rating	1.5 A PoE , PoE+	
6.	Contact Materials	Plated phosphor bronze, stainless steel	
7.	Plug compatibility	Compatible with RJ45 (8-position) plugs Should also be backward compatible to Cat 5e	

**12. Minimum Technical Specifications for 1G Multimode SFP Transceiver Modules**

No	Feature	Minimum Requirements	Bidder's response
1.	Brand	Internationally recognized, matured brand (bidder must specify brand )	
2.	Mode of operation	Multimode	
3.	Compatibility	Must be compatible with Cisco switches	
4.	Form Factor	Small pluggable form factor	
5.	Capacity	1 Gigabyte (1G)	

**13. Minimum Technical Specifications for 24-Port Managed Access Switch**

No	Feature	Minimum Requirements	Bidder's Response
1.	General Descriptive Requirement	Enterprise standalone, High-density, High performance, Gigabit Ethernet switch. Layer 2 switching and basic routing to be supported. The switch <b>MUST</b> provide a seamless integration with the existing KRA network.	
2.	Model and Technology	Mature internationally recognized brand, in existence for at least 10 years (bidder must specify brand, model and series). The device <b>MUST NOT</b> be a product that has/is reaching end of life support/end of sale in two years' time.	
3.	Network Ports	24 PoE+ Ethernet 10/100/1000 ports, 4 - SFP transceiver-based Gigabit Ethernet ports.	



4.	Routing and Layer 3 Features	Must support Advanced Layer 3 capabilities including OSPF, EIGRP, ISIS, RIP and routed access	
5.	Other Features	Must support (IPv4 and IPv6) features, advanced quality of service (QoS), rate limiting, Access Control Lists (ACLs)	
6.	Compliance	IEEE 802.1Q, 802.1p, 802.3x	
		Ethernet: IEEE 802.3, 10BaseT, and 10BaseFL PoE+	
		Fast Ethernet: IEEE 802.3u, 100BaseTX, 10BaseFX	
		Gigabit Ethernet: IEEE 802.3z.	
		Compatible with different vendors' network equipment e.g. 3com, Nortel, Cisco.	
7.	Network Monitoring	Compliant with IEEE SNMP standards. Capable of monitoring the Network up to Node Level. Management by a well-known and developed proprietary OS.	
8.	Spanning Tree Protocol Technology	Support for Spanning Tree Protocol Technology	
9.	VLAN support	Compliant with IEEE 802.1Q standards- should support VLANs/Network Segmentation.	
10.	Security	Port Level Security e.g. Port Filtering, Access Control Lists, Policy based routing etc. Management by a recognized proprietary operating system.	
11.	Operation	Auto negotiating on all ports automatically selects half- or full-duplex transmission mode to optimize bandwidth.	
		Can support converged wired and wireless access.	
		Per-port broadcast, multicast, and unicast storm control prevents faulty end stations from degrading overall systems performance.	
12.	Software IOS release	Should be delivered with the latest version and supported IOS release	
13.	Power input	Dual power supply units	
		240 VAC, 50-60 Hz	
14.	Fan	Dual fan modules, field-replaceable	
15.	Warranty & Support	Minimum 3 years on Parts, labour and software and next business day replacement for any hardware failure that may occur.	





	<p>In addition, the equipment <b>MUST</b> include the manufacturer's premier technical support services that include:</p> <p>Accelerated hardware replacement options, Operating system updates, Access to the Manufacturer's technical assistance team, Online troubleshooting/support tools and proactive problem diagnosis services.</p> <p>The proposed product <b>MUST</b> have a manufacturer's local warranty &amp; Support. KRA will verify with the manufacturer to ensure compliance.</p>	
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#### 14. Minimum Technical Specifications for Access Point

No	Features	Minimum Specifications	Bidder's Response
1.	Brand	Internationally recognized, matured brand, in existence for at least 10 years(bidder must specify brand ).	
2.	Physical	The access point must be mountable on the ceiling Must be Wi-Fi certified Must be Wi-Fi Multimedia certified	
3.	Overview	Must support IEEE 802.11ax (Wi-Fi 6) with 4x4 MIMO, 8x8 MU-MIMO technology and 8 spatial streams. Must support Maximum Ratio Combining (MRC), flexible radio assignment and DFS Must support uplink/downlink OFDMA, CSD, TWT, BSS Colouring, beamforming and packet aggregation. Should be capable of providing high-speed spectrum intelligence to combat performance problems due to wireless interference. Must provide High-Density Experience (HDX) for a high-performance coverage giving the end-user a seamless wireless interference.	
4.	Network Standards	Dual Band Radios 802.11a/b/d/g/h/n/ac/ax (Wi-Fi 6), 802.3/ab/af/at, Bluetooth 5.0	
5.	Data rates and Modulation	600 Mbps	



6.	Interfaces	<ul style="list-style-type: none"><li>• 1 Ethernet port 100/1000/2500/5000 Multigigabit Ethernet (RJ-45)</li><li>• Management console port (RJ-45)</li><li>• UUSB 2.0 at 4.5 W</li></ul>	
7.	Transmit power settings	<p>2.4 GHz</p> <ul style="list-style-type: none"><li>• 23 dBm (200 mW)</li><li>• -4 dBm (0.39 mW)</li></ul> <p>5 GHz</p> <ul style="list-style-type: none"><li>• 26 dBm (400 mW)</li><li>• -1 dBm (0.79 mW)</li></ul>	
8.	Antennas	<ul style="list-style-type: none"><li>• 2.4 GHz: Peak gain 4 dBi, internal antenna, omnidirectional in azimuth</li><li>• 5 GHz: Peak gain 6 dBi, internal antenna, omnidirectional in azimuth</li></ul>	
9.	Non-overlapping channels	<ul style="list-style-type: none"><li>• 2.4GHz :- 802.11b/g - 3 &amp; 802.11n - 3</li><li>• 5GHz :- 802.11n - 21</li></ul>	
10.	Capabilities	Must support IEEE 802.11ax with 8x8 multiuser multiple-input multiple-output (MU-MIMO) technology with eight spatial streams, which sustains 600 Mbps rates over a greater range for more capacity and reliability	
11.	Security	802.11i, Wi-Fi Protected Access 3 (WPA3), WPA2 802.1X authentication Advanced Encryption Standards (AES) Extensible Authentication Protocol (EAP) including EAP-Transport Layer Security (TLS), EAP-Tunneled TLS (TTLS), Protected EAP (PEAP) v0 or EAP-MSCHAP v2, EAP-Flexible Authentication via Secure Tunneling (EAP-FAST) and EAP-Subscriber Identity Module (SIM) Provides WIDS/WIPS, Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP) VPN pass-through IP Security (IPsec), Layer 2 Tunneling Protocol (L2TP) MAC address filtering Wireless bridging/mesh X.509 digital certificates MAC address authentication Advanced Encryption Standards (AES), Temporal Key Integrity Protocol (TKIP)	
12.	Powering Option	Must be capable of being powered with: <ul style="list-style-type: none"><li>• 240V AC 50Hz</li><li>• Power over Ethernet: 802.3af PoE</li><li>• Must be delivered with a POE injector</li></ul>	





13.	Status LEDs	<ul style="list-style-type: none"><li>• Boot loader status</li><li>• Association status</li><li>• Operating status</li><li>• Boot loader warnings</li></ul>	
14.	Accessories	Must be delivered with a mounting kit	
15.	Warranty	<p>Minimum 3 years on Parts, labour and software and next business day replacement for any hardware failure that may occur.</p> <p>In addition, the equipment <b>MUST</b> include the manufacturer's premier technical support services that include:</p> <p>Accelerated hardware replacement options, Operating system updates, Access to the Manufacturer's technical assistance team, Online troubleshooting/support tools and proactive problem diagnosis services.</p> <p>The proposed product <b>MUST</b> have a manufacturer's local warranty &amp; Support. KRA will verify with the manufacturer to ensure compliance.</p>	

### 15. Labour and Installation Accessories

No	Feature	Minimum Requirements	Bidder's Response
1.	Trunking	The trunking must be installed neatly as per the LAN design and the engineer's instructions. All cables must run through the trunking.	
2.	Horizontal cabling	The horizontal cabling should be done neatly and professionally as per the LAN design and the engineer's instructions on site.	
3.	Fibre cabling	Installation of fibre should be carried out according to the instructions of the network engineer on site. All the 12 cores must be terminated for each side of a cable.	
4.	Tools & accessories	The bidder is expected to include the cost of all the installation accessories (including but not limited to cable ties, wood screws, insulating tapes, draw wires, wall plugs and labels etc) in the labour cost.	
5.	Quality of works	The contractor is required to provide high standard installation service and quality workmanship. Cable management must also be neatly done.	
6.	Drawings and documentation	On completion of the works the contractor <b>MUST</b> provide all the relevant documentation and the LAN schematic diagram for the site.	



# KENYA REVENUE AUTHORITY

ISO 9001:2015 CERTIFIED

INTERNAL

7.	Labeling	All the data points and ports on the Patch panels must be well labeled with Printed labels. The patch cords must also be labeled on both ends to match port numbers.	
8.	Testing and Commissioning	The Contractor is required to carry out professional test and provide results both in printed and in soft copy. A joint test and commissioning will be carried out by KRA and the contractor.	
9.	Defect Liability Period	The defect liability period shall be one (1) year. The contractor will be required to return to site and rectify any defects that may occur within the defect liability period at no extra cost to the Authority.	

PROPOSED KESRA NEW TOILET BLOCK & EXTERNAL WORKS

AT

KESRA MOMBASA CAMPUS

FOR M/s KENYA SCHOOL OF REVENUE ADMINISTRATION (KESRA)

PLUMBING, DRAINAGE & FIREFIGHTING INSTALLATIONS

BILLS of QUANTITIES.

(ALL RATES TO BE INCLUSIVE OF 16% V.A.T AS APPLICABLE).

Dec-21

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT II (K. SHs)
	<u>PROPOSED KESRA REFURBISHMENTS</u>				
	<u>PLUMBING &amp; DRAINAGE AND SANITARYWARE INSTALLATIONS</u>				
A	<u>EXTERNAL PLUMBING SERVICES</u>				
P.01.00	EXTERNAL POTABLE WATER RETICULATION SYSTEM				
	<i>Supply, Install, Test and Commission the following:</i>				
P.01.01	40mm diameter pipe from the existing mains to the ground water storage tank.	Lm.	50		
P.01.02	40mm diameter high pressure screw-down full way non-rising stem gate valve as Pegler or equal and approved for water connection to the ground level tank.	No.	2		
P.01.03	Water meter with forward and reverse flow metering as Johnsons / Honeywell - 40 size 3/4" complete including all accessories and fittings to pipework to reticulation/building supply line.	No.	1		
P.01.04	PVC rotary molded heavy duty cylindrical water storage tank of capacity 10000 litres as "Roto" or "Ken tank". Allow in the rates for 25mm diameter (internal orifice) ball valve, Brass Inline Strainers and all inlet, outlet, washout and overflow pipe connections complete with isolating valves and accessories.	No.	3		
P.01.05	Brass Gate Valve, 40mm diameter as "Cobra" 1002/125-15 (For Outlet and Wash-out lines).	No.	4		
P.01.06	Brass Inline Strainer, 40mm diameter as "Cobra" 1050-32.	No.	2		
P.01.07	Cold Water system Pressurization Pump set as "PEDROLLO PKm65 pump" Transfer pump set (duty and standby) with a control panel for the set of pumps to work interchangeably and incorporating thermal protection against motor overload and dry-run protection with auto-restart.	Set	1		

P.01.08	40mm PPR PN 25 piping for pump connection, overflow and washout complete with all pipe fittings including but not limited to tees, elbows, adaptors and couplings (Provisional).	Lm.	40		
P.01.09	Construct masonry Gate Valve chamber (450mm x 300mm x 450mm average depth) in 100mm concrete block wall, mass concrete base slab and pre-cast concrete cover slab.	No.	1		
TOTAL C/F TO NEXT PAGE					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT IN (K. SHs)
	TOTAL B/F FROM PREVIOUS PAGE				
P.01.10	Allow for setting to work, testing and commissioning of the whole of plumbing works to the satisfaction of Engineer. This shall include part testing of the plumbing works as installation progresses and issuances of test certificate to the Engineer witnessed by the Clerk of Works. Include in the rates for sterilization of the whole of the internal and external plumbing works by Chlorination as described to the satisfaction of the Engineer.	Item.	1		

	TOTAL C/F TO SUMMARY PAGE			

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (KSHS).
B	<b>SANITARYWARE &amp; EQUIPMENT INSTALLATIONS</b>				
P.02.00	<p><i>Supply the listed sanitary ware items and equipment complete, deliver to the project site, assemble, install, test and commission. Allow for supply and installation of all fixings, supports and connections to services, control, isolating and non-return valves. Include for supply and installation of all fittings, angle valves and accessories. Allow for any other item required for the satisfactory execution and completion of the installation.</i></p> <p><i>The specifications as given in the BoQ shall be understood as a quality reference guide. The contractor shall provide a brand of similar, equal or better quality. All fittings shall be subject to approval by the architect and engineer before procurement and installation.</i></p> <p><b>Supply, Install, Test and Commission the following complete:</b></p>				
P.02.01	Close Coupled W.C pan, as "Ideal Ceramics" complete with 4/6L cistern and fittings with dual flush push button, seat and cover with stainless steel hinges and W.C outlet Connector.	No.	6		
P.02.02	Toilet Paper Dispenser, in stainless steel AISI 304, satin finish as "Mediclinics" PR0789CS and complete with fixings.	No.	6		

P.02.03	Ceramic WHB as Duravit D-Code Ref# 07054500002 complete with Semi-Pedestal Ref# 08571700002 and inclusive of hangers and fixings, 35mm diameter uPVC Anti-siphonage bottle trap with extension pipe to flange and, Chrome plated grid waste.	No.	4		
P.02.04	Chrome plated Self-closing Push Type Tap $\frac{1}{2}$ " as DOCOL and inclusive of flexible hose pipe as Cobra C-15-350 and angle valve as Cobra 832-10.	No.	4		
P.02.05	Arabic shower complete with wall bracket and screws, on and off water button switch, 40mm diameter shower head complete with 1200mm long spray pattern hose and half inch threaded female connection plus angle valve.	No.	6		
P.02.06	Urinal with Concealed Inlet and Spreader as Duravit D-Code Model #082930.	No.	1		
P.02.07	Urinal Divider as Duravit D-Code Model.	No.	1		
P.02.08	Urinal Flush Valve as "DOCOL" Urinal Flush Valve .	No.	1		
P.02.09	Surface mount Liquid Soap dispenser in stainless steel AISI 304, bright finish as "Mediclinics" DJ0030CS and complete with fixings.	No.	12		
TOTAL C/F TO NEXT PAGE					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT IN (K. SHs)
	TOTAL B/F FROM PREVIOUS PAGE				
P.02.10	Bevel edged mirror, size 800mm x 600mm x 6mm complete with back pad and chrome dome head screw fixings.	No.	4		

	TOTAL C/F SUMMARY PAGE.				

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (KSHS).
C	<b><u>WATER DISTRIBUTION SYSTEM (IN CPVC PIPING AND ACCESSORIES)</u></b>				
P.03.00	<i>Supply, install, test and commission the water distribution system in ASTM D2846 CPVC piping to conform to the requirements of B.S 6700 and to the particular requirements of the site. Each room to be installed with isolation valve. Include for all pipe brackets, hangers and fixings as per pipe manufacturer's recommended spacing. Allow for any other item required for the satisfactory execution, completion and operation of the installation.</i>				



	<p><i>Allow in the rates for all pipe fittings and accessories of the same manufacturer including but not limited to reducer bushings, transition bushings, transition couplings, reducer couplings, brass couplings, tees, reducer tees, elbows, adaptors, brass FPT tees, brass FPT elbows and brass male adaptors all as required for the complete the cold water distribution system.</i></p> <p><b>Supply, Install, Test and Commission the following complete;</b></p>				
P.03.01	40mm diameter inclusive of all connectors, adaptors, supports and valves installed in walls, floors, ceilings and ducts from the existing plumbing system valve within the kitchen area to kitchen sinks, wash hand basins, and WCs as detailed in the drawings.	Lm	20		
P.03.02	Ditto but 32mm diameter	Lm	15		
P.03.03	Ditto but 25mm diameter	Lm	30		
P.03.04	Brass Gate Valve, 40mm diameter as "Cobra" 1002/125-25.	No.	1		
P.03.05	Ditto but 32mm diameter.	No.	2		
P.03.06	Ditto but 25mm diameter.	No.	2		
TOTAL C/F TO SUMMARY PAGE					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (KSHS).
D	<u>SOIL AND WASTE DRAINAGE SYSTEM (uPVC PIPING)</u>				

P.04.00	<p><i>Supply, install, test and commission the installation in Heavy Duty UPVC pipework; grey for the internal above ground system and golden-brown for the buried system all complying to BS 5750 quality system of manufacture and to BS 5572, BS 4515 and BS 5255 and to the particular condition and requirements of the site. The manufacturer's pipe jointing recommendations shall be fully complied with.</i></p> <p><i>Allow in the rates for all necessary pipe fittings and accessories of the same manufacture including but not limited to adaptors, connectors, Tees, reducers, elbows, rodding access points, plugs and all pipe brackets, hangers and fixings as required for the satisfactory execution of the work and efficient completion and operation of the soil and waste drainage system.</i></p> <p><b>Supply, Install, Test and Commission the following complete;</b></p>				
P.04.01	32mm diameter.	Lm	5		
P.04.02	40mm diameter.	Lm	10		
P.04.03	50mm diameter.	Lm	15		
P.04.04	110mm diameter.	Lm	30		
P.04.05	100mm diameter vent cowl	No.	1		
P.04.07	150mm x 150mm Floor trap complete with stainless steel access cover with drainage holes.	No.	5		
P.04.08	110mm diameter Terrain 18.49 'P' Trap Spigot outlet gulley traps complete with 300mm x 300mm masonry walling water proof plaster finish internally and purpose made aluminium or galvanized frame complete with precast concrete cover to approval.	No.	3		
P.04.09	Allow for linking the new soil and waste drainage system into the existing system complete inclusive of testing.	Item.	1		
TOTAL C/F TO SUMMARY PAGE.					

ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT IN (K. SHs)
F	<u>FIRE FIGHTING SYSTEM INSTALLATIONS</u>				
P.05.00	<u>PORTABLE EXTINGUISHERS</u>  <i>Supply and install Fire extinguishers equipment's complete, deliver to the project site, assemble, install, test and commission.</i>				
P.05.01	5kg manganese steel portable CO2 gas fire extinguisher complete.	No	8		
P.05.02	Cartridge operated 9kg portable dry powder fire extinguisher complete.	No	8		

	TOTAL C/F TO SUMMARY PAGE.				

KESRA MOMBASA REFURBISHMENT - PLUMBING, DRAINAGE & FIRE FIGHTING INSTALLATIONS - SUMMARY PAGE

ITEM	DESCRIPTION	AMOUNT (IN KSH)
P.00	<p>GENERAL ITEMS</p> <p>Allow for the preparation of all shop and 'as built' drawings, and project documentation including manuals, warranties etc. All documents shall be submitted in triplicate hard copies, bound. Soft copies shall be presented in a CD ROM. All drawings shall be at 1:50 scale.</p>	
P.01.00	EXTERNAL PLUMBING SERVICES	
P.02.00	SANITARYWARE & EQUIPMENT INSTALLATIONS	
P.03.00	WATER DISTRIBUTION SYSTEM (IN CPVC PIPING AND ACCESSORIES)	
P.04.00	SOIL AND WASTE DRAINAGE SYSTEM (uPVC PIPING)	
P.05.00	PORTABLE EXTINGUISHERS	
	TOTAL FOR PLUMBING, DRAINAGE & FIREFIGHTING INSTALLATIONS C/F TO MAIN COLLECTION PAGE	

Contractor's Signature:

Contractor's Rubber Stamp:

Date: .....



ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (KSH)	AMOUNT (KSH)
1	<b>PRELIMINARIES &amp; GENERAL REQUIREMENTS</b>					
a	Allowance for P&G requirements	Item				
2	<b>SUBSTRUCTURES</b>					
a	Excavation to reduce levels	cm	19.82			
b	Trench excavation to receive strip footing	cm	18.45			
c	Backfilling / disposal of excavated materials	cm	38.27			
d	Imported hardcore filling to make up levels	cm	19.82			
e	300mm thick hard-core filling + 50mm thick blinding	sm	39.63			
f	Anti-termite treatment	sm	39.63			
g	1000 gauge damp proof membrane	sm	39.63			
h	Mass Concrete Class 1:4:8 Blinding to Footings	sm	18.45			
i	Reinforced Concrete Class 20 in Strip footing	cm	3.69			
j	Reinforced Concrete Class 20 in Surface Bed - 150mm thick	sm	39.63			
k	Assorted Reinforcement Bars	kg	184.50			
l	BRC A142 Reinforcement Bars	sm	39.63			
m	Formwork to sides of strip footing	sm	12.30			
n	Forming to edges of surface slab	m	27.40			
o	200mm thick natural stone walling in foundations - max 1 metre deep	sm	36.90			
p	200mm wide DPC	m	41.00			
q	Render to sides of foundations	sm	16.44			
r	Bituminous paint to sides of foundations	sm	16.44			
3	<b>CONCRETE FRAME</b>					
a	Reinforced Concrete Class 25 in Beams	cm	2.77			
b	Assorted Reinforcement Bars	kg	276.75			
c	Formwork to sides of Beams	sm	27.68			
d	Plaster to Sides of Beams	sm	27.68			
e	Paint to sides of Beams	sm	27.68			
4	<b>WALLING</b>					
a	200/150mm thick natural stone walling - Ex/Internally	sm	94.08			
b	Render/plaster to walls externally/internally	sm	188.16			
c	Textured paint to walls externally	sm	59.52			
d	Supply & fixing of wall tiles internally	sm	128.64			
e	Paint to walls internally	sm	-			
5	<b>ROOF CONSTRUCTION &amp; CEILING FINISHES</b>					
a	Roof Structure Complete [New Trusses & Common Rafters]	sm	52.77			
b	Roof covering fixed to timber rafters (m.s) on and including timber battens (Shingles)	sm	52.77			
c	200x25mm cypress fascia board	m	31.00			
d	T&G PVC boarding to eaves	sm	13.95			
e	Gypsum board ceiling laid flat	sm	38.82			
f	Moulded gypsum cornice	m	33.10			
g	Varnishing general surfaces of fascia board - roof	m	31.00			
h	Prepare and apply paint to gypsum board ceilings	sm	38.82			
6	<b>FLOOR FINISHES</b>					
a	42mm thick screed to receive floor tiling	sm	39.63			
b	Supply & fixing of approved floor tiles	sm	39.63			
7	<b>WINDOWS + FRAMES + IRONMONGERY</b>					
a	Supply & fixing of Aluminium Windows	sm	7.68			
b	Precast concrete window cills	m	6.40			
c	Window boards	m	6.40			
8	<b>DOORS + FRAMES + IRONMONGERY</b>					
a	Supply & fixing of timber door o/a size 800x2400mm high complete	Nr	8.00			
9	<b>SERVICES INSTALLATIONS [PROVISIONAL SUMS]</b>					
a	Custom made vanity unit to receive wash hand basins	LM	4.30			
b	Allowance for Mechanical Installations (Plumbing, Drainage & Sanitary Ware & Fire Fight.)	Item				
c	Allowance for Electrical Installations (Conduiting + Wiring + Light Fittings)	Item				
d	Builders Work in Connection with Services (Chasing and Cutting)	Item				

ADD 16% VALUE ADDED TAX

TOTAL CONSTRUCTION COST IN KSH INCLUSIVE OF 16% VAT





ITEM	DESCRIPTION	UNIT	QTY	RATE	AMOUNT (KSH)	AMOUNT (KSH)
1	PRELIMINARIES & GENERAL REQUIREMENTS					
a	Allowance for P&G requirements	Item				
2	WALLING					
a	General paintworks to existing walls internally [provisional quantity]	sm	200.00			
3	FLOOR FINISHES					
a	Hack off existing floor tiles complete with backing screed and make good	sm	244.29			
b	42mm thick screed to receive floor tiling	sm	244.29			
c	Supply & fixing of approved floor tiles	sm	244.29			
TOTAL CONSTRUCTION COST IN KSH						
ADD 16% VALUE ADDED TAX						
TOTAL CONSTRUCTION COST IN KSH INCLUSIVE OF 16% VAT						



CONFERENCE & ENTRANCE AREA FITOUT WORKS & ASSOCIATED SERVICES INSTALLATIONS

FOR KENYA REVENUE AUTHORITY AT KESRA PREMISES IN MOMBASA

GRAND SUMMARY

ITEM	DESCRIPTION	ESTIMATED AMOUNT KSHS
1	Preambles & Pricing Notes	
2	Particular Preliminaries	
3	General Preliminaries	
4	Fitout Works - Reception, Walkway, Meeting Room & Marketing Office	
5	Fitout Works - Conference Rooms	
6	HVAC Installations - Common Areas	
7	HVAC Installations - Conference Rooms	
8	Electrical and Security Services Installations - Common Areas	
9	Electrical and Security Services Installations - Conference Rooms	
10	IT Services Installations- Conference Rooms	
11	Plumbing, Drainage, Sanitary Ware & Fire Fighting Inst..	
12	Toilet Block	
13	Tiling Dining/ Kitchen Areas	
Sub - Total Amount		
13	Provide Kenya Shillings One Million five Hundred Thousand Only (Kshs 1,500,000.00) for Contingencies	
Total Estimated Project Cost		

Amount in words:.....

Tenderer's Name:.....

Address: .....

Signature:.....

Rubber stamp:.....

Date:.....

Witness's name:.....

Signature:.....

Address: .....

Date: .....

