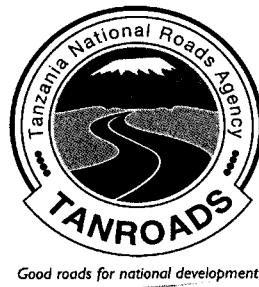


THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION



TENDER No. AE/001/2017-18/HQ/W/49

FOR

REHABILITATION AND UPGRADING OF SONGEA AIRPORT

Clarification No. 1 to the Tender Documents

Date: 7th November, 2017

Clarification No. 1 to the Tender Documents is issued in accordance with Instructions to Bidders, Clause 8.1 to effect the following amendments to the Tender Documents:

QUESTION NO. 1

We hereby request your kind extension of three weeks up to 28th November 2017 for site & market investigation and scrutiny the tender to ensure submission of a reasonable and competitive tender.

Response to Question No. 1:

*The Deadline for bids submission has been extended for three weeks from 7th November 2017 to 30th November 2017 has been granted. Please refer **Addendum No. 1 dated 26th November 2017.***

QUESTION NO. 2

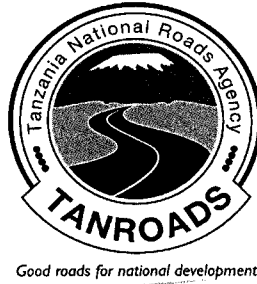
Following the site visit in the airports at the above mentioned locations it was clear that there are changes to the designs anticipated and accordingly, change to the scope of work and the Bill of Quantities would be effected.

We would be grateful if an extension of time of three weeks is granted.

Response to Question No. 2:

Refer response to Qn. 1.

THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF WORKS, TRANSPORT AND COMMUNICATION



TENDER No. AE/001/2017-18/HQ/W/48

FOR

REHABILITATION AND UPGRADING OF SONGEA AIRPORT

Addendum No. 2 to the Tender Documents

Date: **7th November, 2017**

Addendum No. 2 to the Tender Documents is issued in accordance with Instructions to Bidders, Clause 9.1 to effect the following amendments to the Tender Documents:

Item No. 1

SECTION VII – Drawings

Amend the Section VII: Drawings by adding Energy Centre – Light Layout for the proposed Substation Building attached as **Appendix 1**.

Item No. 2

SECTION VIII– BILL OF QUANTITIES

- i. Amend the Section VIII: Bill of Quantities (BoQ) by adding Bill items for the proposed Substation Building attached as **Appendix 2**.
- ii. Page 3

Amend the General Requirement and Provision by inserting Item 1(c) and (d) as follows:

(c)	Allow for demolishing existing structures/buildings	Provisional Sum		100,000,000.00
(d)	Allow for the Contractor's Overheads and Profits as a percentage of sub item 1 (c).	%		

Refer Appendix 3 for the revised page 3.

iii. Page 25

Insert the following Item 7.2 and 7.3.

7.2	Supply installation and commissioning of DVOR,DME,Localiser,and other accessories as approved by TCCA	PS		2,000,000,000.00
7.3	Allow for the Contractor's Overheads and Profits as a percentage of sub item 7.2.	%		

Refer Appendix 4 for the revised page 25.

iv. Page 30: Table 2: Summary of Specified Provisional Sums

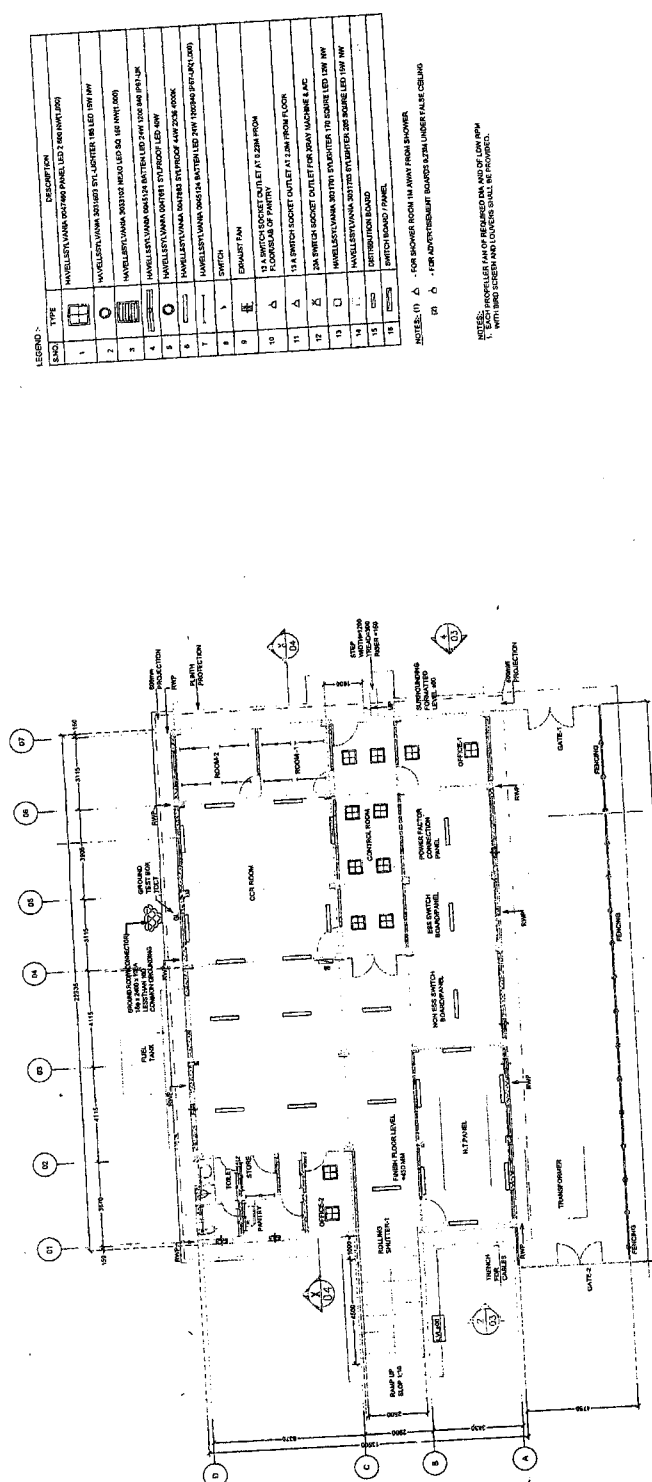
Replace Table 2: Summary of Specified Provisional Sums with the revised Summary of Specified Provisional Sums attached as **Appendix 5**.

v. Page 31

Replace Table 3: Grand Summary of Bill of Quantities with the revised Grand Summary of Bill of Quantities attached as **Appendix 6**.

Appendix 1: Energy Centre – Light Layout for the proposed Substation Building

APPENDIX 1



1 ENERGY CENTRE LIGHT LAYOUT Scale: 1:100

LEGEND:

S.No.	TYPE	DESCRIPTION
1	[Symbol]	HAVELISTY LAMPA 20X200 PANEL LIGHT 240 WATT (200)
2	[Symbol]	HAVELISTY LAMPA 20X200 SYLINDER 180 LED 10W 10W
3	[Symbol]	HAVELISTY LAMPA 20X200 REKOD LED 50 (60 WATT (500))
4	[Symbol]	HAVELISTY LAMPA 20X200 REKOD LED 20W 1000 MA 10W 10W
5	[Symbol]	HAVELISTY LAMPA 20X200 SYLINDER 180 LED 10W
6	[Symbol]	HAVELISTY LAMPA 20X200 SYLINDER 180 LED 10W (10000)
7	[Symbol]	SWITCH
8	[Symbol]	SMART TAN
9	[Symbol]	12 A SWITCH-ROCKET OUTLET 15 A 7.52M FROM FLOOR
10	[Symbol]	13 A SWITCH-ROCKET OUTLET 15 A 1.2M FROM FLOOR
11	[Symbol]	15 A SWITCH-ROCKET OUTLET 15 A 1.2M FROM FLOOR
12	[Symbol]	15 A SWITCH-ROCKET OUTLET 15 A 1.2M FROM FLOOR
13	[Symbol]	HAVELISTY LAMPA 20X200 SYLINDER 180 LED 10W 10W
14	[Symbol]	HAVELISTY LAMPA 20X200 SYLINDER 180 LED 10W 10W
15	[Symbol]	DISTRIBUTION BOARD
16	[Symbol]	SWITCH BOARD / PANEL

NOTES: 1) Δ - FOR SHOWER ROOM IN W/WY FROM SHOWER
2) Δ - FOR INTERCOMBUST ROOMS ACZM UNDER FALSE CEILING

REMARKS:
1) THIS DRAWING IS FOR INFORMATION ONLY AND NOT TO BE USED FOR CONSTRUCTION.
2) ALL DIMENSIONS ARE IN METERS UNLESS OTHERWISE STATED.
3) ALL MATERIALS AND EQUIPMENT TO BE SUPPLIED BY THE CONTRACTOR.

United Republic of Tanzania
Tanzania Airport Authority

ON PROJECT SHEET NO.	REVISION APPROVED BY	DATE	BY
	REVISION APPROVED BY	DATE	BY
	REVISION APPROVED BY	DATE	BY
	REVISION APPROVED BY	DATE	BY
	REVISION APPROVED BY	DATE	BY

PROJECT TITLE
SONGEA AIRPORT
ENERGY CENTER
LIGHT LAYOUT

DESIGNED BY
CHECKED BY
DRAWING NO.
AR-4301

DATE OF ISSUE
REVISION DATE

PROJECT NO.
DRAWING NO.

DESIGNED BY
CHECKED BY
DRAWING NO.

DATE OF ISSUE
REVISION DATE

PROJECT NO.
DRAWING NO.

Feasibility Study and Detailed Engineering Design and Tender Documents for
Eleven (11) Airport, Tanzania

CONSULTANT:
Yooshin Engineering Corporation

INTERCONTINENTAL CONSULTANTS AND TECHNICALS PVT. LTD.

HYEYON KAGI Architects & Associates Co. Ltd.

PROJECT NO. AR-4301

DRAWING NO. AR-4301

DATE OF ISSUE

REVISION DATE

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Appendix 2: Bill of Quantities (BoQ) for the proposed Substation Building- Energy Centre

BILL OF QUANTITIES

REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT

SUMMARY OF ENERGY CENTRE ROOM

Item No	Description	Amount (TShs)
A	CIVIL WORKS	
B	PLUMBING & SANITARY WORKS	
C	ELECTRICAL WORKS	
	TOTAL OF ENERGY CENTRE ROOM WORKS (Carried Forward to Table 3 : Grand Summary)	

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	<u>SECTION-I : EARTH WORK:</u>				
1.01	Earthwork in excavation by mechanical means (Hydraulic excavator) / manual means in foundation trenches or drains,pits etc and disposal of surplus excavated soil as directed with in a lead of 50m in all types of Soil. Commencing from existing ground surface etc complete as per drawings & Technical Specifications				
a)	In all kinds of soil				
i)	Up to 1.5m depth	m ³	284		
ii)	Up to 1.5 to 3m depth	m ³	58		
b)	In soft rock : Commencing from under side of Top Soil:				
i)	From 1.5m to 3m.	m ³	17		
1.02	Filling from available excavated earth (Excluding rock) in trenches, plinth, sides of foundation etc. in layers not exceeding 20cm in depth etc complete as per drawings & Technical Specifications	m ³	292		
a)					
b)	Backfilling behind structures with borrow earth etc complete as per drawings & Technical Specifications	m ³	62		
1.03	Providing and filling in plinth with sand/ Crusher dust under floor in layers not exceeding 20cm in depth consolidating no deposited layer by ramming and watering, including dressing etc complete as per drawings & Technical Specifications				
a)	Sand Filling:	m ³	41		
1.04	Providing, injecting and spraying chemical emulsion for pre-constructural anti-termite treatment around the column pit, wall trenches, top surface of plinth filling, below the foundation , plinth protection and ground floor etc. complete with Chlorpyrifos/ Lindane E.C. 20% with 1% concentration etc complete as per drawings & Technical Specifications	m ²	274		
1.05	Brick bats filling with common burnt bricks under foundation and plinth etc complete as per drawings & Technical Specifications	m ³	5		
	<u>Section-II : PLAIN CEMENT CONCRETE</u>				
2.01	Providing and laying in position cement concrete of specified grade excluding the cost of centring and shuttering-all work up to plinth level etc complete as per drawings & Technical Specifications				
a)					
i)	Grade C-15	m ³	68		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
	<u>Section-III : REINFORCED CEMENT CONCRETE</u>				
3.01	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work up to plinth level etc complete as per drawings & Technical Specifications				
	a) Insitu concrete : Grade C -25	m ³	117		
3.02	Providing and laying in position cement concrete of specified grade excluding the cost of centering and shuttering - All work above Plinth Level upto floor five level etc complete as per drawings & Technical Specifications				
	a) Insitu concrete : Grade C- 25	m ³	103		
3.03	Providing and fixing formwork including centering, shuttering ,strutting, staging, propping bracing etc. complete and including its removal at all levels for etc complete as per drawings & Technical Specifications:				
	a) Foundations, footings, base of columns and plinth beam in any shape and size.	m ²	663		
3.04	Providing and fixing of prefabricated type of form work for all heights suspended floors, roof ,etc complete as per drawings & Technical Specifications	m ²	937		
3.05	Steel reinforcement for R.C.C. work with Characteristic strength of 460 Mpa class B shall conform to Standards including straightening, cutting, bending, placing in position and binding all complete upto plinth level etc complete as per drawings & Technical Specifications				
	(a) Reinforcement complete up to plinth	Tonne	12		
	(b) Reinforcement complete above plinth level	Tonne	12		
	<u>Section-IV : WATER PROOFING WORK:</u>				
4.01	Providing and laying APP (Atactic Polypropylene Polymer) modified prefabricated five layer 3 mm thick water proofing membrane, black finished reinforced with non-woven polyester matt etc complete as per drawings & Technical Specifications	m ²	302		
4.02	Providing and laying water proofing treatment in sunken portion of WCs, bathroom etc., by applying cement slurry mixed with water proofing cement compound etc complete as per drawings & Technical Specifications				
	a) Waterproofing in toilet area	m ²	7		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
4.03	Providing and laying damp proof course (upto 50mm thick) with plain cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded crushed stone aggregate 20mm nominal size) including formwork etc complete as per drawings & Technical Specifications	m ²	55		
	<u>Section-V : STONE/BRICK MASONRY WORKS</u>				
5.01	Selected and approved masonry walls :Concrete block as per BS 6073-1982 walling : bedded, jointed and pointed in cement and sand mortar etc complete as per drawings & Technical Specifications				
a)	200 mm thick - Solid Block masonry 1:4 cement mortar - In superstructure	m ²	801		
5.02	Brick work with common burnt clay modular bricks of class designation 7.5 in foundation and plinth in etc complete as per drawings & Technical Specifications				
(i)	Cement mortar 1:4 (1 cement : 4 coarse sand)	m ³	1		
	<u>WALL FINISHES</u>				
5.03	Cement plaster of mix (1 cement : 3 fine sand) as per BS-8212 etc complete as per drawings & Technical Specifications				
a)	On internal Horizontal Surfaces: Ceiling Plaster 6 mm thk. with CM 1:3	m ²	332		
b)	Internal Plaster up to 12 mm thk. with CM 1:3	m ²	763		
c)	External Plaster up to 20mm Thick in Two Layer with CM 1:3	m ²	769		
	<u>Section -VI : PAINTING & FINISHING</u>				
6.02	Applying priming coats with primer of approved brand and manufacture, having low VOC (Volatile Organic Compound) content etc complete as per drawings & Technical Specifications				
a)	With water thinnable cement primer on wall surface having VOC content less than 50 grams/litre.	m ²	1,095		
6.03	Wall painting with acrylic emulsion paint of approved brand and manufacture to give an even shade . Two or more coats on new work etc complete as per drawings & Technical Specifications	m ²	1,095		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
6.04	Finishing walls with water proofing cement paint of required shade etc complete as per drawings & Technical Specifications New work (Two or more coats applied @ 3.84 kg/10 sq m)	m ²	769		
	Section-VII : FLOORING:				
7.01	52 mm thick cement concrete flooring with concrete with hardener topping, under layer 40 mm thick cement concrete 1:2:4. (1 cement : 2 coarse sand : 4 graded stone aggregate 20 mm nominal size) and top layer 12 mm thick cement hardener consisting of mix 1:2 (1 cement hardener mix : 2 graded stone aggregate 6 mm nominal size) by volume etc complete as per drawings & Technical Specifications	m ²	349		
7.02	Providing and laying ceramic glazed floor tiles 300 x 300 mm (thickness to be specified by the manufacturer) of 1st quality etc complete as per drawings & Technical Specifications				
a)	Anti Skid Tile Flooring	m ²	7		
7.03	Providing and laying Vitrified tiles in different sizes (thickness to be specified by manufacturer), over 12 mm thick bed of cement mortar 1:3 (1 cement: 3 coarse sand) etc complete as per drawings & Technical Specifications				
a)	Size of Tile 600x600 mm	m ²	21		
7.04	Granite flooring with 25 mm thick stone, as per sample approved by Engineer-in-charge, over 12 mm (average) thick base of cement mortar 1:3 (1 cement : 3 coarse sand) laid and jointed with grey cement slurry, including rubbing and polishing complete with etc complete as per drawings & Technical Specifications	m ²			
7.05	Providing and fixing 1st quality ceramic glazed wall tiles (thickness to be specified by the manufacturer) of approved make over 12 mm thick bed of cement Mortar 1:3 (1 cement : 3 coarse sand) etc complete as per drawings & Technical Specifications	m ²	12		
7.07	Providing and fixing 32 mm thick Jet black mirror polished bull nosed , premoulded and prepolished, machine cut for kitchen platforms, vanity counters, window sills , facias and similar locations of required size, approved shade, colour and texture laid over 20 mm thick base cement mortar 1:4 (1 cement : 4 coarse sand), joints treated with white cement, mixed with matching pigment, epoxy touch ups, including rubbing, curing, moulding and polishing to edges to give high gloss finish etc. complete at all levels etc complete as per drawings & Technical Specifications	m ²	3		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
	<u>Section-VIII : DOORS / WINDOWS/ PARTITION WALLS</u>				
8.03	Providing and fixing flush hollow metal type doors , with or without view panels etc including transomes,presed cills to suit ,including all necessary ironmongery, accessories, hardware , gaskets, anchors and protective coatings etc complete unit as per drawings & Technical Specifications.				
	(a) Single Leaf Doors, Size 750 x 2100	No.	2		
	(d) Single Leaf Doors, Size 1000 x 2100	No.	6		
	(f) Single Leaf Doors, Size 1200 x 2100	No.	3		
	(h) Single Leaf Doors, Size 2000 x 2100	No.	1		
8.05	Providing and fixing doors,Windows, Ventilators, view panels etc in proprietary powder coated aluminium / MS tubular frames ,subframe, ,Glass panels/ glazed shutters including transomes,presed aluminium cills to suit ,including all necessary ironmongery, accessories, hardware , gaskets, anchors and protective coatings etc complete unit as per drawings & Technical Specifications.				
	(d) Windows, Size 1200 x 1800	No.	13		
	(e) Windows, Size 1200 x 1650	No.	1		
	(f) Windows, Size 1500 x 1800	No.	3		
	(j) Ventilators, Size 600 x 600	No.	1		
	<u>Section-IX: STEEL WORKS / SHUTTERS :</u>				
9.01	Providing and fixing stainless steel (Grade 304) railing made of Hollow tubes, channels, plates etc., including welding, grinding, buffing, polishing and making curvature (wherever required) and fitting the same with necessary stainless steel nuts and bolts complete, i/c fixing the railing with necessary accessories & stainless steel dash fasteners , stainless steel bolts etc., of required size, on the top of the floor or the side of waist slab with suitable arrangement as per approval of Engineer-in-charge,(for payment purpose only weight of stainless steel members shall be considered excluding fixing accessories such as nuts, bolts, fasteners etc.) etc complete as per drawings & Technical Specifications	Kgs	274		
9.02	Supplying and fixing rolling shutters of approved make, made of required size M.S. laths, interlocked together through their entire length and jointed together at the end by end locks, mounted on specially designed pipe shaft with brackets, side guides and arrangements for inside and outside locking with push and pull operation complete, including the cost of providing and fixing necessary 27.5 cm long wire springs manufactured from high tensile steel wire of adequate strength and M.S. top cover of required thickness for rolling shutters etc complete as per drawings & Technical Specifications				
	(a) 80x1.25 mm M.S. laths with 1.25 mm thick top cover	m ²	15		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
	<u>Section-X : ROOFING & CEILING:</u>				
10.01	Making Depressed portion 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 sand : 4 graded stone aggregate of 20 mm nominal size) over P.V.C. Sheet 1mx1mx400micron, finished with 12mm cement plaster 1:3 (1 cement: 3 sand) and a coat of neat cement rounding the edge sand: making and finishing the outlet etc complete as per drawings & Technical Specifications	No.	10		
10.02	Providing and fixing false ceiling at all height including providing and fixing of frame work made of special sectionsetc complete as per drawings & Technical Specifications				
	i) 12.5 mm thick tapered edge gypsum moisture resistant board	m ²	21		
	<u>Section-XI : MISCELLANEOUS</u>				
	SIGNAGE				
11.02	Allow the Provisional Sum for the supplying and fixing for provision of all Illuminated Wall mounted/Hanging signages with or without directions, notices, Fixings and the like to TAA requirements to be installed within the Building including all leads and lifts etc. complete as per drawing , specification and direction of Engineer—in-charge.	Lump Sum			
TOTAL FOR ENERGY CENTRE ROOM CIVIL WORKS (Carried Forward to Summary of Energy Centre Room)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
B	PLUMBING & SANITARY WORKS				
(I)	WATER SUPPLY WORKS (INTERNAL)				
1	Providing and fixing 3 layer PP-R (Poly propylene Random copolymer) pipes SDR 7.4, U V stabilized & anti microbial fusion welded, having thermal stability for hot & cold water supply, including all PP - R plain & brass threaded polypropylene random fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes testing of joints complete as per direction of Engineer in Charge.				
	internal work - Exposed on wall				
a)	PN - 16 Pipe, 16 mm OD	m	8		
b)	PN - 16 Pipe, 20 mm OD	m	5		
2	Providing and fixing 3 layer PP-R (Poly propylene Random copolymer) pipes SDR 7.4, U V stabilized & anti microbial fusion welded, having thermal stability for hot & cold water supply, including all PP - R plain & brass threaded polypropylene random fittings, i/c fixing the pipe with clamps at 1.00 m spacing. This includes the cost of cutting chases and making good the same including testing of joints complete as per direction of engineer in Charge.				
	Concealed work , including cutting chases and making good the walls etc.				
a)	PN - 16 Pipe, 16 mm OD	m	8		
b)	PN - 16 Pipe, 20 mm OD	m	5		
3	Providing and fixing C.P. brass bib cock of approved quality				
a)	15 mm nominal bore	No.	3		
4	Providing and fixing brass stop cock of approved quality				
a)	15 mm nominal bore	No.	3		
	Sanitary Installation and Drainage				
5	Providing and fixing uPVC pipes for Soil waste and rain water and including all fittings e.g. bends junctions, cowls, offsets ,Pvc clips, etc jointing with solvent cement including cutting holes in walls, floors excavation, refilling and disposal of surplus earth wherever required and making good the walls.				
a)	40 mm dia	m	11		
b)	50 mm dia	m	1		
c)	63 mm dia	m	2		
d)	110 mm dia	m	9		
e)	160 mm dia	m	27		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
6	Making depressed floors 45x45 cm with average minimum thickness of 5 cm cement concrete 1:2:4 (1 cement : 2 coarse sand : 4 graded stone aggregate of 20 mm nominal size) over PVC. sheet 1 m x1 m x 400 micron, finished with 12 mm cement plaster 1:3 (1 cement : 3 coarse sand) and a coat of neat cement, rounding the edges and making and finishing the outlet complete.	No.	6		
7	Providing and fixing trap of self cleansing design with screwed down or hinged grating with or without vent arm complete, including cost of cutting and making good the walls and floors :				
a)	100 mm inlet and 100 mm outlet	No.	3		
8	Providing and fixing in position 125 mm dia 3 mm thick stainless steel grating with frame for uPVC floor traps or drain of required pattern including cutting and making good the floor complete				
a)	125 mm dia over floor trap / drain	No.	3		
9	Providing and fixing in position 125 x 125 mm square stainless steel cockroach trap consisting of 0.45 mm thick inner and outer cups and 1.00 mm thick trap grating with ring to be fixed inside uPVC P traps with cement concrete (Kitchen and Pantry).	No.	1		
10	Providing and fixing stone slab table rubbed, edges rounded and polished of size 75 x 50 cm deep and 1.8 cm thick fixed in urinal partitions by cutting a chase of appropriate width with chase cutter and embedding the stone in the chase with epoxy grout or with epoxy grout or with cement concrete 1:2:4 (1 cement: 2 coarse sand: 4 graded stone aggregate 6 mm nominal size) as per direction of Engineer and finished smooth:				
a)	Granite stone of approved shade.	m ²	2		
11	Providing and fixing wash basin with C.I. brackets, 15 mm C.P. brass pillar taps, 32 mm C.P. brass waste of standard pattern, including painting of fittings and brackets, cutting and making good the walls wherever required :				
a)	White vitreous China flat back wash basin size 550 x 400 mm with single 15 mm C.P. brass pillar tap.	No.	1		
12	Providing and fixing PTMT Bottle Trap for Wash basin, sink & Urinals.				
	Bottle trap 31 mm single piece moulded with height of 270 mm, effective length of tail pipe 260 mm from the centre of the waste coupling 77 mm breadth with 25 mm minimum water seal, weighing not less than 260 gms.	No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
13	Providing and fixing mirror of superior glass (of approved quality) and of required shape and size with plastic moulded frame of approved make and shade with 6 mm thick hard board backing :				
a)	Rectangular shape 1500 x 450 mm	m ²	1		
14	Providing and fixing toilet paper holder				
a)	C.P. brass	No.	1		
15	Providing and fixing PTMT liquid soap container 109 mm wide, 125 mm high and 112 mm distance from wall of standard shape with bracket of the same materials with snap fittings of approved quality and colour, weighing not less than 105 gms.	No.	1		
16	Providing and fixing white / off-white color European type water closet with concealed 'P' or 'S' trap, automatic flushing cistern & fittings Standard size C.P. bolts, nuts, C.I. chair or other hanging / fixing arrangements with multiconnector to mains, solid plastic seat with lid, C.P. brass hinges and rubber buffers:				
a)	Wall mounted sanitary porcelain W.C and activating plate	No.	1		
17	Providing and fixing C.P. brass abluion health faucet assembly with 1.2 m long braided PVC hose with mounting bracket fixed on wall complete.	No.	1		
18	Providing and fixing white color urinal with manually flushing cistern & fittings Standard size C.P. brass flush pipe, spreaders with unions & clamps(all in C.P.brass) with waste fitting, outlet grating and other couplings in C.P. brass including painting and fitting etc.				
a)	White sanitary porcelain Urinal	No.	1		
19	Providing and fixing 15 mm dia C.P. swan neck sink Mixer	No.	1		
20	Providing and fixing junction trap approved quality and with all fittings complete.	No.	2		
21	Providing and fixing hand dryer with approved quality and with all fittings complete.	No.	1		
22	Providing and fixing C.P. brass long body bib cock of approved quality conforming to IS standards and weighing not less than 690 gms. 15 mm nominal bore	No.	1		
23	Providing and fixing SS Coat Hanger	No.	2		
TOTAL FOR ENERGY CENTR ROOM - PLUMBING & SANITARY WORKS (Carried Forward to Summary of Energy Centre Room)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
C	ELECTRICAL WORKS				
E 01	SWITCHGEAR, DG SET & LV MAIN SWITCHBOARDS				
1	LV MAIN SWITCHBOARDS, SUB-MAIN SWITCHBOARDS AND LOCAL ELECTRICAL PANELS, SWITCH GEAR, DG SETS				
1.01	Supply, installation, testing and commissioning of front operated, front access Non Essential Switch Board / Panel in Buildings complete with following items i.e. Incomer, Metering, Bus Bars, Outgoing etc. as per drawings conforming to Standards specified in Relevant specifications and as required:				
(c)	Copper Armoured cable at Energy Centre Building as per Drawing AR-4304 Incomer 1600 Amps, 4 Pole, 50 KA ACB. - 1 No. LED indication lamp for ON, OFF, TRIP LED phase indication lamp for R-Y-B. Metering 1 No Digital Integrated Protection Meter with RS 485 Port and 2 DO. 3 Nos PTs with fuses. 3 Nos. CTs 1600 / 800 / 5 / 5 A, 10 VA. Bus Bars 2000 Amps with symmetrical fault level of 50 KA. Outgoing a) 400A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 2 Nos. b) 200 / 200A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 2 Nos. c) 250 A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 1 No. d) 100A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 1 No. e) 100 / 60 A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 2 No. f) 100 / 60 A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 1 No. g) 600 A, 50 KA, 4P ACB having Electronic Trip Unit with protection against Overload and Short Circuit complete with LED indication lamps for RYB phases, ON, OFF, TRIP and DIPM with RS 485 Port and 2 DO, CT's, PT's etc. as per drawing. - 1 No. h) 300 / 300 A, 50 KA, 4P ACB having Electronic Trip Unit with protection against Overload and Short Circuit complete with LED indication lamps for RYB phases, ON, OFF, TRIP and DIPM with RS 485 Port and 2 DO, CT's, PT's etc. as per drawing. - 1 No.	No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
1.02	<p>Brought Forward</p> <p>Supply, installation, testing and commissioning of front operated, front access Essential Switch Board / Panel in Buildings complete with following items i.e. Incomer, Metering, Bus Bars, Outgoing etc. as per drawings conforming to Standards specified in Relevant specifications and as required:</p> <p>Copper Armoured cable at Ground Floor of Energy Centre Building as per Drawing AR-4304</p> <p>Incomer 600 Amps, 4 Pole, 50 KA ACB. - 1 No. LED indication lamp for ON, OFF, TRIP LED phase indication lamp for R-Y-B.</p> <p>Metering 1 No Digital Integrated Protection Meter with RS 485 Port and 2 DO. 3 Nos PTs with fuses. 3 Nos. CTs 600 / 300 / 5 / 5 A, 10 VA.</p> <p>Bus Bars 800 Amps with symmetrical fault level of 50 KA.</p> <p>Outgoing a) 200A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 1 No. b) 200 / 160A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 2 Nos. c) 200 / 140A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 1 No. d) 100A, 50 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit - 2 Nos. e) 100 / 100 A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. - 1 No. f) 100 / 60A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. - 1 No. f) 100 / 60A, 25 KA, 2P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. - 1 No. g) 100 / 30A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. - 1 No.</p> <p>HT Panels</p> <p>Supply, Installation, Testing & Commissioning of 11 kV, SF-6 switch board panel complete with all accessories, interconnection, earthing etc. and DIPM with RS 485 Port and 2 DO, as per drawings and as specified comprising of VCBs of following ampere rating and CT ratio: a) Incoming : 630 Amps SF-6 with CT ratio 100/50/5/5 Amps with metering and protection. - 1 no. b) Outgoing : 630 Amps VCB with CT ratio 100/50/5/5 Amps with metering and protection. - 1 nos.</p>	No.	1		
1.06	<p>HT Panels</p> <p>Supply, Installation, Testing & Commissioning of 11 kV, SF-6 switch board panel complete with all accessories, interconnection, earthing etc. and DIPM with RS 485 Port and 2 DO, as per drawings and as specified comprising of VCBs of following ampere rating and CT ratio: a) Incoming : 630 Amps SF-6 with CT ratio 100/50/5/5 Amps with metering and protection. - 1 no. b) Outgoing : 630 Amps VCB with CT ratio 100/50/5/5 Amps with metering and protection. - 1 nos.</p>	No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
1.07	Transformer Supply, Installation, Testing & Commissioning of 800 KVA, 11KV/415V Power Transformer c/w other standard accessories etc. all as required and as specified.	No.	1		
1.08	DG Set Supply, installation, testing and commissioning of Diesel Engine operated Electric Generating Set of 400 KVA capacity complete with ATS and / AMF Panel, MS class-C exhaust pipe with accessories and insulation, Battery Charger, concrete foundation etc. all conforming to IEC / BS standard, as per specifications and as required.	No.	1		
1.09	Supply, installation, testing and commissioning of front operated, front access Power Factor Correction Panel of 250KVAR (PFC switchboard / panel) complete with following items i.e. Incomer, Metering, Bus Bars, Outgoing etc. as per drawing AR-4304 conforming to Standards specified in relevant specifications and as required: INCOMER 400 Amps, 4 Pole, 50 KA MCCB. - 1 No. LED indication lamp for ON, OFF, TRIP LED phase indication lamp for R-Y-B. 8 Step APFCR relay. Metering 1 No Digital Integrated Meter with RS 485 Port and 2 DO. 3 Nos PTs with fuses. 3 Nos. CTs 400 / 5 A, 10 VA. BUS-BARS 600 Amps with symmetrical fault level of 50 KA. OUTGOINGS a) 6 Nos. feeders as per the following- i) 4 Nos. 100A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. ii) 2 Nos. 63A, 35 KA, 4P MCCB having Electronic Trip Unit with protection against Overload and Short Circuit. b) 4 No. 100A, 3ph, 415 volts capacitor duty contactors with 3 main contacts and 2 NO+2NC ancillary contacts. c) 2 No. 50A, 3ph, 415 volts capacitor duty contactors with 3 main contacts and 2 NO+2NC ancillary contacts. d) Each outgoing feeder switch gear comprising 2 Nos Push Button for ON & OFF. e) 4 No. 50 KVAR, 3 - phase, 415V, hermetically sealed metalized polypropylene capacitor (heavy-duty) with 7% harmonic D-tuned filters. f) 2 No. 25 KVAR, 3 - phase, 415V, hermetically sealed metalized polypropylene capacitor (heavy-duty) with 7% harmonic D-tuned filters.	No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
1.10	Allow provisional sum to cover service connection charges from TANESCO for the Airport.	Provisional Sum	1		
2	CABLES, CABLE TRAYS, STEELWORK & BUS DUCT				
2.01	Supply and laying in duct / ground / pipe etc at the site of work, 1.1 KV grade, Copper Conductor, XLPE Insulated, FRLS (Fire Retardant Low Smoke), armoured cables conforming to BS 6724, BS 7655 and Technical Specifications of the following sizes complete with cable end terminations with double compression gland as specified and as required:				
a)	4 x 16 Sq.mm	m	625		
b)	4 x 10 Sq.mm	m	310		
d)	4 x 25 Sq.mm	m	310		
j)	1 x 400 Sq.mm	m	550		
k)	4 x 240 Sq.mm	m	15		
l)	4 x 185 Sq.mm	m	100		
m)	4 x 120 Sq.mm	m	650		
n)	4 x 95 Sq.mm	m	250		
o)	4 x 70 Sq.mm	m	20		
p)	4 x 50 Sq.mm	m	80		
q)	3 x 10 Sq.mm	m	20		
r)	4 x 6 Sq.mm	m	150		
2.02	Supply and laying in cable duct at the site of work 11 KV grade, Copper Conductor, XLPE Insulated, armoured cables conforming to BS Standards and Technical Specifications of 3x70 sq. mm. sizes complete with out door cable end terminations with heat shrinkable jointing kit with all accessories, marking tape, cover bend, route markers etc. as specified and as required.	m	55		
2.03	Supply and installation of Prefabricated perforated GI (Galvanized Iron) cable trays made of GI sheets continuously connected including bends, reducers etc. as required complete at site of work.				
b)	300 mm wide x 50 mm deep x 1.6mm thick	m	25		
2.04	Supply and installation of GI steel work for suspension / supporting cable trays complete with fasteners and masonry works as required.	kg	10		
2.05	Supply and laying of following dia DWC HDPE (Double Wall Corrugated High-density polyethylene) pipe in position of for crossing of cables under the track between Energy Centre and Terminal Building ground floor switch room, complete with manholes including sealing of ends with water proof sealant.				
ii)	100 mm dia	m	600		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
3	WIRING & ACCESSORIES				
3.01	Supply, Installation, Testing and Commissioning of conduiting & wiring for following Light Point with 1.5 sq. mm single core, copper FRLS (Fire retardant low smoke) wires along with 1.5 sq. mm copper earth wire including supply & fixing suitable size MS electro galvanised with modular type cover plate, 13 A switch, connections, earthing etc. as required.				
a)	From DB (5/10A SP MCB) direct to or to switchboard & switch to first point (light / exhaust fan etc.)	No.	17		
c)	From first point to subsequent light / Exhaust Fan etc.	No.	42		
3.02	Supply, Installation, Testing and Commissioning of conduiting & wiring of following Power Point with 2.5 sq. mm single core, copper FRLS (Fire retardant low smoke) wires along with 2.5 sq. mm earth copper wire including supply & fixing suitable size MS electro galvanised with modular type cover plate, 13 A shrouded socket outlet (shuttered) with 13 A switch including connections, earthing, testing & commissioning etc. Complete, as required.				
a)	From DB (20 / 30A SP MCB) to first power point.	No.	4		
b)	From first power point to subsequent power point.	No.	5		
3.03	Supply, Installation, Testing and Commissioning of conduiting & wiring for the power point from DB with 4 sq. mm single core, copper FRLS (Fire retardant low smoke) wires along with 4 sq. mm earth copper wire including, including supply & fixing of 20 A, 3 pin shuttered type socket outlet, indication lamp, MCB in GI Box with cover etc. as required.	No.	3		
3.04	Supplying & fixing of rectangular uPVC Cable trunking of following sizes including pull boxes as required at site complete with cover having locking arrangement, earthing strips including at joints etc. as required.				
b)	100 mm (Depth) x 100 mm (Width) x 1.6 mm (Thick)	m	25		
c)	50 mm (Depth) x 50 mm (Width) x 1.6 mm (Thick)	m	20		
3.06	Supply and installation of following sizes of GI conduit in surface / recess with junction boxes, pull box, saddles including cutting, chasing and refilling etc. complete as required.				
a)	25mm dia conduit	m	10		
b)	32mm dia conduit	m	25		
3.08	LIGHTING & POWER DISTRIBUTION BOARDS				
f)	Supply, installation, testing & commissioning of 14 way SPN (Single Pole and Neutral) Light & Power DB's equipped with the following - Incomer - 1 No. 63 A, 2 Pole MCB and RCCB (30 mA Sensitivity) Outgoing - 14 Nos. of 5/20/30A SP MCB	No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

Sl.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
4	INDOOR LIGHTING				
4.01	Supply, installation, testing and commissioning of following LED light fixtures or Equivalent as per approved list and as per drawing and as required.				
a)	HAVELLS SYLVANIA 0047460 Panel LED 2600 NW, 34W.	No.	12		
d)	HAVELLS SYLVANIA 0045124 BATTEN LED 24W 1200 840 IP67 - UK (1.000)	No.	17		
g)	HAVELLS SYLVANIA 0047883 Syl-proof 44W, 2x36 4000K	No.	24		
4.02	Supply, installation, testing and commissioning of 230 mm sweep, 700 CFM and 1400 RPM exhaust fan (Similar to Havells make Ventilator DS or equivalent) in the existing opening with mounting brackets including making holes of suitable size etc. complete as required.	No.	6		
5	PROTECTIVE, CLEAN EARTH SYSTEM				
5.01	Supply and laying of Copper strip in pipes / surface / wall / trays etc. with spacers and saddles etc. as specified and as required.				
(b)	32mm x 6mm Strip	m	100		
(c)	40mm x 6mm Strip	m	40		
5.02	Supply and laying of unarmoured, stranded copper conductor, FRLS, green coloured cable on wall / cable tray as per BS 7211 and for earthing complete with copper lugs at both ends.				
(a)	1 x 16 sq. mm	m	25		
5.03	Supply and installation of earthing station with copper plate earth electrode as specified and as required.	m	12		
5.04	Supply and laying of 50 mm dia DWC HDPE (Double Wall Corrugated High-density polyethylene) pipe in position for crossing of cables under the track from switch room to earth station, including sealing of ends with water proof sealant.	m	140		
7	LIGHTNING PROTECTION SYSTEM				
7.01	Supply, Installation, Testing & Commissioning of Tercel Model Tz20, Protection Radius 37 meters in Level 1 and upto 58 meters in Level III, Gain in Triggering Time 20µ Early Streamer Emission (ESE) Lightning Conductor with collect ambient energy through a lower series of electrodes. Timing of the streamer emission controlled with an electronic device that detects the lightning and triggers a streamer. Test meter must be available as per drawing.				
(b)		No.	1		
Total : Items on this page (Carried Forward)					

BILL OF QUANTITIES

**REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
ENERGY CENTRE ROOM**

SI.No.	Item Description	Unit	Quantity	Rate	Amount
	Brought Forward				
7.02	Supply & Installation of 5 meter elevation Pole of 50mm dia complete with reducer at the top to fix the unit along with Base plate, guying kit, clamps and other hardware and fittings as required.	No.	1		
7.03	Supply and laying of 70 sq. mm copper flexible wire for down conductor including all accessories from air terminal to the earth pit.	m	50		
7.04	Supply & Installation of transient event counter as required.	No.	1		
7.05	Supply and installation of Maintenance free earth pit using 3 nos. of 5/8" dia. Copper-bonded (250 microns) Earthing Electrode of 3 mts. long and shall be interconnected with copper bonded flanges (03 Nos.), bi-metallic u- clamp (01 No.) for taking the earth connection, Earth enhancing compound 50 Kgs and inspection chamber including excavation and refilling etc as required.	No.	2		
7.06	Supply and installation of Test Clamp to connect the down conductor to the earth termination and disconnect the down conductor from the earth termination.	No.	2		
7.07	Supply and installation of Desk top Computer - 6th Generation Intel core i7 with graphic 530 (3.4 Ghz upto 4 Ghz, 8 MB cache, 4 cores), 4 GB DDR3 RAM, 1TB HDD, 2 GB DDR3 Graphic Card, Super multi DVD Burner, 4 USB PORT with 21" LED Monitor, 101 Keyboard and Mouse.	No.	1		
7.08	Supply, installation and commissioning Load Management Software including Training.	No.	1		
7.09	Supply and installation of 1000 VA On line UPS with half an hour backup.	No.	1		
7.10	Supply and installation EInet Pro 25 for communicating with Digital Meters.	No.	1		
7.11	Supply and installation Ethernet Gateway	No.	5		
7.12	Supply and installation Lan Switch having 8 Port	No.	1		
7.13	Supply and laying CAT6 Cable in cable tray / pipe duct / conduit etc. as required.	m	650		
TOTAL FOR ENERGY CENTRE ROOM - ELECTRICAL WORKS (Carried Forward to Summary of Energy Centre Room)					

Appendix 3: Revised page 3

**BILL OF QUANTITIES
REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
PRELIMINARIES AND GENERAL**

Item	Description	Unit	Quantity	Rate (TShs)	Amount (TShs)
	General Requirements And Provisions				
1	Relocation of Services:				
(a)	Arrange and pay for removal and / or alteration to services provided by agencies for Electricity Supply, Water Supply or Telecommunication Services	Provisional Sum			3,825,000
(b)	Allow for the Contractor's Overheads and Profits as a percentage of sub item 1 (a).	%			
(c)	Allow for demolishing existing structures/buildings	Provisional Sum			100,000,000.00
(d)	Allow for the Contractor's Overheads and Profits as a percentage of sub item 1 (c).	%			
2	Contractors Obligations: [as the 'Insuring Party' as that is defined in Sub-Clause 4.0 of the General Conditions.]				
(a)	Sureties	LS			
(b)	Insurance of Works, Plant, Materials and Contractor's document	LS			
(c)	Insurance of Contractor's Equipment	LS			
(d)	Insurance against Injury to persons and damage to the property	LS			
(e)	Insurance of Contractors and Employer's Employees personnel including the Engineer	LS			
	Engineer's Accommodation And Attendance Upon Engineer And His Site Personnel				
3	Offices for the Engineer: <i>(Ownership to revert to the Employer)</i>				
(a)	Provide fully furnished and equipped offices for the Engineer	Lump Sum			
Total : Items on this page (Carried Forward)					

Appendix 4: Revised page 25

BILL OF QUANTITIES

REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT
NAVIGATIONAL AIDS

Item No	Description	Unit	Quantity	Rate (Tshs)	Amount (Tshs)
	Brought Forward				
6.3	Signalling Lamp	No.	2		
7	Sub-Head 7 : Optic Fibre Cable (OFC)				
7.1	Supply of optic fibre cable of required length for indications for MOS at remote site. Approx. length will be 1 km. Required interfaces & terminations, including commissioning of OFC.	No.	1		
7.2	Supply installation and commissioning of DVOR,DME,Localiser,and other accessories as approved by TCCA	PS			2,000,000,000
7.3	Allow for the Contractor's Overheads and Profits as a percentage of sub item 7.2.	%			
TOTAL : NAVIGATIONAL AIDS (Carried Forward to Table 3 : Grand Summary)					

Appendix 5: Revised Table 2: Summary of Specified Provisional Sums

BILL OF QUANTITIES

REHABILITATION AND UPGRADING WORK AT SONGEA AIRPORT

TABLE 2 : SUMMARY OF SPECIFIED PROVISIONAL SUMS

Item No	Description	Amount (TShs)
(I)	Preliminaries and General	
1	Relocation of Services:	
(a)	Arrange and pay for removal and / or alteration to services provided by agencies for Electricity Supply, Water Supply or Telecommunication Services works	3,825,000
3	Engineer's accommodation and Attendance upon Engineer and his site personnel	
17	Environmental Protection And Waste Disposal	
(a)	Environmental & Social Mitigation & Monitoring Works to be carried out in accordance with approved ESIA report	132,000,000
(II)	Civil Works	
(i)	Airside Civil Works	
	BILL -5 : TOLERANCES, TESTING AND QUALITY CONTROL	
	Testing Of Materials And Workmanship	
5.01	Special tests requested by the Engineer (state material and test method):	11,000,000
7.2	Supply installation and commissioning of DVOR,DME,Localiser,and other accessories as approved by TCCA	2,000,000,000
	TOTAL OF SPECIFIED PROVISIONAL SUMS (Carried Forward to Table 3 : Grand Summary)	2,146,825,000

Appendix 5: revised Grand Summary of Bill of Quantities (BoQ)