

**PREAMBLES****BILLS OF QUANTITIES****1 PREAMBLES**

These bills of quantities form part of the Contract Documents and are to be read in conjunction with the General Conditions, the Specifications and the Drawings

The rates and prices to be inserted in the bills of quantities shall be fully inclusive value of the works described in the specifications and shown on the drawings, including all expenses, costs and profits which may be required in and for the supply, delivery and construction of the works together with all general risks, liabilities and obligations set forth or implied in the documents on which the tender is to be based.

A rate and/or price is to be entered against each item in the bills of quantities which is being offered, whether quantities are stated or not. Items against which no price is entered will be considered as covered by the other rates or prices in the bills of quantities.

All items will be measured net or as described in the specification, and no allowance will be made for waste.

The quantities set out in the bills of quantities are estimated quantities of work and they are not to be taken as the actual and final quantities of the works to be executed by the contractor in fulfilment of his obligations under the contract.

In the event of any arithmetical errors occurring in the totals in these bills of quantities such totals will be corrected on the assumption that the rates quoted are correct.

Where special risks, liabilities and obligations cannot be dealt with as above, then the price thereof is to be separately stated in the Preliminary and General Bill.

All rates and prices entered in the Bills of Quantities shall exclude value added tax(VAT). The appropriate VAT shall be added to the "TOTAL TENDER PRICE" as summarised in the "SUMMARY".

2 GENERAL

Quantities reflected in the bills of quantities are provisional only and are subject to remeasurement on completion of part or sections of the works carried out to collections on an ongoing basis to the final account on completion of the works.

Billed quantities shall not be used for ordering or purchasing.

Rates shall include for:

- a) The supply and delivery to site, storing, scaffolding, hoisting and fixing thereof complete
- b) Tools and appliances required for proper installation
- c) Required fixings whether billed or otherwise
- d) All wastage, off-cuts, drilling, welding, etc.
- e) Removal from site of redundant, surplus items, rubbish, etc.
- f) Complete working installation supplied, installed and commissioned



3 MEASUREMENTS DEFINITIONS FOR ELECTRICAL INSTALLATION

Generally notwithstanding any general or local custom the method and units of measurement shall be those reflected in the bills of quantities or as defined in the sections below:

CABLES

Cables installed on cable racks, trays, surface to brickwork or concrete shall include for "K" clamps, cable ties, saddles, etc., where applicable.

CABLE, EARTH WIRE AND SINGLE CORE CONDUCTOR TERMINATIONS

Terminations will be measured as a complete termination in accordance with the electrical specifications including drilling, tapes, compounds, lugs, identification markings, termination kits, nuts, bolts, washers, etc. An additional length of conductor has been measured per termination as follows:

LT cable with associated earth wire - Distribution boards, kiosk, control panels	1000mm
- Transformers, electrical motors	500mm
- Light fittings	300mm
- Switches, socket outlets, isolators, push buttons, junction boxes, any other appliances	150mm

The contractor shall allow in his rate for any additional lengths required for his own purposes.

CABLE RACK/LADDERS, TRUNKING, POWER SKIRTING AND UNDERFLOOR DUCTING

The above items are measured from centre point to centre point and shall include all fixings, drilling, jointing, etc.. Bends, tees, accessories, etc., are to be regarded as measured "extra over".

CONDUITS AND ACCESSORIES

All rates for conduit are to include for couplings, cutting, threading, bending, locknuts, bushes, manufactured or prefabricated bends, necessary fixing materials, etc.

Where items are measured as cast into concrete the tenderer must allow in his rates for closing ends during construction to prevent the ingress of concrete, etc.

Draw trays and draw boxes exceeding 100 x 100 x 50mm deep are measured separately.

All conduit boxes and draw trays are measured as one item regardless the number of conduit entries.

DRILLING/PUNCHING OF HOLES

All drilling/punching of holes to allow for cable glands or conduit entries etc., shall be included in the rates.

**BILL NO.1 - SITE ELECTRICAL RETICULATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	SITE ELECTRICAL RETICULATION					
	Supply, delivery, installation, testing, commissioning and handing over in working condition and maintenance during guarantee period.					
	LV RETICULATION					
1.1	DISTRIBUTION BOARDS AND KIOSK					
	KIOSK A - Main LV Distribution					
1.1.1	Outdoor Type ESKOM weatherproofed floor standing board, complete Normal and Emergency Power as specified, with all equipment and as indicated on schematic diagram No. ??	No	1			R
1.1.2	Main KIOSK A Earthing - Earth Matt - 70mm ² , BCEW	Sum	1			R
1.1.3	KIOSK B - SUB- MAIN LV Distribution - Residential					
	Ground Mounted Kiosk complete with Weatherproofed enclosure as specified, with all equipment and as indicated on schematic diagram No. ??	No	1			R
1.1.4	Main KIOSK B Earthing - Earth Matt - 70mm ² , BCEW	Sum	1			R
1.2	CABLES					
	600/1000V PVC/PVC/SWA/PVC copper/Alu cable installed in ground and sleeves (excavation and sleeves measured elsewhere)					
1.2.1						
1.2.1.1	120mm ² 4core	m	60			R -
1.2.1.2	95mm ² 4core	m	50			R -
1.2.1.3	70mm ² 4core	m	31			R -
1.2.1.4	50mm ² 4core	m	10			R -
1.2.1.5	35mm ² 4core	m	59			R -
1.2.1.6	25mm ² 4core	m	88			R -
1.2.1.7	16mm ² 4core	m	88			R -
1.2.1.8	10mm ² 4core	m	121			R -
1.2.1.9	6mm ² 4core	m	160			R -
1.2.1.10	4mm ² 4core	m	47			R -
1.2.1.11	16mm ² 3core	m	136			R -
1.2.1.12	10mm ² 3core	m	37			R -
1.2.1.13	4mm ² Twin + Earth (Car Port Lights)	m	87			R -
1.2.1.14	6mm ² Twin + Earth (Street Pole Lights)	m	348			R -
1.2.1.15	150mm ² 4core Al ECC	m	100			R -
1.2.2	Cable terminations: -make off above cable, complete with glands and shrouds, including connection of cable to equipment terminals					
1.2.2.1	120mm ² 4core	no	4			R
1.2.2.2	95mm ² 4core	no	8			R
1.2.2.3	70mm ² 4core	no	2			R
1.2.2.4	50mm ² 4core	no	4			R
1.2.2.5	35mm ² 4core	no	8			R
1.2.2.6	25mm ² 4core	no	2			R
1.2.2.7	16mm ² 4core	no	6			R
1.2.2.8	10mm ² 4core	no	4			R
1.2.2.9	6mm ² 4core	no	4			R
1.2.2.10	4mm ² 4core	no	2			R
1.2.2.11	16mm ² 3core	no	4			R
1.2.2.12	10mm ² 3core	no	4			R
1.2.2.13	150mm ² 4core Al ECC	m	4			R
1.2.3	Black Insulated copper earth conductor strapped to above cable, complete with termination					
1.2.3.1	70mm ²	m	31			R -
1.2.3.2	50mm ²	m	10			R -
1.2.3.3	35mm ²	m	59			R -
1.2.3.4	25mm ²	m	88			R -
1.2.3.5	16mm ²	m	369			R -
1.2.3.6	10mm ²	m	47			R -
1.2.3.7	6mm ²	m	136			R -
1.2.3.8	4mm ²	m	37			R -
1.2.3.9	4mm ²	m	48			R -
1.2.3.10	2,5mm ²	m	417			R -
	carried forward					R -

**BILL NO.1 - SITE ELECTRICAL RETICULATION**

Do not add VAT to the individual items. Add VAT in the final summary.
The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	SITE ELECTRICAL RETICULATION					
	brought forward					R -
1.2.4	Bare stranded copper earth conductor strapped to above cable, complete with termination					
1.2.4.1	120mm ²	m	45			R -
1.2.4.2	95mm ²	m	72			R -
1.2.4.3	70mm ²	m	114			R -
1.2.4.4	50mm ²	m	139			R -
1.2.4.5	25mm ²	m	58			R -
1.2.4.6	16mm ²	m	197			R -
1.2.4.7	10mm ²	m	452			R -
1.2.4.8	6mm ²	m	921			R -
1.2.4.9	4mm ²	m	455			R -
1.2.4.10	2.5mm ²	m	327			R -
1.3	SECURITY AND AREA LIGHTING					
	Supply, store, protect, erect, fix, including fixings, lamps, connectors, etc. the following light fittings, including connections, all as specified					
1.3.1	Type S1 - Post-Top Type luminaire c/w 38W LED light on a 5m steel pole Wiring /Earth wire / Terminal Blocks & Lugs, similar or equal to Reagent Lighting - Argo Post Top	no	12			R -
1.3.2	5m Stepped Galvanised Steel pole with equipment and internal wiring	no	11			R -
1.3.3	Excavation, back-filling and compacting of holes for poles	no	11			R -
1.3.4	Type S2 - Similar to S1 but with Blue Police Theme light and wall mounted	No	1			R -
1.3.5	90 degree Galvanised steel bracket for wall mounting the Post top luminaire	No	2			R -
1.3.6	Wall- Mounted Bulkhead type light fitting - Type W1	no	15			R -
1.4	DISTRIBUTION KIOSKS					
	LIGHTING KIOSK					
1.4.1	Supply and install weatherproof distribution kiosk for Security Lights, complete as specified, with all equipment as listed in board schedule	no	1			R -
1.5	TELEPHONE AND DATA					
	TELEPHONE DISTRIBUTION BOARD					
1.5.1	1000mm x 800mm x 150mm with door and wood backing	no	1			R -
1.5.2	600mm x 600mm x 150mm with door and wood backing	no	3			R -
1.5.3	1.6mm ² galvanised draw wire	m	1000			R -
1.6	CABLE SLEEVES					
1.6.1	110mm Black Kabflex Cable sleeves	m	635			R -
1.6.2	50mm Black Kabflex Cable sleeves	m	450			R -
1.7	MANHOLES					
1.7.1	1000mm x 1000mm x 800mm Deep built manhole with heavy duty cast iron cover	no	13			R -
1.8	TRENCHING					
	Excavations for new cable trenches, foundations, manholes, joint holes etc in soil (up to 1.5m deep)					
1.8.1	Earth	m ³	385			R -
1.8.2	Soft rock	m ³	193			R -
1.8.3	Hard rock	m ³	154			R -
1.8.4	Excavation to uncover cables for recovery by hand over existing cables	m ³	25			R -
1.9	SOIL BEDDING AND COVER					
1.9.1	Import soil for the replacement of high clay content soil removed from excavations	m ³	77			R -
1.9.2	Provide cement to enhance soil mixture for the backfilling of trenches under road surfaces, walkways and paved areas, in the ratio of 1:6	m ³	154			R -
1.10	CABLE MARKERS					
1.10.1	PVC warning marking tape	m	20			R -
1.10.2	Concrete route markers	no	30			R -
1.10.3	Precast concrete slabs	m	80			R -
1.11	EARTHING AND BONDING					
		sum	1			R -
1.12	TEST AND COMMISSION					
1.12.1	Test and commission the complete LV reticulation and issue the necessary test certificates	sum	1			R -
TOTAL BILL NO. 1 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						R -
BILL NO. 1 TOTAL EXCL. VAT						R -

**BILL NO.2: MAIN BUILDING - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	MAIN BUILDING					
2.1	MAIN LV BOARD IN MAIN BUILDING					
2.1.1	Supply and install Main LT Board, complete as specified, with all equipment as indicated on schematic diagram	no	1			R -
2.2	CONDUIT					
2.2.1	PVC conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
2.2.1.1	20mm dia	m	4931			R -
2.2.1.2	25mm dia	m	100			R -
2.2.1.3	32mm dia	m	50			R -
2.2.2	Galvanised conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
2.2.2.1	20mm dia	m	320			R -
2.2.2.2	25mm dia	m	250			R -
2.2.2.3	32mm dia	m	80			R -
2.3	CONDUIT BOXES					
2.3.1	Round conduit box	no	355			R -
2.3.2	Deep round conduit box	no	85			R -
2.3.3	100 x 50 x 50mm wall box	no	36			R -
2.3.4	100 x 100 x 50mm wall box	no	76			R -
2.4	WIRING					
2.4.1	PVC insulated copper conductors drawn into wireways, including waste					
2.4.1.1	2.5mm ² (Lights)	m	2558			R -
2.4.1.2	4mm ² (Power)	m	7303			R -
2.4.2	Bare stranded copper earth wire into wireways, including waste					
2.4.2.1	2.5mm ²	m	4931			R -
2.4.3	Insulated copper earth wire into wireways, including waste					
2.4.3.1	2.5mm ²	m	4931			R -
2.5	WIRING CHANNEL					
2.5.1	OL9000	m	210			R -
2.5.2	OL 9000 Bend	no	4			R -
2.5.3	OL 9000 Cross	no	1			R -
2.5.4	OL9000 Ends	no	9			R -
2.5.5	OL9000 Tee	no	15			R -
2.5.6	OL8300	m	225			R -
2.5.7	OL 8300 Bend	no	4			R -
2.5.8	OL 8300 Cross	no	1			R -
2.5.9	OL8300 Ends	no	9			R -
2.5.10	OL8300 Tee	no	13			R -
	carried forward					R -

**BILL NO.2: MAIN BUILDING - ELECTRICAL INSTALLATION**

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The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	MAIN BUILDING					
	brought forward					R -
2.6	CABLE TRAYS					
	The rates for wiring channel and cable tray shall include the necessary supports, hangers, fixing material, etc.					
2.6.1	200 x 50 mm wire mesh	m	184			R -
2.6.2	Cross	no	1			R -
2.6.3	Bend	no	6			R -
2.6.4	End piece	no	8			R -
2.6.5	Tee piece	no	10			R -
2.7	POWERSKIRTING					
	The rates for powerskirting shall include for splices, joining, Two compartment, 2 cover, as specified, complete with covers, surface mounted to wall	m	269			R -
2.7.1	Bend	no	32			R -
2.7.2	End caps	no	60			R -
2.8	ACCESSORIES					
	Switches, socket outlets, isolators, etc., complete with cover fixed					
2.8.1	16A, 1lever 1-way switch	no	6			R -
2.8.2	16A, 2lever 1-way switch	no	3			R -
2.8.3	16A, 3lever 1-way switch	no	2			R -
2.8.4	15A Photocell Day/Night switch complete	no	3			R -
2.8.5	6A socket outlet in deep round box (box measured elsewhere)	no	238			R -
2.8.6	16A, 3-pin Single switched socket outlet	no	15			R -
2.8.7	16A, 3-pin Double switched socket outlet	no	3			R -
2.8.8	Combination socket outlet c/w 16A 3-pin switched socket (164-1) and 2x16A 3-pin switched Euro Slim socket (164-2)	no	5			R -
2.8.9	Combination socket outlet c/w 16A 3-pin switched socket (164-1) and 2x16A 3-pin switched Euro Slim socket (164-2) in power skirting	no	1			R -
2.8.10	16A, 3-pin Normal switched socket outlet in power skirting	no	139			R -
2.8.11	16A, 3-pin Emergency switched socket outlet in power skirting	no	73			R -
2.8.12	Single 13A, 3-pin Euro socket outlet in power skirting	no	69			R -
2.8.13	16A, 3-pin switched socket outlet, WP	no	4			R -
2.8.14	Floor Pedestal with 2 x 16A, 3-pin Combination Outlet, 1 x UPS 3-pin Outlet and 2 x Data	no	2			R -
2.8.15	Data outlet	no	72			R -
2.8.16	Telephone	no	70			R -
2.8.17	PIR Motion Detector, 360 degrees Light	no	13			R -
2.8.18	PIR Motion Detector, 360 degrees Light + AC	no	49			R -
2.8.19	16A, 3-pin Double switched socket outlet Weatherproof	no	4			R -
2.8.20	20A DP isolator	no	23			R -
2.8.21	20A DP isolator, WP	no	39			R -
2.8.22	30A DP isolator	no	3			R -
2.8.23	30A TP isolator, WP	no	3			R -
	carried forward					R -

**BILL NO.2: MAIN BUILDING - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	MAIN BUILDING					
	brought forward					R -
2.9	LIGHT FITTINGS					
3.9.1	Type B1, Round Bulkhead Vandalism Proof	no	0			R -
2.9.2	Type D1, Recessed mounted downlight, Polycarbonate diffuser, 15W LED 3000K .	no	51			R -
2.9.3	Type D1E, Recessed mounted downlight, Polycarbonate diffuser, 15W LED 3000K with 1hr battery backup	no	24			R -
2.9.4	carbonate diffuser, 1200mm long, 36W LED Tube, 220V	no	1			R -
2.9.5	Type F4, RoughGuard LED 56W (Without Nightlight)	no	4			R -
2.9.6	Type F5, RoughGuard LED 15W (Without Nightlight)	no	1			R -
2.9.7	Type F6, Backlit LED Panel ceiling recessed - 600mm x 600mm 36W	no	40			R -
2.9.8	Type F6E, Backlit LED Panel ceiling recessed - 600mm x 600mm 36W fitted with 1hr battery backup	no	43			R -
2.9.10	Type F7, Backlit LED Panel ceiling Recessed - 1200mm x 600mm 56W	no	19			R -
2.9.11	Type F7E, Backlit LED Panel ceiling Recessed - 1200mm x 600mm 56W fitted with 1hr battery backup	no	12			R -
2.9.12	Type F8, Surface mounted 32W 4000k Vapour Proof Luminaire, 1200mm with PC diffuser.	no	5			R -
2.9.13	Type F8E, Surface mounted 32W 4000k Vapour Proof Luminaire, 1200mm with PC diffuser fitted with 1hr battery backup	no	14			R -
2.9.14	Type F9, System Linear Black Suspended 50 x 1500mm 41W	no	4			R -
2.9.15	Type F9E, System Linear Black Suspended 50 x 1500mm 41W fitted with 1hr battery backup	no	4			R -
2.9.16	Type F10, Linear Mini 50 1500mm 41w Black Suspended	no	3			R -
2.9.17	Type F10E, Linear Mini 50 1500mm 41w Black Suspended fitted with 1hr battery backup	no	3			R -
2.9.18	Type S1, LED Post 54W, complete with Spigot & Heal sink-LM 6 die cast aluminium LED Fitting with control gear, Roof-injection moulded Polypropylene UV Stabilised Acrylic, Symmetrical 4000k, IP66 Colour, Matt Silver	no	10			R -
2.9.19	sink-LM 6 die cast aluminium LED Fitting with control gear, Roof-injection moulded Polypropylene UV Stabilised Acrylic, Symmetrical 4000k, IP66 Colour, Matt Silver	no	2			R -
2.9.20	Type W1, Square Bulkhead LED 16W the luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium	no	36			R -
2.9.21	Exit light	no	7			R -
2.10	TEST AND COMMISSIONING					
2.10.1	Test and commission the complete LT reticulation and issue the necessary test certificates and certificate of compliance as per SANS 10142-1	item	1			R -
2.11	UNMEASURED ITEMS					R -
TOTAL BILL NO. 2 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						R -
BILL NO. 2 TOTAL EXCL. VAT						R -

**BILL NO.3 - HOLDING CELLS - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
3	HOLDING CELLS					
3.1	LT BOARD IN HOLDING CELL BUILDING					
3.1.1	Supply and install Holding Cell LT Board, complete as specified, with all equipment as indicated on schematic diagram	no	1			R -
3.4	CONDUIT					
3.4.1	PVC conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
3.4.1.1	20mm dia	m	969			R -
3.4.1.2	25mm dia	m	200			R -
3.4.1.3	32mm dia	m	100			R -
3.4.2	Galvanised conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
3.4.2.1	20mm dia	m	350			R -
3.4.2.2	25mm dia	m	100			R -
3.4.2.3	32mm dia	m	50			R -
3.5	CONDUIT BOXES					
3.5.1	Round conduit box	no	80			R -
3.5.2	Deep round conduit box	no	3			R -
3.5.3	100 x 50 50mm wall box	no	14			R -
3.5.4	100 x 100 x 50mm wall box	no	14			R -
3.6	WIRING					
3.6.1	PVC insulated copper conductors drawn into wireways, including waste					
3.6.2	2.5mm ² (Lights)	m	977			R -
3.6.3	4mm ² (Power)	m	564			R -
3.6.4	Bare stranded copper earth wire into wireways, including waste					
3.6.5	2.5mm ²	m	770			R -
3.6.6	Insulated copper earth wire into wireways, including waste					
3.6.7	2.5mm ²	m	770			R -
3.7	WIRING CHANNEL					
3.7.1	OL9000	m	10			R -
3.7.2	OL 9000 Cross	no	1			R -
3.7.3	OL9000 Ends	no	1			R -
3.7.4	OL9000 Tee	no	1			R -
3.8	POWERSKIRTING					
	The rates for powerskirting shall include for splices, joining, drilling, fixing, etc.					
3.8.1	Two compartment, 2 cover, as specified, complete with covers, surface mounted to wall	m	4			R -
3.8.2	Bend	no	2			R -
3.8.3	End caps	no	2			R -
3.8.4	Tee	no				R -
	carried forward					R -

**BILL NO.3 - HOLDING CELLS - ELECTRICAL INSTALLATION**

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The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
3	HOLDING CELLS					R -
	brought forward					
3.90	ACCESSORIES					
	Switches, socket outlets, isolators, etc., complete with cover fixed in outlet or extension box (box measured elsewhere)					
3.9.1	16A, 1lever 1-way switch	no	13			R -
3.9.2	16A, 3lever 1-way switch	no	1			R -
3.9.3	15A Photocell Day/Night switch complete	no	3			R -
3.9.4	6A socket outlet in deep round box (box measured elsewhere)	no	0			R -
3.9.5	16A, 3-pin Single switched socket outlet	no	4			R -
3.9.6	16A, 3-pin Double switched socket outlet	no	1			R -
3.9.7	Combination socket outlet c/w 16A 3-pin switched socket (164-1) and 2x16A 3-pin switched Euro Slim socket (164-2)	no	3			R -
3.9.8	16A, 3-pin Normal switched socket outlet in power skirting	no	2			R -
3.9.9	16A, 3-pin Emergency switched socket outlet in power skirting	no	1			R -
3.9.10	Single 13A, 3-pin Euro socket outlet in power skirting	no	1			R -
3.9.11	16A, 3-pin switched socket outlet, WP	no				R -
3.9.12	Floor Pedestal with 2 x 16A, 3-pin Combination Outlet, 1 x UPS 3-pin Outlet and 2 x Data	no				R -
3.9.13	Data outlet	no	1			R -
3.9.14	Telephone	no	1			R -
3.9.15	PIR Motion Detector, 360 degrees Light	no				R -
3.9.16	PIR Motion Detector, 360 degrees Light + AC	no				R -
3.9.17	16A, 3-pin Double switched socket outlet Weatherproof	no	5			R -
3.9.18	20A DP isolator	no	3			R -
3.9.19	20A DP isolator, WP	no	4			R -
3.9.20	60A DP isolator	no	1			R -
3.10	LIGHT FITTINGS					R -
3.10.1	Type F2, BEKA RoughGuard LED 26W (Without Nightlight)	no	20			R -
3.10.2	Type F3, BEKA RoughGuard LED 7W (With Nightlight)	no	7			R -
3.10.3	Type F4, BEKA RoughGuard LED 56W (Without Nightlight)	no	13			R -
3.10.4	Type F5, BEKA RoughGuard LED 15W (Without Nightlight)	no	23			R -
3.10.5	Type F8, Marea surface mounted 32W 4000k Vapour Proof Luminaire, 1200mm with PC diffuser.	no	1			R -
3.10.6	Type W1, Square Bulkhead LED 16W the luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium	no	16			R -
3.10.7	Exit light	no	4			R -
3.11	TEST AND COMMISSIONING					
	Test and commission the complete LT reticulation and issue the necessary test certificates and certificate of compliance as per SANS 10142-1					
3.11.1		item	1			R -
3.12	UNMEASURED ITEMS					R -
				BILL NO. 3 TOTAL EXCL. VAT		R -
				TOTAL BILL NO. 3 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY		R -

**BILL NO.4: PUMP ROOM AND SERVICES BUILDING - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.
The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
4	PUMP ROOM AND SERVICES BUILDING					
4.1	Distribution Boards					
	Supply and install LV Board, complete as specified, with all equipment as indicated on schematic diagram					
4.1.1	DB- S - Services - Cleaning and Storage Room	no	1			R
4.1.2	DB-EWP - Water Pump Room	no	1			R
4.2	CONDUIT					
	PVC conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
4.2.1						
4.2.1.1	20mm dia	m	300			R
4.2.1.2	25mm dia	m	100			R
4.2.1.3	32mm dia	m	100			R
4.2.2	Gaivanised conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
4.2.2.1	20mm dia	m	100			R
4.2.2.2	25mm dia	m	50			R
4.2.2.3	32mm dia	m	50			R
4.3	CONDUIT BOXES					
4.3.1	Round conduit box	no	4			R
4.3.2	100 x 50 50mm wall box	no	14			R
4.3.3	100 x 100 x 50mm wall box	no	10			R
4.4	WIRING					
4.4.1	PVC insulated copper conductors drawn into wireways, including waste					
4.4.1.1	2.5mm ² (Lights)	m	460			R
4.4.1.2	4mm ² (Power)	m	230			R
4.4.2	Bare stranded copper earth wire into wireways, including waste					
4.4.2.1	2.5mm ²	m	345			R
4.4.2.2	Insulated copper earth wire into wireways, including waste					
4.4.2.3	2.5mm ²	m	345			R
4.5	WIRING CHANNEL					
4.5.1	OL9000	m	10			R
4.5.2	OL 9000 Cross	no	1			R
4.5.3	OL9000 Ends	no	1			R
4.5.4	OL9000 Tee	no	1			R
4.6	POWERSKIRTING					
	The rates for powerskirting shall include for splices, joining, drilling, fixing, etc.					
4.6.1	Two compartment, 2 cover, as specified, complete with covers, surface mounted to wall	m	4			R
4.6.2	Bend	no	2			R
4.6.3	End caps	no	2			R
4.6.4	Tee	no				R
4.7	ACCESSORIES					
	Switches, socket outlets, isolators, etc., complete with cover fixed in outlet or extension box (box measured elsewhere)					
4.7.1	16A, 1lever 1-way switch	no	2			R
4.7.3	15A Photocell Day/Night switch complete	no	2			R
4.7.4	6A socket outlet in deep round box (box measured elsewhere)	no	10			R
4.7.5	16A, 3-pin Single switched socket outlet	no	4			R
	carried forward					R

**BILL NO.4: PUMP ROOM AND SERVICES BUILDING - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.
The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
4	PUMP ROOM AND SERVICES BUILDING					
	brought forward					R -
	ACCESSORIES - Continues					
4.7.6	16A, 3-pin Double switched socket outlet	no	1			R
4.7.7	Combination socket outlet c/w 16A 3-pin switched socket (164-1) and 2x16A 3-pin switched Euro Slim socket (164-2)	no	3			R
4.7.8	16A, 3-pin Normal switched socket outlet in power skirting	no	2			R
	16A, 3-pin Emergency switched socket outlet in power skirting	no	1			R
4.7.9	Single 13A, 3-pin Euro socket outlet in power skirting	no	1			R
4.7.10	16A, 3-pin switched socket outlet, WP	no				R
4.7.11	Floor Pedestal with 2 x 16A, 3-pin Combination Outlet, 1 x UPS 3-pin Outlet and 2 x Data	no				R
	Data outlet	no	1			R
4.7.12	Telephone	no	1			R
	16A, 3-pin Double switched socket outlet Weatherproof	no	5			R
4.7.15	20A DP isolator	no	2			R
4.7.16	20A DP isolator, WP	no	1			R
4.8	LIGHT FITTINGS					R
4.8.1	Type B1, Round Bulkhead Vandalism Proof	no	3			R
4.8.2	Type F8, Marea surface mounted 32W 4000k Vapour Proof Luminaire, 1200mm with PC diffuser.	no	10			R
4.8.3	Type W1, Square Bulkhead LED 16W the luminaire base and trim ring is manufactured of a high-pressure die-cast marine grade aluminium	no	10			R
4.90	UNMEASURED ITEMS					R -
4.9.1	BUILDER'S WORK					
4.9.1.1	Chase conduit in wall and make good					
4.9.1.2	20mm conduit	m	2			R
4.9.1.3	25mm conduit	m	2			R
4.9.1.3	32mm conduit	m	2			R
4.9.2	CUT HOLES IN CELING FOR RECESSED LIGHT					
4.9.2.1	60mm to 100mm dia	no	1			R
4.9.2.2	100mm to 200mm dia	no	1			R
4.9.3	DRILLING OF HOLES THROUGH CONCRETE SLAB					
4.9.3.1	50mm dia	no	1			R
4.9.3.2	100mm dia	no	1			R
4.10	EARTHING AND BONDING	sum	1			R
4.11	TEST AND COMMISSION					
4.11.1	Test and commission the complete LV reticulation and issue the necessary test certificates	sum	1			R
BILL NO. 4 TOTAL EXCL. VAT						R -
TOTAL BILL NO. 4 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						

**BILL NO.5: FIRE DETECTION SYSTEM INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a **COMPLETE** installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
5.1	FIRE DETECTION SYSTEM INSTALLATION					
	PRELIMINARY & GENERAL					
5.1.1	Clearance of Rubbish	Item	1			R -
5.1.2	Retention Interest	Item	1			R -
5.1.3	Site Establishment & Clearance	Item	1			R -
5.1.4	Scaffolding	Item	1			R -
5.1.5	Tests and Inspections	Item	1			R -
5.1.6	Preparation of Operating and Maintenance Manuals	Item	3			R -
5.1.7	As-built Drawings	Item	1			R -
5.1.8	12 Months Guarantee and Maintenance	Item	1			R -
5.1.9	Programming of the Work	Item	1			R -
5.1.10	Testing, Balancing & Commissioning	Item	1			R -
5.1.11	Equipment Submissions	Item	1			R -
5.1.12	Shop Drawings	Item	1			R -
5.1.13	Equipment Labels	Item	1			R -
5.1.14	Water & Power for commissioning If JBCC Document	Item	1			R -
5.2	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)					
5.2.1		Item	1			R -
5.2.2		Item	1			R -
5.3	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.					
5.3.1	Provisional sum for construction Changes	Prov	1			R -
5.3.2	Contractor's overhead and profit on Item 1.015	%	10			R -
	CARRIED TO BILL SUMMARY		R			R -



BILL NO.5: FIRE DETECTION SYSTEM INSTALLATION

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	FIRE DETECTION					
	Wired Fire Detection Installations					
	The Fire detection shall comply with SANS10400 and SANS 10139, for public buildings. The fire detection system shall be provided throughout the facilities (System category L1 and P) and be an addressable fire detection system.					Note
	Systems in explosive gas or dust atmosphere shall comply with SANS 60079-14 and EN 61241-17					Note
	Standby Battery supplies for any part of the system shall be capable of maintaining the system in normal operation for at least 24 h, after which there shall be sufficient capacity to operate all sounders in evacuation mode for at least 30 min.					Note
5.4	FIRE PANELS					
5.4.1	4 loop analogue control panel, 230V, EN54 approved	no	2			R -
5.4.2	ZP3AB-NET1 Network interface board	no	1			R -
5.4.3	Battery 12V 7.2 AH	no	6			R -
5.4.4	Galv conduits + accessories	m	50			R -
5.4.5	RS485 network cable	m	100			R -
5.5	Loop Devices and Equipment					
5.5.1	ZP730-2 Optical Detector	no	20			R -
5.5.2	Detector Base	no	20			R -
5.5.3	Heat Detector	no	5			R -
5.5.4	Detector Base	no	5			R -
5.5.5	Base Sounder Beacon	no	4			R -
5.5.6	Base for Base Sounder Beacon	no	4			R -
5.5.7	Horn Sounder Beacon	no	1			R -
5.5.8	Base for Horn Sounder Beacon	no	1			R -
5.5.9	Manual Call Point	no	6			R -
5.5.10	Manual Call Point Backbox	no	6			R -
5.5.11	Interface Unit to connect between HC and Main FACP	no	1			R -
5.5.12	Shutdown Relays to Other systems	no	2			R -
5.5.13	Monitoring Interface units to other systems	no	1			R -
5.5.14	Galv conduits + accessories	m	100			R -
5.5.15	2C PH30 fire alarm cable	m	300			R -
	SUB-TOTAL CARRIED FORWARD		R			R -

**BILL NO.5: FIRE DETECTION SYSTEM INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
	BROUGHT FORWARD					R -
5.6	SERVER ROOM					
	Fire Detection					
5.6.1	3 Zone Fire/Extinguishing Control Panel (EN Approved)	no				-
5.6.2	12V DC 7.5 AH Battery	no				-
5.6.3	Series 65 Optical Smoke Detector (9-33 V DC)	no				-
5.6.4	Series 65 Standard Base	no				-
5.6.5	Sonos Sounder/Beacon LED, Red, 17-60 V DC	no				-
5.6.6	Fire Bell, Red, 6" Gong, 95db, 24 V DC	no				-
5.6.7	AC Shutdown Unit c/w On-board Test Button	no				-
5.6.8	Galv conduits + accessories	m				-
5.6.9	2C PH30 fire alarm cable	m				-
5.6.10	Server Room - 121.22m2					-
5.6.11	Gas Suppression					-
5.6.12	Empty Cylinder 80L (welded & dip tube) with valve +	no				-
5.6.13	Manual release device	no				-
5.6.14	HFC-227ea Factory Filled and Pressurized Per kg	kg				-
5.6.15	Pressure gauge with switch	no				-
5.6.16	Discharge hose ø33mm 90° Elbow L = 500mm	no				-
5.6.17	32mm BSP nozzle HFC227ea	no				-
5.6.18	System "Release" Sign / Manual Release Station	no				-
5.6.19	Caution "Exit Area" Sign	no				-
5.6.20	Container Strap / 50/80 Lite (2 off)	no				-
5.6.21	Piping & Accessories	no				-
5.6.22	Integrity Test	no				-
	For your system to comply to regulation as stipulated in SANS 10139 of the code of standards; the following is required: Commissioning SANS Certification Logbooks A3 - Aluminium framed drawings As-constructed drawings O&M manuals Training					
5.7	Interfacing					R -
5.7.1	The following interfacing have been provided:					R -
5.7.2	- Smoke ventilation / AC shutdown - 2 off interfaces					R -
5.7.3	- Access control (reception) - 1 off interfaces					R -
5.7.4	- Lift interfacing - 1 off interfaces					R -
5.7.5	- Audio evacuation - 1 off interfaces					R -
5.8	Additional items					
5.8.1	Gas suppression systems for server room in Building A.	Sum				R -
5.8.2	Total flooding FM200 gas suppression proposed	Sum				R -
	SUB-TOTAL CARRIED FORWARD TO BILL SUMMARY					R -
SUMMARY OF TENDER BILL OF QUANTITIES						
Bill No.	Description					Amount
1	PRELIMINARY & GENERAL					R -
2	FIRE DETECTION					R -
	TOTAL BILL NO. 5 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY					R -
	BILL NO. 4 TOTAL EXCL. VAT					R -

**BILL NO.6: ELECTRONIC INSTALLATION - WIREWAYS**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
6	ELECTRONIC SERVICES - wireways - manholes and sleeves					
6.1	SECURITY, FIBRE INFRASTRUCTURE/WIREWAYS					
6.1.1	25mm dia	m	800			R -
6.1.2	32mm dia	m	50			R -
6.1.3	Ø50mm PVC sleeve	m	500			R -
6.1.4	110mm Diameter Green High-Density Poly Ethylene sleeves	m	300			R -
6.1.5	1.6mm galvanised draw wire	m	1650			R -
6.2	CONDUIT BOXES					
6.2.1	Round conduit box	no	100			R -
6.2.2	100 x 100 x 50mm wall box	no	50			R -
6.3	MANHOLES AND DRAW BOXES					
6.3.1	600mm x 600mm HD Manhole	m	11			R -
6.3.2	400mm x 400mm internal Dimmension - Junction Box	m	8			R -
6.4	TRENCHING					
6.4.1	Excavations for new cable trenches, foundations, manholes, joint holes etc in soil (up to 0,6m deep)					
6.4.2	The rates given hereunder shall include for the backfilling of trenches. Backfilling shall be done in stages and thoroughly consolidated at each stage to prevent subsequent subsidence					
6.4.3	Earth	m³	520			R -
6.4.4	Soft rock	m³	156			R -
6.4.5	Hard rock	m³	52			R -
6.4.6	Excavation to uncover cables for recovery by hand over existing cables	m³	10			R -
6.4.7	Import soil for the replacement of high clay content soil removed from excavations	m³	45			R -
6.4.8	Setting out of cable route by land surveyor	sum	1			R -
6.5	CABLE MARKERS					
6.5.1	PVC warning marking tape	m	94			R -
6.5.2	Precast concrete slabs	no	30			R -
6.6	UNMEASURED MATERIALS					
	Allowance for all costs which the Contractor will incur in of the contract document and which are either not specifically covered by the normal rates or are not listed above. Details of materials allowed for shall be provided in a covering letter.					
6.6.1		sum				R -
6.6.2		sum				R -
6.7	TESTING AND COMMISSIONING					
6.7.1	Test and commission the complete electronics reticulation	item	1			R -
6.8	MISCELANEOUS ITEMS					
	Intercom System Complete with Base station and outdoor unit at the pedestrian entrance. The system shall comply with the requirements of SAPS					
6.8.1	Intercom system as per drawing layout	Sum	1			R -
6.8.2	Testing and Commissioning and handover of Intercom	Sum	1			R -
BILL NO. 6 TOTAL EXCL. VAT						R -
TOTAL BILL NO. 6 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						

**BILL NO.7 -RESIDENTIAL UNITS**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE		TOTAL
				Supply	Install	
7	RESIDENTIAL UNITS					
7.1	Distribution Boards					
	Supply and install Unit DB, complete as specified, with all equipment as indicated on schematic diagram					
7.1.1	Unit DB - 2 bedroom room	no	2			R -
7.1.2	Unit DB - 3 bedroom room	no	2			R -
7.2	CONDUIT					
	PVC conduit, complete with all couplings, bushes, locknuts, Fixing saddles and screws, cutting, fixing, cleaning for wiring purposes, in roof space, in concrete or brick and surface mounted					
7.2.1	20mm dia	m	350			R -
7.2.2	25mm dia	m	75			R -
7.2.3	32mm dia	m	50			R -
7.3	CONDUIT BOXES					
7.3.1	Round conduit box	no	30			R -
7.3.2	Deep round conduit box	no	2			R -
7.3.3	100 x 50 50mm wall box	no	18			R -
7.3.4	100 x 100 x 50mm wall box	no	54			R -
7.4	WIRING					
	PVC insulated copper conductors drawn into wireways, including waste					
7.4.1	1.5mm ² (Lights)	m	2880			R -
7.4.2	2.5mm ² (Lights)	m	1728			R -
7.4.3	4mm ² (Power)	m	580			R -
7.4.4	Bare stranded copper earth wire into wireways, including waste					
7.4.5	1.5mm ² (Lights)	m	2304			R -
7.4.6	2.5mm ²	m	290			R -
7.4.7	Insulated copper earth wire into wireways, including waste					
7.4.8	1.5mm ² (Lights)	m	2304			R -
7.4.9	2.5mm ²	m	290			R -
7.5	ACCESSORIES					
	Switches, socket outlets, isolators, etc., complete with cover fixed in outlet or extension box (box measured elsewhere)					
7.5.1	16A, 1lever 1-way switch	no	12			R -
7.5.2	16A, 2lever 1-way switch	no	4			R -
7.5.3	16A, 3lever 1-way switch	no	2			R -
7.5.4	16A, 3-pin Single switched socket outlet	no	4			R -
7.5.5	16A, 3-pin Double switched socket outlet	no	4			R -
7.5.6	Combination socket outlet c/w 16A 3-pin switched socket (164-1) and 2x16A 3-pin switched Euro Slim socket (164-2)	no	34			R -
7.5.7	16A, 3-pin Double switched socket outlet, WP	no	4			R -
7.5.8	TV Points complete with 4x4 box and cover	no	4			R -
7.5.9	Data/Fibre point complete with 4x4 box and cover	no	4			R -
7.5.10	30A DP isolator	no	2			R -
7.5.11	30A DP isolator, WP	no	4			R -
7.5.12	60A DP Isolator	no	2			R -
7.6	LIGHT FITTINGS					
7.6.1	Type D1, Recessed LED Down Lighter, 8.5W, 60° Beam	no	60			R -
7.6.2	Type F1, Surface mounted Linear, Aluminium, Opal Poly - carbonate diffuser, 1200mm long, 36W LED Tube, 220V	no	16			R -
7.6.3	Type W1, BEKA Series 21 LED with prismatic diffuser 8W	no	14			R -
7.7	TEST AND COMMISSIONING					
	Test and commission the complete LT reticulation and issue the necessary test certificates and certificate of compliance as per SANS 10142-1					
7.7.1			1			R -
BILL NO. 7 TOTAL EXCL. VAT						R
TOTAL BILL NO. 7 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						

**BILL NO. 8 - EARTHING AND LIGHTNING PROTECTION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
8	EARTHING AND LIGHTNING PROTECTION					
8.1	The Earthing and Lightning Protection system shall be designed and installed by an accredited specialist or organisation to the latest SANS Code of Practice					
8.1.1	Soil resistivity survey	sum	1			R -
8.1.2	Evaluation of soil resistivity survey, incl. soil prospection sheet, graph & report	sum	1			R -
8.1.3	Install air finials as per specification and drawings	no	10			R -
8.1.4	Install 16mm ² , bare Aluminium ridge conductor	m	150			R -
8.1.5	Supply and install 70mm ² bare stranded aluminium down conductor from roof to inspection box.	m	240			R -
8.1.6	Supply and install 32mm black galvanised conduit to house copper down conductor from roof to inspection box.	m	120			R -
8.1.7	4 x 4 diecast square box complete with lid, installed at +300mm AFFL.	no	40			R -
8.1.8	Supply and install trailing leads	no	40			R -
8.1.9	Supply and install 1m earth rod	no	40			R -
8.1.10	Install bonding of structural steel and other metallic services to LPS	no	5			R -
8.1.11	Specialised Earthing for Steel Water Tank/Reservoir	Sum	1			R -
8.2	Testing and Documentation					
8.2.1	Testing and commissioning of lightning protection system	sum	1			R -
8.3	Documentation					
8.3.1	Issue a Certificate of Compliance in terms of the SANS specifications by an accredited earthing and lightning protection specialist or organisation	sum	1			R -
BILL NO. 8 TOTAL EXCL. VAT						R -
TOTAL BILL NO. 8 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						

**BILL NO. 9: STANDBY GENERATORS - ELECTRICAL INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
9	STANDBY GENERATORS					
	Supply, delivery, installation, testing, commissioning and handing over in working condition and maintenance during guarantee period.					
9.1	STANDBY DIESEL GENERATOR					
	Supply, delivery, installation, testing, commissioning and handing over in working condition and maintenance during guarantee period.					
9.1.1	65kVA Outdoor Type Generator Set complete with built-in 8hr day tank as specified including rigging onto existing generator Room.	Sum	1			R -
9.1.2	Electrical Fuel pump	Sum	1			R -
9.1.3	Control Panel complete with wiring	Sum	1			R -
9.1.4	Gate way for comms and remote monitoring	Sum	1			R -
9.1.5	Starter Batteries - 24V	Sum	1			R -
9.1.6	Weatherproof sound attenuated enclosure - 65DB Maximum	Sum	1			R -
9.1.7	Concrete plinth for Generator set	No	1			R -
9.1.8	Testing, Inspections and Commissioning	Sum	1			R -
9.2	Maintenance					
9.2.1	12-Month Guarantee and Maintenance as per the specification. Quarterly	Sum	1			R -
9.3	Warning Notices					
9.3.1	Supply and install set of warning notices on the container as per SANS and OHS specification	Sum	1			R -
9.4	Manuals					
	Compilation of Maintenance, operational and technical manuals and documentation to the client satisfaction					
9.4.1	Supply manuals	Sum	1			R -
9.5	PadLocks					
9.5.1	Supply and install A82 padlocks.	Item	3			R -
9.5.2	Issue of Certificate of compliance as per SANS 10142-1 for the Generator and the additional circuits in the new Main Kiosk as specified	Lot				R -
9.6	GENERATOR REFUELLING SERVICE					
9.6.1	The supply, delivery/transport and filling of the day tank (set mounted) and bulk tank with 50ppm or 500ppm Diesel fuel as required	Per litre				R -
9.6.2	Transport Diesel fuel as required	per km				R -
9.6.3	Refuelling Preliminaries and General including labour, licence, permits to	Lot				R -
9.6.4	Preliminary and Generals - over and above Mains contractors	Sum	1			R -
TOTAL BILL NO. 9 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY						R -
BILL NO. 9 TOTAL EXCL. VAT						R -

**BILL No.10: SOLAR PV POWER PLANT INSTALLATION - HYBRID INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL	
				SUPPLY	INSTALL		
				FIXED	ADJUSTABLE		
1: PRELIMINARY & GENERAL							
1.1	Site Establishment	sum	1			R	-
1.2	Site Office, Accommodation and Storage	sum	1			R	-
1.3	Insurances	sum	1			R	-
1.4	Health & Safety (including Health and Safety File)	sum	1			R	-
1.5	Plant hire and access to roof	sum	1			R	-
1.6	Supervisors and surveys	sum	1			R	-
1.7	Security	sum	1			R	-
1.8	Engineering and sign-offs	sum	1			R	-
1.9	Delivery and offloading equipment to site	sum	1			R	-
1.10	Storage of equipment on site	sum	1			R	-
1.11	Civil works (if applicable)	sum	1			R	-
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R	-
2: SOLAR SYSTEM PV COMPONENTS							
2.1	PV Modules 600W (Specify Make and Rating below)	ea	80			R	-
2.2	Optimisers if required (Specify Make and Rating below)	Sum	1				
2.3	Aluminium mounting rails, brackets and clips						
2.3.1	Mounting Type A - Aluminium mounting rails, brackets and clips for flush mounting onto IBR roof. Roof tilt - 10 deg.	modules	100			R	-
2.4	PV combiner boxes (Specify Make and Rating below)						
2.4.1	PV DC Surge Protection Devices	ea	16			R	-
2.4.2	PV DC Fuses and fuse holders	ea	16			R	-
2.4.3	DC Double Pole Circuit Breakers 20-25A	ea	8			R	-
2.4.4	Enclosures to contain the above	ea	2			R	-
2.5	DC Cables (Specify Make and Rating below)						
2.5.1	Solar Cable EN50618 6mm²	m	1500			R	-
2.5.2	Welding Cable xxxmm²	m	300			R	-
2.6	Cable containment as required						
2.6.1	P8000 Galvanised trunking c/w galvanised covers	m	40			R	-
2.6.2	P2000 Galvanised trunking c/w galvanised covers	m	120			R	-
2.6.3	25mm Galvanised conduit c/w adapters and fixings	m	60			R	-
2.6.4	32mm Galvanised conduit c/w adapters and fixings	m	60			R	-
2.7	PV DC Connectors (MC4 or similar)	ea	160			R	-
2.8	Miscellaneous Hardware and Accessories	sum	1			R	-
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R	-

**BILL No.10: SOLAR PV POWER PLANT INSTALLATION - HYBRID INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

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ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
	3. BATTERY ENERGY STORAGE SYSTEM					
3.1	Single Compact Unit Battery - Lithium Iron Phosphate (LiFePO4) with intergrated Solar BMS	kWh	250			R -
3.2	Weatherproof, ventilated battery cabinet c/w cooling measures, suitable for outdoor installation in direct sunlight	sum	1			R -
3.3	DC Cables (Specify Make and Rating below)					
3.4	DC Cable Red (Welding Cable)mm ²	m	20			R -
3.5	DC Cable Black (Welding Cable)mm ²	m	20			R -
3.6	DC Connectors/Terminations	sum	1			R -
3.7	Battery Disconnect Switches	ea	1			R -
3.8	Battery Monitoring Sensors	sum	1			R -
3.9	Monitoring and Metering Equipment (ESS)	sum	1			R -
3.10	Miscellaneous Hardware and Accessories	sum	1			R -
3.11	Common Busbar For Future Multiple Battery Connections	sum	1			R -
3.12	Protection for overcurrent (Integrated Shunt Trip Circuit Breaker)	ea	1			R -
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R -
	4. HYBRID INVERTER AND POWER CONVERSION COMPONENTS					
4.1	Hybrid Inverters with solar charge controller/s (Specify Make and Rating below)					
4.1.1	60kW Hybrid	ea	1			R -
4.2	60kVA Bi-directional Battery Inverter (Specify Make and Rating below)	ea	0			R -
4.3	Automatic Bypass cabinet for 60kVA Battery Inverter (Specify Make and Rating below)	ea	1			R -
4.4	DC Disconnect Switches	sum	1			R -
4.5	AC Disconnect Switches	sum	1			R -
4.6	Power Conditioning Equipment (Integrated)	sum	0			R -
4.7	Reactive Power Compensation Equipment	sum	0			R -
4.8	Miscellaneous Hardware and Accessories	sum	1			R -
4.9	Grid-Tie Inverter cage c/w weather canopy	ea	2			R -
4.10	Cooling and ventilation systems	pc sum	1			R 60 000.00
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R

**BILL No.10: SOLAR PV POWER PLANT INSTALLATION - HYBRID INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

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ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
5. ENERGY MANAGEMENT AND CONTROL						
5.1	Micro Grid Controller For Integration With Standby Diesel Generators (65kVA)	sum	1			R -
5.2	Monitoring, measurement and Control Software/Hardware including Web Interface	sum	1			R -
5.3	Communication Devices and Protocols	sum	1			R -
5.4	Human Machine Interface (HMI) - Teminal With Touch Screen In Admin Office	sum	1			R -
5.5	PV System Monitoring Dashboard - 55 inch display in reception.	sum	1			R -
5.6	Protection Relays - if applicable	sum	1			R -
5.7	Electronic meters for Grid, Generator, PV and Battery power monitoring c/w CT's and comms cables					
5.7.1	Grid meters c/w 1000/5A CT's	ea	2			R -
5.7.2	Generator meters c/w 300/5A CT's	ea	2			R -
5.7.3	PV Inverter meters c/w 100/5A CT's	ea	2			R -
5.7.4	Battery Inverter meters c/w 100/5A CT's	ea	1			R -
5.8	Miscellaneous Hardware and Accessories	sum	1			R -
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R -
6. PROTECTION AND SAFETY						
6.1	Over/under Voltage Protection Devices	ea	3			R -
6.2	AC Surge Protection Devices - Type 1	ea	3			R -
6.3	DC Surge Protection Devices - see Bill No 2	sum	0			R -
6.4	Ground Fault Detection Equipment	sum	1			R -
6.5	Anti-islanding Protection Devices	sum	1			R -
6.6	Fire Detection and Suppression Systems	ea	0			R -
6.7	Fireman's Switch	ea	3			R -
6.8	Lightning Protection and Earthing					
6.8.1	External Lightning protection system provided by others	sum	0			R -
6.8.2	Bonding and earthing of pv panels, mounting structures, cable trunkings and equipment	sum	1			R -
6.9	Safety Signage and Labels	sum	1			R -
6.10	Miscellaneous Hardware and Accessories	sum	1			R -
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R -

**BILL No.10: SOLAR PV POWER PLANT INSTALLATION - HYBRID INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

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ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
7. GRID CONNECTION AND INTERGRATION						
7.1	Tie-In Motorised Circuit Breakers, AC					
7.1.1	60A 3P 400V 10kA	ea	2			R -
7.1.2	150A 3p 400V 20kA	ea	1			R -
7.2	Load Circuit Breakers, AC					
7.2.1	60A 3P 400V 10kA	ea	2			R -
7.2.2	150A 3p 400V 20kA	ea	1			R -
7.3	AC Combiner/Isolation DB's Complete - Roof	ea	2			R -
7.4	Grid Protection Relays - as required	sum	1			R -
7.5	Grid Synchronization Devices - if required	sum	1			R -
7.6	Power Quality Conditioning Equipment - if required	sum	1			R -
7.7	Miscellaneous Hardware and Accessories	sum	1			R -
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R -
8. WIREWAYS, EARTHING AND LV RETICULATION						
8.1	Enclosures IP 65, 150mmWx200mmLx120mmH	ea	5			R -
8.2	AC Cables					
8.2.1	16mm² 4-Core Cu Cable PVC/PVC/SWA/PVC 600/1000V	m	20			R -
8.2.2	150mm² 4-Core Al Cable PVC/PVC/SWA/PVC 600/1000V	m	50			R -
8.3	AC Cable Terminations					
8.3.1	16mm² 4-Core Cu Cable PVC/PVC/SWA/PVC 600/1000V	ea	4			R -
8.3.2	150mm² 4-Core Al Cable PVC/PVC/SWA/PVC 600/1000V	ea	2			R -
8.4	Earth Cables - Black PVC Insulated CU Cable					
8.4.1	16mm² Insulated Earth Cable (Black)	m	20			R -
8.4.2	25mm² Insulated Earth Cable (Black)	m	50			R -
8.5	Earth Cable Terminations					
8.5.1	16mm² Insulated Earth Cable (Black)	m	4			R -
8.5.2	25mm² Insulated Earth Cable (Black)	m	2			R -
8.6	Trenching (450mmx600mm deep)	m	0			R -
8.7	Labelling	sum	1			R -
8.8	Miscellaneous Hardware, Terminations and Accessories	sum	1			R -
SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE						R -

**BILL No.10: SOLAR PV POWER PLANT INSTALLATION - HYBRID INSTALLATION**

Do not add VAT to the individual items. Add VAT in the final summary.

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ITEM	DESCRIPTION	UNIT	QTY	RATE		TOTAL
				SUPPLY	INSTALL	
	9. COMMISSIONING, MAINTENANCE AND HANDOVER					
9.1	Quality Assurance and sign-offs (Council and NERSA - if applicable)	Sum	1			R -
9.2	Commissioning, test certificates and CoC	Sum	1			R -
9.3	Training of Client Representatives (Minimum 3 persons)	Sum	1			R -
9.4	Three sets of O&M Manuals as per Tender Specification Part 4 PS.11	Sum	1			R -
9.5	Operation & Maintenance (From handover date)	Sum	1			R -
9.5.1	Period month : 0-12	Months	12			R -
9.5.2	Period month : 13-24	Months	12			R -
9.5.3	Period month : 25-36	Months	12			R -
9.6	Asbuilt drawings to engineer	Sum	1			R -
	SUB- TOTAL CARRIED FORWARD TO BILL SUMMARY PAGE					R -

SUMMARY OF TENDER BILL OF QUANTITIES

Bill No.	Description	Amount
1	PRELIMINARY & GENERAL	R -
2	SOLAR SYSTEM PV COMPONENTS	R -
3	BATTERY ENERGY STORAGE	R -
4	INVERTER AND POWER CONVERSION COMPONENTS	R -
5	ENERGY MANAGEMENT AND CONTROL	R -
6	PROTECTION AND SAFETY COMPONENTS	R -
7	GRID CONNECTION AND INTERGRATION COMPONENTS	R -
8	WIREWAYS AND LV RETICULATION	R -
9	COMMISSIONING, TRAINING, MAINTENANCE AND HANDOVER	R -
BILL NO. 10 TOTAL EXCL. VAT		R
TOTAL BILL NO. 10 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY		R

**BILL No.11: PROVISIONAL SUMS**

Do not add VAT to the individual items. Add VAT in the final summary.

The prices for the items must be inclusive of all costs to provide a COMPLETE installation.

ITEM	DESCRIPTION	UNIT	QTY	UNIT RATE	TOTAL
11	PROVISIONAL SUMS				
11.1	Eskom Bulk Mains Supply point 200kVA as per budget quotation and agreement	Sum	1		-
11.2	Allowance for attendance on Item 1 above by Main Contractor and Electrical Sub-contractor	%			-
11.3	Lighting and Air Conditionnin Control System	Sum	1		-
11.4	Allowance for Item 3 above attendance by Main Contractor and Electrical Sub-contractor	sum	0		-
BILL NO. 11 TOTAL EXCL. VAT R					-
TOTAL BILL NO. 11 CARRIED FORWARD TO ELECTRICAL INSTALLATION FINAL SUMMARY					

**ELECTRICAL SERVICES INSTALLATION****SUMMARY OF BILLS OF QUANTITIES: ELECTRICAL INSTALLATION**

BILL NO.	DESCRIPTION	AMOUNT
0	Preliminary and Generals - per main contractor BOQ	
1	Site Electrical Reticulation	-
2	Main Building - Electrical Installation	-
3	Holding Cells - Electrical Installation	-
4	Pump Room and Service Building - Electrical Installation	-
5	Fire Detection Installation	-
6	Electronic Installation - Wireways	-
7	Residential Units - Electrical Installation	-
8	Lightning Protection System Installation	-
9	Standby Generator Installation	-
10	Solar PV Installation	-
11	Provisional Sums	-
	Sub-total	
	Provision for Preliminary and Generals Items (Pro-Rata) @ 6,5%	
	TOTAL ESTIMATED AMOUNT EXCL. VAT	
	PLUS VAT @ 15%	
TOTAL CARRIED FORWARD TO MAIN SUMMARY		