

7	Ref D036S Euro-profiled cylinder stainless steel sash lock	No	36
8	Ref D037D Euro-profiled cylinder stainless steel dead lock	No	5
9	Ref DDC 106501 Nickel plated 65mm ten pin euro-profiled master keyed double cylinder deadlock	No	27
10	Ref DKC 106501 Nickel plated 65mm ten pin euro-profiled master keyed double cylinder deadlock	No	2
11	Master key	No	3
12	Ref SH875 Stainless steel furniture on 150 x 75mm backplate	Pairs	36.0
13	150 x 19mm Ref DPH301C stainless steel 'D' shaped straight back to back flush handle	Pairs	2.0
14	Keytek Magnetic lock suitable for Steel and wooden fireproof door	Pairs	1.0

#### **HANDLES**

##### **Manufactured by Dorma or equal approved**

15	150 x 19mm Ref DPH301C stainless steel 'D' shaped straight bolt through pull handle	Pairs	9.0
16	79mm Ref DWC stainless steel WC indicator turn knob for the physically challenged	Pairs	1.0

#### **PUSH PLATES AND KICK PLATES**

##### **Manufactured by Dorma or equal approved**

17	Ref DKP-SS-160 150 x 75 x 0.9mm brushed finished stainless steel push plate	No	8
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#### **DOOR CLOSERS**

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IRONMONGERY

<b><u>Manufactured by Dorma or equal approved</u></b>				
18	Ref BTS75V/EN2-5 variable spring strength, double action floor spring complete with 7510 stainless steel cover plate, 8021 bottom strap and 8062 top centre - Non hold open version	No	2	
<b><u>LETTERS, NAMEPLATES, ETC.</u></b>				
<b><u>0.6mm Chromadek metal sheeting with vinyl logo and cut vinyl lettering fixed to substrate with self-tapping screws</u></b>				
19	750 x 500mm Building name sign	No	2	
20	50 x 50 x 0.6mm Square brushed anodised Engraved aluminium 'Door number' indicator plate	No	14	
<b><u>'Dorma' or other equal approved stainless steel signs</u></b>				
21	150 x 150mm 'Running Man' (RH) fire escape indicator plate	No	8	
22	150 x 150mm 'Direction Arrow' fire escape direction indicator plate	No	4	
23	150 x 150mm 'FHR' fire hose reel indicator plate	No	2	
24	150 x 150mm 'MALE SIGN' indicator plate	No	1	
25	150 x 150mm 'FEMALE SIGN' indicator plate	No	1	
26	150 x 150mm 'DISABLED PERSON' indicator plate	No	2	
27	150 x 150mm 'FIRE EXTINGUISHER DCP' indicator plate	No	2	
28	900 x 198mm 'FE' fire escape indicator plate	No	3	
<b><u>"Vista MCFT" curved aluminium wall signs or equally approved with vinyl insert and vinyl cut lettering, including grey plastic end caps fixed to substrate with double sided tape</u></b>				
29	Type WF, size 250 x 58mm high	No	15	
30	Type WF, size 350 x 78mm high	No	14	
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**BATHROOM FITTINGS****'Franke' or equal approved:**

- 31 600mm Long x 55mm diameter chromium plated towel rail including end brackets.

No 5

**'Nampak' or equal approved:**

- 32 "Tissue Elite" liquid soap holder size 128 x 201mm high plugged.

No 3

**"Chairman" or equal approved**

- 33 32mm cranked stainless steel dog leg rail overall size 900mm with 70mm circular fixing flanges at each end, three times screwed with 8mm stainless steel countersunk screws to plugs with matching clips on flange cover plates fixed in position as indicated on the drawings.

No 2

- 34 32mm diameter cistern back rail stainless straight long leg rail overall size 750mm x 200mm with 70mm circular fixing flanges at each end, three times screwed with 8mm stainless steel countersunk screws to plugs with matching clips on flange cover plates fixed in position as indicated on the drawings.

No 2

**'Union' or other equal approved**

- 35 Union AL8722AS Anodised silver rubber tipped hat & coat hook

No 38

- 36 Franke (Suppliers code: TD350) or other approved wall mounting heavy duty stainless steel paper towel dispenser with surface satin finish, material thickness 14 gauge (2mm), complete closed casing held in place by a stainless steel rod fixed to the mounting plate and a security lock, loading capacity 400 to 600 piece paper depending on convolution, includes stainless steel screws and dowels.

No 12

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37	Franke "RODAN" (Suppliers code: RODX310) or other approved satin finish stainless steel wall mounted touch free electronic warm air hand dryer for wall mounting, material thickness 1,2mm, infrared sensor activity for non-touch operation and sensor range adjustable from 100 to 300mm (Cable and plug not included).	No	
<b><u>SUNDRIES</u></b>			
<b><u>Dorma or other equal approved</u></b>			
38	Ref DDS-NP-018 Floor mounted door stop	No	63
39	Ref DHC-SS-031B Stainless steel heavy duty coat hook plugged	No	12
40	Stainless steel 1.2mm table size 2400 x 650mm wide	No	2
<b><u>SHELVES, ETC.</u></b>			
<b><u>Industrial type shelving with power coated mild steel</u></b>			
41	25mm thick hardwood top finish and varnish with 2x polyurethane varnish fixed to bracket with 30mm x 6 No self tapping Screws	m	20
42	Ditto, 250 x 250mm mild steel shelf support	No	3
<b><u>Greenfield or equal approved proprietary type steel shelving with standard powder coated finish</u></b>			
43	914 x 762mm Ref G3 shelf	No	13
<b><u>STEEL LOCKERS</u></b>			
<b><u>LOUVRE</u></b>			
44	Purpose made louvre vent approximately 1300mm x 1300mm high fixed to frame door size 1525 x 2438mm.	No	1
45	Internal aluminium louvre grille coated with a white epoxy powder finish. Telescopic galvanised steel wall liner Adjustable from 230mm to 390mm to suit most walls, with a cut-out for concealed cable entry. External grey polypropylene louvre shutter, to prevent outside air entering the building. The louvre is opened by the airflow when the fan starts. IP55 terminal box for easy wiring	No	8

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**SHELVING**

**Industrial type shelving with power coated mild steel**

46    25mm thick hardwood top finish and varnish with 2x  
polyurethane varnish fixed to 250 x 250mm steel  
bracket shelf support with 30mm x 6 No self tapping  
Screws

m

206

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IRONMONGERY

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Standard residential windows with 10 x 10mm mild steel solid square sections burglar bars at 100mm centres welded to inside of frame (opening and fixed sashes)

- |   |  |    |   |
|---|--|----|---|
| 4 | Window type NE5F, 533 x 654mm high (W3)    | No | 3 |
| 5 | Window type NCTX7S, 1022 x 949mm high (W6) | No | 2 |

#### ALUMINIUM WINDOWS, DOORS, ETC

Bronze powder coated aluminium doors and frames as per 'Aluminium City Nuclip' system, complete with subframes, ironmongery, glass, sealing, etc and fixing to brickwork or concrete

- |   |  |    |   |
|---|--|----|---|
| 6 | Purpose made double door, 1613 x 2032mm high | No | 2 |
|---|--|----|---|

#### ALUMINIUM WINDOWS, DOORS, ETC

Hollow hot dipped galvanised metal &nbsp;ward cell doors, trellis gate and frame combination, the door 50mm thick overall and intermediate rails covered on both sides with 1.6mm reinforcements, lock cavity, lock cover plate, 1.6mm stainless steel plate, etc, door size 1100 x 2032mm, trellis gate size 1080 x 1990mm and 3mm thick mild steel plate type door frame all in accordance with PPOL 2006/D1, D3 and D4

- |   |  |    |   |
|---|--|----|---|
| 7 | Door, gate and frame overall size 1100 x 2210mm high with a combined mass of approximately 250kg | No | 2 |
|---|--|----|---|

#### THE FOLLOWING IN STEEL SECURITY GATES INCLUDING SETTING UP AND FIXING IN POSITION

White Epoxy Coated Expandable Trellis Door Security Gates By Specialist To Be Installed In Accordance With Manufacturer's Instructions

- |   |  |    |   |
|---|--|----|---|
| 8 | Purpose made swing open "Expanda Saftidor" or equally approved door type D19 size 2480 x 2100mm high overall with locking mechanism. | No | 1 |
|---|--|----|---|

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METALWORK



Hollow hot dipped galvanised metal ward cell doors, trellis gate and frame combination, the door 50mm thick overall and intermediate rails covered on both sides with 1.6mm reinforcements, lock cavity, lock cover plate, 1.6mm stainless steel plate, etc, door size 1200 x 2032mm, trellis gate size 1080 x 1990mm and 3mm thick mild steel plate type door frame all in accordance with PPOL 2006/D1, D3 and D4

- 9 Standard size double ended telescopic strongroom ventilator

No

4

**STEEL RECORDROOM AND STRONGROOM DOORS, VENTILATORS, ETC**

**Heavy duty strong room doors**

- 10 Category 2 (strongroom) door and frame 850 x 1860mm high overall x 127mm thick with an approximate mass of 540kg

No

1

- 11 Category 2 (strongroom) door and frame 950 x 1860mm high overall x 127mm thick with an approximate mass of 540kg

No

2

**STEEL FITTINGS, ETC**

**The following in epoxy powder coated pressed mild steel sheet metal shelving**

- 12 Mild steel bars as light through on staircase consisting of three vertical bars welded to two horizontal bars built into brickwall overall size 450 x 1800mm high

No

5

**Adjustable shelving**

- 13 Adjustable shelving 2134mm high formed of five 450 x 1.2mm thick powder coated steel shelves fixed to and including powder coated steel wall bands at 600mm centres plugged to brick

m

12

**CELL WINDOWS AND SCREENS**

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METALWORK

**Cell windows:**

- |    |   |    |   |
|----|---|----|---|
| 14 | Window size 850 x 950mm high overall with frame and three vertical mullions welded to and including 16 x 30mm manganese steel mullion 1250mm long, forming four sashes, two centre 206mm wide and the two outer sashes each 219mm wide hung to purpose made hin | No | 2 |
|----|---|----|---|

**Security screens:**

- |    |  |    |   |
|----|--|----|---|
| 15 | Internal security screen size 850 x 950mm high overall comprising 40 x 40 x 5mm angle section framing, two horizontal and three vertical 40 x 5mm flat section stiffeners and filled in with and including Flatex 352 or other approved expanded metal screen welded on, including forming two handholes with 1mm sheet iron surrounds all sper detail drawings. | No | 2 |
|----|--|----|---|

**Stainless Steel Bollards**

- |    |  |    |   |
|----|--|----|---|
| 16 | 150mm Diameter x 1200mm high x 7mm wall thickness, heavy duty 150 flat top polished 304 stainless steel bollard, 900mm above ground and casting 300mm into and including cement concrete (15MPa) base size 600 x 600 x 450mm and backfilling, compacting, etc. | No | 4 |
|----|--|----|---|

**WASHING LINES, DRIERS, ETC****Galvanised hoop iron cramps, ties, etc.**

- |    |  |   |    |
|----|--|---|----|
| 17 | 4mm Diameter galvanised steel wire in long lengths tightly drawn with ends wrapped around and fixed to straining eye bolts | m | 25 |
|----|--|---|----|

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METALWORK

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METALWORK

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	<b><u>SECTION 2</u></b>			
	<b><u>BILL NO. 12</u></b>			
	<b><u>PLASTERING</u></b>			
	<p><u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>SCREEDS</u></b>			
	<b><u>3:1: Cement plaster screeds steel trowelled, on concrete</u></b>			
1	38mm Thick on floors and landings	m2	118	
	<b><u>GRANOLITHIC</u></b>			
	<b><u>Untinted granolithic, on concrete</u></b>			
2	25mm Thick on floors and landings to receive epoxy floor screed ( epoxy floor screed elsewhere measured)	m2	102	
	<b><u>INTERNAL PLASTER</u></b>			
	<b><u>One coat 4:1 Cement plaster steel trowelled, on brickwork and small parts on concrete</u></b>			
3	On walls	m2	174	
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	PLASTERING			

## TILING

**Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill**

**Mod light grey glazed porcelain floor tile size 600 x 600mm fixed with adhesive to screed (screed elsewhere) and flush pointed with (waterproof) jointing compound**

1	On floors and landings	m2	60
2	Skirting 100mm high	m	25
3	On sills 120mm wide of cut tiles laid flat	m	90

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TILING

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Item No		Quantity	Rate	Amount
	<b><u>SECTION 2</u></b>			
	<b><u>BILL NO. 14</u></b>			
	<b><u>PLUMBING AND DRAINAGE</u></b>			
	<u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill			
	Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill			
	-----			
	<b><u>RAINWATER DISPOSAL</u></b>			
	<b><u>'Watertite' seamless aluminium</u></b>			
1	100 x 100mm Zinc alloy pre-painted continuous length gutters	m	108	
2	Extra for outlet for 100 x 75mm pipe	No	18	
3	100 x 75mm rainwater pipes	m	69	
4	Extra for shoe	No	18	
5	Spreader 600mm long for 100mm diameter pipe with half closed ends and 20mm diameter holes at 50mm centres	No	28	
	<b><u>SANITARY FITTINGS</u></b>			
	<b><u>Stainless steel for sinks, worktops and wash troughs manufactured from 1,2mm grade 304 (18/10) including brackets and sealing</u></b>			
6	Drop-in sink and drainer 1,500 x 460mm wide with one end bowl and with sound proofing finish underneath sink	No	2	
	<b>Carried to Collection</b>			R
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7	Franke citimetal or equally approved model "S2" Grade 304 (18/10) stainless steel double end bowl catering sink, size 1500 x 650mm with a 150mm high integral splash back to the rear and 50 x 10mm turn down turn down with beaded edge on the remaining side. The underside sprayed with vermin proof proof bitumastic sound deadening and supported with 30 x 30 x 3mm framework and galvanised mild steel backing sheet. Fitted on to 38mm diameter round stainless steel detachable legs with adjustable flanged foot pieces, bowl size 500 x 500mm x 230mm deep.	No	3	
8	Franke citimetal or equally approved model "S2" Grade 304 (18/10) stainless steel double centre 1850 x 650mm bowl pot sink with a 150mm high integral splash back to the rear and 50 x 10mm turn down with beaded edge on the remaining side. The underside sprayed with vermin proof proof bitumastic sound deadening and supported with 30 x 30 x 3mm framework and galvanised mild steel backing sheet. Fitted on to 38mm diameter round stainless steel detachable legs with adjustable flanged foot pieces, bowl size 760 x 460mm x 380mm deep.	No	2	
9	Franke citiline prep bowl stainless steel sink or equally approved, unit size 448mm diameter wide with 405 x 145 mm deep bowl , fitted onto cupboard with spazio 2 (code: 301252) plumbing kit	No	1	
<b><u>Vitreous China</u></b>				
10	510 x 405 White vitreous china wash hand basin with two tap holes complete with and including universal floor mounted pedestal and including two chromium plated pillar taps, waste and anti-theft plug	No	7	
11	Closed coupled WC suite comprising white vitreous china pan with p-trap, 9 litre white vitreous china cistern complete with valveless symphonic fitting, ball valve and matching flush pipe elbow and heavy duty white double flap seat	No	6	
12	Closed coupled(disabled) WC suite comprising white vitreous china pan with p-trap, 9 litre white vitreous china cistern complete with valveless syphonic fitting, ball valve and matching flush pipe elbow,purpose made side-flush lever mounted on wall adjacent to cistern and heavy duty white double flap seat	No	2	
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PLUMBING AND DRAINAGE				

13	Plexicor cross linked cst acrylic perspex classica square shower tray size 900 x 900 150mm deep in 1:5 cement mortar	No	3	
	<b><u>'VANSTONE' or equal approved</u></b>			
14	Reinforced concrete single compartment wash tub basin with outlets and two pedestals size 700 x 530 x 340mm deep. Code P2-2901, P2-2902, P2-2903 or similar approved	No	2	
	<b><u>WASTE UNIONS ETC</u></b>			
	<b><u>Cobra Watertech or equal approved</u></b>			
15	32mm 301 CP basin waste union	No	8	
16	38mm bath or sink waste union	No	3	
17	75 Secure CP shower outlet	No	3	
	<b><u>TRAPS ETC</u></b>			
	<b><u>Rubber</u></b>			
18	40 - 40mm Butyl rubber deep seal 'P' or 'S' trap	No	3	
	<b><u>Brass</u></b>			
19	32mm Shower trap including stainless steel grating	No	3	
	<b><u>Rofo or equal approved</u></b>			
20	RO 125 V (H) NW 50 stainless steel floor trap with grating	No	3	
	<b><u>TAPS, VALVES, ETC</u></b>			
	<b><u>Brass</u></b>			
21	15mm Ball Stop	No	1	
	<b><u>Cobra Watertech or equal approved</u></b>			
22	15mm CP ' Code 072' 125mm diameter shower rose	No	3	
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PLUMBING AND DRAINAGE				



23	15mm CP ' Code 064' ball joint angle shower connector with 'code 025' fascia plate	No	3		
24	15mm 106-15CP Star bib-tap	No	3		
25	15mm 'Code 3366ST' CP wall type sink mixer with swivel spout	No	3		
26	15mm 181/020/070CP shower mixer with riser pipe, arm and shower head	No	3		
27	15mm 027CP overhead shower arm	No	3		
28	Cobra star or equally approved 266/041/10 wall type sink mixer with "overarm" swivel outlet , concealed connections adjustable from 128mm to 178mm with plugs stay and chain	No	3		
29	2 pairs cobra star or equally approved 106-20 Bib tap with hot and cold indices, extension pieces & flanges	No	4		
<b><u>SANITARY PLUMBING</u></b>					
<b><u>Cast iron pipes with SSN couplings</u></b>					
30	50mm Pipes	m	40		
<b><u>Extra over cast iron pipes with SSN couplings for fittings</u></b>					
31	50mm Bend	No	40		
<b><u>uPVC soil and vent pipes</u></b>					
32	110mm Pipes laid in and including trenches not exceeding 1m deep	m	1		
<b><u>Extra over uPVC soil and vent pipes for fittings</u></b>					
33	50mm Bend	No	24		
34	110mm Bend	No	14		
35	110mm Access bend	No	1		
36	110mm Access junction	No	1		
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PLUMBING AND DRAINAGE					

37	110mm Pan connector	No	22
	<b><u>Sundries</u></b>		
38	Provide all necessary apparatus, water ,etc .for and test whole of the sanity drainage installation to the satisfaction of the Representative/Agent and the local Authority, rectify all defective work free of charge and leave in perfect order	No	1
	<b><u>WATER SUPPLIES</u></b>		
	<b><u>Class 0 thin wall hard drawn copper pipes and fittings with capillary soldered type connections</u></b>		
39	15mm Pipes	m	102
	<b><u>Extra over Class 0 copper pipes for soldered capillary fittings</u></b>		
40	15mm Fittings	No	104
	<b><u>ELECTRIC WATER HEATERS</u></b>		
	<b><u>Kwikot or equal approved</u></b>		
41	150 Litre high pressure vertical wall mounted electric water heater bolted to brickwall	No	4

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Bill No. 14

PLUMBING AND DRAINAGE

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Bill No. 14

PLUMBING AND DRAINAGE

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	<b><u>BILL NO. 15</u></b>			
	<b><u>GLAZING</u></b>			
	<p><u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>GLAZING TO STEEL WITH PUTTY</u></b>			
	<b><u>4mm thick Clear float glass:</u></b>			
1	Panes exceeding 0,1m2 and not exceeding 0,5m2.	m2	9	
2	Panes exceeding 0,5 m2 and not exceeding 2 m2.	m2	16	
	<b><u>TOPS, SHELVES, DOORS, MIRRORS, ETC.</u></b>			
	<p><b><u>6 mm Silvered float glass copper backed mirrors with polished edges holed for and fixed with chromium plated dome capped mirror screws with rubber buffers to plugs in brickwork:</u></b></p>			
3	Mirror 450 x 600 mm high fixed to wall.	No	10	
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	GLAZING			

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<b><u>BILL NO. 16</u></b>			
<b><u>PAINTWORK</u></b>			
<p><b>NOTE:</b> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
<b><u>ON INTERNAL FLOATED PLASTER SURFACES</u></b>			
<b><u>One coat alkali resistant primer and two coats superior quality acrylic emulsion paint for interior and exterior use</u></b>			
On internal Walls	m2	291	
<b><u>ON FIBRE-CEMENT BOARD SURFACES</u></b>			
<b><u>One coat alkali resistant primer and one undercoats and two coats alkyd enamel paint.</u></b>			
Fascias and barge boards,	m2	77	
<b><u>ON METAL SURFACES</u></b>			
<b><u>Spot priming defect in pre- painted surfaces with red oxide primer and applying oe universal undercoat and two coat gloss enamel paint</u></b>			
On door frames	m2	23	
Windows with burglar bars panel set approximately 50mm awy from window at 150mm centers (both sides measured ovr full flat areas)	m2	4	
<b><u>ON WOOD SURFACES</u></b>			
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<u>One coat primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint</u>				
5	On Doors	m2	95	
<u>One coat sanding sealer and three coats superior quality clear polyurethane matt varnish</u>				
6	On Doors	m2	40	
7	Skirtings, rails, etc not exceeding 300mm girth	m	481	
<u>Two coats creosote on sawn timbers</u>				
8	Roof timber trusses	m2	30	
<b><u>EXISTING SERVICE POINT (CSC), BLOCK A, SINGLE QUARTERS, ETC</u></b>				
<b><u>PAINTWORK, ETC TO PREVIOUSLY PAINTED WORK ON</u></b>				
<b><u>ON INTERNAL FLOATED PLASTER SURFACES</u></b>				
<u>One coat alkali resistant primer and two coats superior quality acrylic emulsion paint for interior and exterior use</u>				
9	On internal Walls	m2	413	
<b><u>ON EXTERNAL FLOATED PLASTER SURFACES</u></b>				
<u>One coat alkali resistant primer and two coats superior quality acrylic emulsion paint for interior and exterior use</u>				
10	On External Walls	m2	384	
<b><u>ON WOOD SURFACES</u></b>				
<u>One coat primer, one coat alkyd based universal undercoat and two coats superior quality universal enamel paint</u>				
11	On Doors	m2	82	
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PAINTWORK



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## BILL NO. 1

## SECURITY FENCING

Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill

## SCREEN WALLS

**Excavation in earth not exceeding 2m deep:**

1	Trenches	m3	21
---	----------	----	----

**Extra over bulk excavations in earth for excavation in**

2	Soft rock	m3	1
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**Extra over all excavations for carting away**

3	Surplus material from excavations and/or stock piles on site, to a dumping site to be located by the contractor	m3	11
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### Risk of collapse of excavations

4	Sides of trench and hole excavations not exceeding 1,5m deep	m2	57
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**Earth filling obtained from the excavations and/or prescribed stock piles on site, compacted to 93% Mod AASHTO density**

5	Backfilling to trenches, holes, etc	m3	13
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**Carried to Collection**

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SECURITY FENCING

<b><u>Approved brand of anti-termite soil poison applied by a Registered Pest Control company and guaranteed against termite infestation for ten years</u></b>			
6	To bottoms and sides of trenches etc	m2	99
<b><u>Brickwork of NFP bricks in II mortar</u></b>			
7	Piers	m3	25
8	One brick walls	m2	81
<b><u>Brickwork reinforcement</u></b>			
9	150mm Wide reinforcement built in horizontally	m	18
<b><u>Buff Travertine face bricks (FBX) with a pointed with square recessed horizontal and vertical joints</u></b>			
10	Extra over brickwork for face brickwork in stretcher bond including wire ties	m2	125
11	Columns	m2	132
<b><u>Brick-on-edge header course copings, sills, etc Buff Travertine pointed with recessed joints on all exposed faces</u></b>			
12	Coping on top of one brick wall pointed top and both faces	m	109
<b><u>FENCING</u></b>			
<b><u>Galvanised security fence with bitumen-aluminium painted (two coats) steel pipe posts, stays, gates, etc including galvanised steel bolts, straining eye bolts, etc, site clearance and preparation of ground</u></b>			
13	Security fence 2.1m high of 5 strands of 3mm straining wire tied to posts and eye bolts and covered with 50 x 25 x 2.5mm welded wire mesh tied at 300mm centres to each straining wire (posts elsewhere)	m	51
14	Continuous razor wire security roll to top of fence flat wrapped in 500mm diameter rings, tied together and to straining wire at 150mm centres	m	51
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**MANKWENG POLICE STATION**

- 15 75mm Diameter Y30 post 2.4m long, including concrete base
- 16 75mm Diameter inclined stay 1.5m long, including concrete base

No

30

No

3

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SECURITY FENCING

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	<b><u>BILL NO. 2</u></b>			
	<b><u>COVERED PARKING</u></b>			
	<p><u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>EXTERNAL WORKS</u></b>			
	<b><u>COVERED PARKING</u></b>			
	<b><u>EXCAVATION OTHER THAN BULK</u></b>			
	<b><u>Excavation in earth not exceeding 2m deep:</u></b>			
1	Holes	m3	10	
	<b><u>Extra over excavations other than bulk in earth for excavation in:</u></b>			
2	Soft rock	m3	1	
	<b><u>Risk of collapse of excavations other than bulk:</u></b>			
3	Sides of trench and hole excavations not exceeding 1,5m deep.	m2	14	
	<b><u>KEEPING EXCAVATIONS FREE OF WATER:</u></b>			
	<b><u>Keeping excavations free of water:</u></b>			
4	Keeping excavations free of all water other than subterranean water	Item		
	<b><u>REINFORCED CONCRETE CAST AGAINST EXCAVATED SURFACES:</u></b>			
	<b>Carried to Collection</b>		R	
	Section No. 3			
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	COVERED PARKING			

<b><u>25 MPa/19mm Concrete:</u></b>		
5	Columns in foundations	m3 1
<b><u>ROUGH FORMWORK (DEGREE OF ACCURACY III) (CPAP Work Group No 111):</u></b>		
<b><u>Rough formwork to sides:</u></b>		
6	Rectangular stub columns in foundations (Provisional).	m2 14
<b><u>CORRUGATED METAL SHEETING ROOF COVERING AND ACCESSORIES (CPAP Work Group No 124)</u></b>		
<b><u>'Kliplok' or equally approved 0,6mm thick light industrial steel sheeting with 'Chromadek' finish to one side and half coat 'Classicoat Grey' other side, and accessories fixed to steel purlins or rails at 710mm centres:</u></b>		
7	Roof covering with pitch not exceeding 25 degrees, in transportable lengths not exceeding 20m.	m2 414
<b><u>STRUCTURAL STEEL COLUMNS AND BEAMS</u></b>		
<b><u>Welded columns in single lengths with flat section base, bearer and connection plates bolted to concrete:</u></b>		
8	75 x 75 x 3mm Hollow square-section columns.	t 3.94
<b><u>Welded beams in single lengths with flat section base, bearer and connection plates bolted to steel columns:</u></b>		
9	175 x 75 x 20 x 2.5mm Lipped channel-section beams.	t 1.56
10	75 x 50 x 20 x 2.5mm Lipped channel-section purlins.	t 0.60
<b><u>Bolts to columns, beams, etc:</u></b>		
11	8mm Diameter L-shaped anchor bolt 250mm girth	No 50
<b><u>PAINT WORK ON METAL</u></b>		

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 COVERED PARKING

Prepare, remove all dust, grease, salts and contamination with 'Dulux Galvkleen Cleaner for Galvanised Iron', rinse and apply one coat 'Dulux Primer for Galvanised Iron', apply one coat 'Dulux Duragrip Universal Undercoat' and two coats 'Dulux High Gloss Alkyd Enamel paint on galvanised steel:

12	Columns and beams	m2	247
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COVERED PARKING

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COVERED PARKING

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	<b><u>BILL NO. 3</u></b>			
	<b><u>SITE WORKS</u></b>			
	<p><b><u>NOTE:</u></b> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>SEWER</u></b>			
	<b><u>Heavy duty (Class 34) uPVC sewer and drain pipes with couplings</u></b>			
1	160mm Pipes	m	17	
	<b><u>THE FOLLOWING IN ONE BRICK MAN HOLES</u></b>			
2	Excavation in earth not exceeding 2m deep	m3	9	
3	One brick walls	m2	10	
4	Bagging on internal of brick walls	m2	10	
5	Unreinforced concrete benching in bottom of 1460 x 1460mm chamber, dished down to channels and finished smooth with cement plaster	No	4	
	<b><u>Backfilling</u></b>			
6	To trenches	m3	3	
	<b><u>Cast iron gratings, covers etc</u></b>			
7	600 x 600mm x 76kg Cast iron Double seal manhole cover and frame	No	2	
8	120 x 120mm cast iron step built into brickwork	No	10	
	<b>Carried to Collection</b>		R	
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	SITE WORKS			

**WATER SUPPLIES**

**Class 16 uPVC pressure pipes**

9	160mm pipe	m	8
10	110mm pipe	m	30

**Class 9 uPVC pressure pipes**

11	110mm Pipe	m	135
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**Extra over Class 9 uPVC pressure pipes for fittings**

12	110mm Bend	No	2
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**Class 12 uPVC pressure pipes**

13	75mm Pipes	m	268
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**Extra over Class 16 uPVC pressure pipes for fittings with solvent welded joints**

14	90 Degree bend	No	1
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**HDPE polyethylene class 12 piping with 'Plason' or equally approved fittings**

15	50mm Pipes and excavations not exceeding 1m deep	m	10
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**Extra over polyethylene pipes for Plasson fittings**

16	50mm Fittings	No	2
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**Valves,etc including joints to pipes and/ or fittings**

17	75mm Brass full way wheel valve	No	1
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18	22mm 'Castle Optima 2000' or equally approved water meter with threaded inlet port	No	2
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**FIRE APPLIANCES ETC**

**WATER SUPPLIES TO FIRE APPLIANCES**

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<b><u>Class 16 uPVC pressure pipes with rubber ring joints</u></b>				
19	160mm Pipes laid in and including trenches not exceeding 1m deep	m	450	
20	110mm Pipes laid in and including trenches not exceeding 1m deep	m	22	
<b><u>Extra over class 16 uPVC pressure pipes for cast iron pressure fittings</u></b>				
21	160mm Hydrant tee drilled to table 16, including connecting bolts, gaskets, etc	No	2	
<b><u>HDPE Class 16 pipes</u></b>				
22	50mm Pipes	m	42	
<b><u>Extra over HDPE pipes for steel fittings</u></b>				
23	50mm Bend	No	4	
24	50mm Tee	No	1	
25	50 x 22mm Reducing tee	No	3	
<b><u>Testing</u></b>				
26	Testing fire water pipe system		Item	
<b><u>Fire hydrant pedestals</u></b>				
27	Unreinforced concrete hydrant pedestal 900mm high, cast around vertical pipe with bottom 300mm below ground, 300 x 300mm square at base and tapering to 200 x 200mm overall octagonal shaped top, including excavation, formwork and two coats of paint to exposed surfaces	No	2	
<b><u>Valves, meters etc</u></b>				
28	110mm Stream water meter for fire water line	No	1	
29	AVK gate valve (RSV Type) or equally approved, valve to adhere to SABS 664	No	1	
30	110mm non return valve	No	1	
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	<b><u>BILL NO. 4</u></b>			
	<b><u>EXTERNAL WORKS</u></b>			
	<p><u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>PRECAST CONCRETE</u></b>			
	<b><u>(HAYLETT FORMULA WORK GROUP No. 112</u></b>			
	<b><u>PAVING</u></b>			
	<b><u>EARTHWORKS</u></b>			
	<b><u>CLEARING</u></b>			
1	Clear site include. remove trees up to 1m girth to approved areas off site	m2	1 250	
	<b><u>EXCAVATION</u></b>			
2	Excavate in all materials and dispose of surplus/unsuitable material	m3	250	
	<b><u>Extra-over item.2.1 for excavation in:</u></b>			
3	Intermediate material	m3	25	
4	Hard rock material	m3	13	
5	Cut to Spoil	m3	200	
	<b>Carried to Collection</b>		R	
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	PRE-CAST CONCRETE			

6	Rip and compact the ground surface under floors, pavings etc including scarifying for a depth of 75mm, breaking down oversized material, adding suitable material where necessary and compacting to 93% Mod AASHTO density.	m2	1 250		
7	25mm Sand bedding (LI)	m3	31		
	<b><u>Import G5 filling material compacted to 93% Mod AASHTO</u></b>				
8	Under floors, steps, paving, etc	m3	250		
	<b><u>Precast concrete block road surfacing</u></b>				
	<b><u>80mm Grey Double "Zig Zag" interlocking roadstones paving or equal approved</u></b>				
9	Paving to parking areas etc to falls.	m2	1 250		
10	Mountable kerbing to SABS 927 Fig. 7 in 1m lengths with 10mm wide butt joints filled in with (2:1) cement mortar and pointed with grooved half round joints and 10mm wide open butt joints at 5m centre including 15MPa/19mm mass concrete haunching size 225mm long x 225mm high x 150mm thick at joints and backfilling at back of kerbs, top soiled and levelled to adjacent surface	m	190		
11	Mountable kerbing to SABS 927 Fig. 5 in 1m lengths with 10mm wide butt joints filled in with (2:1) cement mortar and pointed with grooved half round joints and 10mm wide open butt joints at 5m centre including 15MPa/19mm mass concrete haunching size 225mm long x 225mm high x 150mm thick at joints and backfilling at back kerbs, top soiled and levelled to adjacent surfaces	m	85		
12	Mountable kerbing to SABS 927 Fig. 8B in 1m lengths with 10mm wide butt joints filled in with (2:1) cement mortar and pointed with grooved half round joints and 10mm wide open butt joints at 5m centre including 15MPa/19mm mass concrete haunching size 225mm long x 225mm high x 150mm thick at joints and backfilling at back of kerbs, topsoiled and levelled to adjacent surfaces	m	18		
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PRE-CAST CONCRETE					

**Unreinforced Concrete**20mpa/19mm

13	Concrete work at access with tar road	m3	5
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**ROADWORK, PARKING AREAS AND PAVING****Extra over all excavations for carting away**

14	Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor	m3	6
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**PAINTWORK****Prepare and apply one coat white reflective road marking paint on bituminous road surfacing, precast concrete paving blocks, etc**

15	Line 100mm Wide	m	98
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16	Disable persons pictorial 1000mm high	No	2
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**LANDSCAPING****Ground preparation:**

17	Cultivation and preparation of areas to be planted.	m2	450
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**Topsoil, compost, lime and fertilizer:**

18	Topsoil supplied by the Contractor in plant beds, grassed areas and holes for trees, shrubs, etc.	m3	158
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19	Compost in plant beds, holes for trees, shrubs, etc.	m3	113
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**Mulch:**

20	35mm Mulch layer in plant beds between plants.	m2	450
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 PRE-CAST CONCRETE



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PRE-CAST CONCRETE

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PRE-CAST CONCRETE

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	<b><u>BILL NO. 5</u></b>			
	<b><u>EXTERNAL WORKS</u></b>			
	<p><u>NOTE:</u> Tenderers are advised to study the Model Preambles for Trades before pricing this bill</p> <p>Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill</p> <p>-----</p>			
	<b><u>RAMPS AND STAIRS AROUND BUILDINGS</u></b>			
	<b><u>RAMPS</u></b>			
	<b><u>Excavation in earth or compacted platforms not exceeding 2m deep</u></b>			
1	Trenches	m3	53	
	<b><u>Risk of collapse of excavations</u></b>			
2	Sides of trench and hole excavations not exceeding 1,5m deep	m2	198	
	<b><u>Earth filling obtained from the excavations and /or prescribed stock piles on site including compacted to 93% Mod AASHTO density</u></b>			
3	Backfilling to trenches, holes, etc	m3	33	
	<b><u>Compaction of surfaces</u></b>			
4	Compaction of ground surface under ramps, etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 93% Mod AASHTO density	m2	161	
	<b><u>Prescribed density tests on filling</u></b>			
5	"Modified AASHTO Density" test	No	25	
	<b>Carried to Collection</b>			
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	Bill No. 5			
	RAMPS, STEPS AND APRONS			

<b><u>Soil poisoning and insecticide</u></b>				
6	Under ramps, etc including forming and poisoning shallow furrows against foundation walls, etc, filling in furrows and ramming	m2	161	
7	To bottoms and sides of trenches, etc	m2	273	
<b><u>15MPa/19mm unreinforced concrete</u></b>				
8	Ramps laid in panels	m3	19	
9	Extra over concrete ramps for thickening size 150mm deep, 200mm top and tapering to 100mm at bottom including all excavation to 100mm, backfilling, etc.	m	250	
<b><u>Finishing top surfaces of concrete smooth with a wood trowel</u></b>				
10	Ramps to falls	m2	161	
<b><u>Brickwork of NFX bricks in class I mortar</u></b>				
11	One brick walls in foundations	m2	88	
<b><u>Brickwork reinforcement</u></b>				
12	150mm Wide reinforcement built in horizontally in foundations	m	259	
<b><u>Buff Travertine face bricks (FBX) with a pointed with square recessed horizontal and vertical joints</u></b>				
13	Extra over brickwork for face brickwork in foundations	m2	88	
<b><u>Brick-on-edge header course copings, sills, etc Buff Travertine pointed with recessed joints on all exposed faces</u></b>				
14	Coping on top of one brick wall	m	250	
<b><u>20MPa/19mm concrete</u></b>				
15	Ramps to falls casted in panels	m3	19	
<b><u>STEEL HANDRAILS</u></b>				
<b>Carried to Collection</b>				
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RAMPS, STEPS AND APRONS				

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Stainless steel horizontal and raking balustrade consisting of 50mm diameter continuous top and bottom rails and 50mm diameter two ball stanchions at average 2100mm centres welded to 100 x 65mm flat section base plate twice holed for and including M10/M12 expansion bolts bolted to concrete including necessary fixings, angle closures, ramp bends, end plates etc... complete.

16	Handrails 900mm high	m	75
17	Handrails 325mm high	m	44

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RAMPS, STEPS AND APRONS

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RAMPS, STEPS AND APRONS

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RAMPS, STEPS AND APRONS

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**SECTION 4****BILL NO. 1****ELECTRICAL WORKS**

NOTE: Tenderers are advised to study the Model  
Preambles for Trades before pricing this bill

Tenderers are advised to study the Department of  
Public Works - Construction works: General  
Specification (PW371-A) and Construction works:  
Particular Specification (PW371-B) before pricing this bill

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Section No. 4  
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GENERAL: SITE

**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings.

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included.

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above.

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS**

**EMERGENCY BACK-UP GENERATOR**

- 1 Install a 250kVA Standby Generator complete with change over panel and 1500litre tank, filled with diesel after all necessary tests and commissioning phase

**Carried to Collection**

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GENERAL: SITE

SUM

R



**MANKWENG POLICE STATION**

2	Allow of the full servicing of the generator complete with all necessary tests and checks			SUM
3	STANDBY PANEL A	EA	1	
4	400A, 15kA, 3 Pole MCCB	EA	1	
5	300A, 15kA, 3 Pole MCCB	EA	1	
6	400A 3 Pole Normal closed contractor on standby power supply Administration and Cell Buildings	EA	1	
7	400A 3 Pole Normal open contractor on normal power supply from Upgraded transformer	EA	1	
8	200A, 15kA, 3 Pole MCCB	EA	2	
9	150A, 15kA, 3 Pole MCCB	EA	1	
10	80A, 15kA, 3 Pole MCCB	EA	1	
<b><u>DISTRIBUTION KIOSKS</u></b>				
Supply and install a new distribution Kiosk, complete with sheet metal trays, frames, sub-frames, bus bars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic				
				R
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**MANKWENG POLICE STATION**

11	Kiosk A	EA	1		
12	300A, 15kA, 3 Pole MCCB	EA	1		
13	220A, 15kA, 3 Pole MCCB	EA	2		
14	180A, 15kA, 3 Pole MCCB	EA	1		
15	150A, 15kA, 3 Pole MCCB	EA	1		
16	KIOSK 1	EA	1		
	<b><u>Standby</u></b>				
17	150A, 15kA, 3 Pole MCCB	EA	1		
	<b><u>Normal</u></b>				
18	120A, 15kA, 3 Pole MCCB	EA	2		
19	80A, 15kA, 3 Pole MCCB	EA	1		
20	16A, 6kA, 1 Pole MCB	EA	3		
21	Day Light switches in York enclosure with transparent lid - properly labelled. Type: National - 16A. By-pass switch (15A CB) to be installed in york box.	EA	3		
22	KIOSK 2	EA	1		
				R	

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GENERAL: SITE

**Standby**

23 80A, 15kA, 3 Pole MCCB

EA

1

24 60A, 15kA, 3 Pole MCB

EA

1

**Normal**

25 220A, 15kA, 3 Pole MCCB

EA

1

26 150A, 15kA, 3 Pole MCCB

EA

1

27 80A, 15kA, 3 Pole MCCB

EA

2

28 16A, 6kA, 1 Pole MCB

EA

2

29 Day Light switches in York enclosure with transparent lid - properly labelled. Type: National - 16A. By-pass switch (15A CB) to be installed in york box

EA

1

**CABLES AND BUS BARS**

Supply and install the following cables drawn through ducts or laid on cable trays. Note that all earth conductors shall be strapped to their respective supply cables at intervals not more than 1m apart.

**LV CABLES****Carried to Collection**

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**95mm<sup>2</sup> 4 Core Copper cable**

30	Kiosk A to Generator (2 x Parallel)	m	135
31	standby Panel to Administration Standby	m	70
32	Kiosk A to Kiosk 1 Normal	m	65
33	Kiosk A to Kiosk 2 Normal	m	95
34	95mm <sup>2</sup> BCC Earth conductor for above	m	365

**70mm<sup>2</sup> 4 Core Copper cable**

35	Standby Panel to Cell Block Standby	m	40
36	Standby Panel to Kiosk 1 Standby	m	35
37	Kiosk 2 to Admin Building Normal	m	35
38	70mm <sup>2</sup> BCC Earth conductor for above	m	110

**50mm<sup>2</sup> 4 Core Copper cable.**

39	Kiosk 1 to Crime Investigation Ground Standby	m	50
40	Kiosk 1 to Crime Investigation Ground Normal	m	50
41	Kiosk 2 to Purpose Building Normal	m	20

**Carried to Collection**

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42	50mm <sup>2</sup> BCC Earth conductor for above	m	120	
	<b><u>35mm<sup>2</sup> 4 Core Copper cable.</u></b>			
43	Kiosk 1 to Cell Block Normal	m	95	
44	Kiosk 2 to Stores Normal	m	40	
45	35mm <sup>2</sup> BCC Earth conductor for above	m	135	
	<b><u>25mm<sup>2</sup> 4 Core Copper cable.</u></b>			
46	Standby Panel to Kiosk 2 Standby	m	80	
47	25mm <sup>2</sup> BCC Earth conductor for above	m	80	
	<b><u>16mm<sup>2</sup> 4 Core Copper cable.</u></b>			
48	Kiosk 2 Standby to Purpose Standby	m	30	
49	16mm <sup>2</sup> BCC Earth conductor for above	m	30	
	<b><u>4mm<sup>2</sup> 4 Core Copper cable.</u></b>			
50	Kiosk 1 to LC 2	m	150	
51	Kiosk 1 to LC 3	m	150	
52	Kiosk 1 to LC 4	m	150	
	<b>Carried to Collection</b>			R
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	GENERAL: SITE			

53	Kiosk 1 to LC 5	m	200	
54	Kiosk 2 to LC 1	m	180	
55	4mm <sup>2</sup> BCC Earth conductor for above	m	830	
<b><u>LV CABLE TERMINATIONS</u></b>				
Cable terminations to supply cables and earth continuity conductor, to include - cable glands, lugs and connections at Main DB and SDB's.				
56	95mm <sup>2</sup> 4 Core Cable (Indoor)	No	10	
57	70mm <sup>2</sup> 4 Core Cable (Indoor)	No	6	
58	50mm <sup>2</sup> 4 Core Cable (Indoor)	No	6	
59	35mm <sup>2</sup> 4 Core Cable (Indoor)	No	4	
60	25mm <sup>2</sup> 4 Core Cable (Indoor)	No	2	
61	16mm <sup>2</sup> 4 Core Cable (Indoor)	No	2	
62	4mm <sup>2</sup> 4 Core Cable (Indoor)	No	60	
63	95mm <sup>2</sup> BCC	m	10	
64	70mm <sup>2</sup> BCC	No	6	
<b>Carried to Collection</b>				<b>R</b>
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**MANKWENG POLICE STATION**

65	50mm <sup>2</sup> BCC	No	6	
66	35mm <sup>2</sup> BCC	No	4	
67	25mm <sup>2</sup> BCC	No	2	
68	16mm <sup>2</sup> BCC	No	2	
69	4mm <sup>2</sup> BCC	No	60	
<b><u>EXCAVATIONS</u></b>				
70	General trenching work for sleeve trenches along the routes as pegged out on site after the required co-ordination with other services.	m	880	
71	Allowance must be made for the sifting of soil when required removal and carting away of all stones and rocks and the dumping off site. Backfilling and compacting shall be carried out as specified for overall site works			SUM
72	Trenching in consolidated soil for cables, cable sleeves, etc incl. backfill as per specifications	m	180	
73	Extra over excavations for excavation in soft rock	m3	50	
74	Extra over excavations for excavation in hard rock	m3	85	
75	Concrete cable markers as per specifications	EA	30	
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**WIRE MESH CABLE TRAYS (200mm)**

85	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete	m	15
86	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - T-off	EA	2
87	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 4 Way	EA	2
88	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees horizontal	EA	4
89	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees vertical	EA	4
90	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - T-off to 600mm wire mesh	EA	1

**WIRE MESH CABLE TRAYS (400mm)**

91	Welded wire mesh cable tray (400mm wide) with joiner sets and suspending equipment complete	m	15
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Carried to Collection

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**LUMINARIES**

Supply and install luminaries fixed to structures e.g.:  
concrete ceiling;  
Rhino board ceiling and walls. Price shall include lamps  
and the  
connecting thereof. Note that all fluorescent emergency  
exit lighting and down-lighter luminaries must be  
supplied

- 92 Bulkhead: Exterior pole mounted 2 x 26W CFL, buttom  
entry, complete  
with 3,5m fibreglass pole, with individual 5A circuit  
breaker in pole

EA

5

**LIGHTNING PROTECTION**

- 93 The building will be protected against lightning strikes  
according to SABS  
0313. The successful contractor will use the building  
reinforce steel at  
distances not more than 20m apart and connect to the  
base prior to it  
being casted. Provide engineer with certificate from  
specialist  
supplier/installer

SUM

- 94 Allow for Earth resistance tests and reports

SUM

**EARTH MAT**

Note: Minimum distance of 5000mm between MV and  
LV  
earth mats.

**Carried to Collection**

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GENERAL: SITE

95	Supply and install an earth mat with the following specifications: The mat will be installed 1m below NGL, will be 1.6m x 1.6m and will consists of 400mm x 400mm cad-welded joints of stranded 70mm <sup>2</sup> copper conductor, 2 separate leads connected to the earth mat with a spacing of at least 1 m will be connected to the mini-substation LV neutral bar. Make provision for back-filling and compacting as well as earth conductivity test	EA	1	
<b><u>EARTHING AND BONDING</u></b>				
96	Provide earthing and bonding in all ablution rooms, laundries and kitchens			SUM
<b><u>GENERAL / TESTING AND COMMISSIONING</u></b>				
97	Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power			SUM
98	Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer			SUM
99	Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993			SUM
100	Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.			SUM
<b>Carried to Collection</b>				R
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- 101    Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.
- 102    Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

SUM

SUM

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GENERAL: SITE

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No

Quantity

Rate

Amount

**SECTION 4****BILL NO. 2****ELECTRICAL INSTALLATION**

NOTE: Tenderers are advised to study the Model Preambles for Trades before pricing this bill

Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill

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**RENOVATIONS OF EXISTING ADMINISTRATION BUILDING**

Carried to Collection

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Section No. 4  
Bill No. 2  
EXISTING ADMINISTRATION BLOCK

**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS**

**DISTRIBUTION BOARDS**

**Carried to Collection**

Section No. 4  
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EXISTING ADMINISTRATION BLOCK

R

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, bus bars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

1	DB - Main	EA	1
	<b><u>Standby</u></b>		
2	180A, 15kA, 3 Pole MCCB	EA	1
3	80A, 6kA, 2 Pole MCB	EA	3
4	80A, 6kA, 2 Pole Earth Leakage	EA	3
5	60A, 6kA, 3 Pole MCB	EA	1
6	20A, 6kA, 1 Pole MCB	EA	14
7	15A, 6kA, 1 Pole MCB	EA	19
	<b><u>Normal</u></b>		
8	120A, 15kA, 3 Pole MCB	EA	1
9	80A, 6kA, 3 Pole MCB	EA	1
10	60A, 6kA, 3 Pole MCB	EA	2

Carried to Collection

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EXISTING ADMINISTRATION BLOCK



**MAN KWENG POLICE STATION**

11	30A, 6kA, 2 Pole MCB	EA	4
12	20A, 6kA, 2 Pole MCB	EA	2
13	16A, 6kA, 2 Pole MCB	EA	33
14	DB - Purpose	EA	1
	<b><u>Standby</u></b>		
15	60A, 6kA, 3 Pole MCB	EA	2
	<b><u>Normal</u></b>		
16	80A, 6kA, 3 Pole MCB	EA	2
17	60A, 6kA, 3 Pole MCB	EA	2
18	60A, 6kA, 2 Pole Earth Leakage	EA	1
19	30A, 6kA, 2 Pole MCB	EA	1
20	20A, 6kA, 1 Pole MCB	EA	3
21	16A, 6kA, 2 Pole MCB	EA	6
22	15A, 6kA, 1 Pole MCB	EA	5
23	DB - Stores	EA	1
<b>Carried to Collection</b>			R
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**Normal**

24	60A, 6kA, 3 Pole MCB	EA	2
25	80A, 6kA, 2 Pole Earth Leakage	EA	1
26	20A, 6kA, 1 Pole MCB	EA	4
27	15A, 6kA, 1 Pole MCB	EA	7
28	DB - Security (Main)	No	1
29	60A, 6kA, 3 Pole MCB	EA	1
30	60A, 6kA, 2 Pole MCB	EA	3
31	20A, 6kA, 1 Pole MCB	EA	17
32	DB - Security (Purpose)	EA	1
33	60A, 6kA, 3 Pole MCB	EA	1
34	20A, 6kA, 1 Pole MCB	EA	8

**ISOLATORS**

Carried to Collection

R

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 EXISTING ADMINISTRATION BLOCK

Supply and install new isolators for air conditioning units, ventilation equipment, stove, geyser, etc. complete with flexible conduit, connectors, compression glands, brackets, etc.

35	16A 2 pole isolator	EA	39
36	20A 2 pole isolator	EA	2
37	30A 2 pole isolator	EA	5
38	60A 3 Pole isolator AC	EA	2
39	60A 3 Pole isolator (UPS)	EA	4

#### CABLES AND BUS BARS

Supply and install the following cables drawn through ducts or laid on cable trays. Note that all earth conductors shall be strapped to their respective supply cables at intervals not more than 1m apart

#### LV CABLES

##### 16mm<sup>2</sup> 4 Core Copper cable.

40	DB-Admin Normal to AC outdoor unit 1	m	45
41	DB-Admin Normal to AC outdoor unit 2	m	45
42	DB-Admin Standby to DB Security (Admin)	m	15

Carried to Collection

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**TRUNKING: LIGHT CIRCUITS**

56	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid	m	200
57	Galvanised ducting 76 x 51mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	EA	8
58	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 4 Way	EA	1
59	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	EA	5
60	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	8

**TRUNKING: PLUG CIRCUITS**

61	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid	m	120
62	Galvanised ducting 76 x 51mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	EA	2
63	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	EA	2

**Carried to Collection****R**

Section No. 4  
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 EXISTING ADMINISTRATION BLOCK

64	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	2	
<b><u>WIRE MESH CABLE TRAYS (200mm)</u></b>				
65	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete	m	140	
66	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - T-off	EA	3	
67	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees horizontal	EA	1	
68	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees vertical	EA	4	
<b><u>WIRING</u></b>				
<b><u>Supply and install wiring for all power and light circuits. All light circuits will be wired with 2.5mm<sup>2</sup>, plug circuits with 4mm<sup>2</sup> and circuits feeding isolators with 4mm<sup>2</sup></u></b>				
69	2,5mm <sup>2</sup> Wiring for light circuits (Red)	m	1 200	
70	2,5mm <sup>2</sup> Wiring for light circuits (Black)	m	1 200	
71	2,5mm <sup>2</sup> Wiring for light circuits (Copper)	m	1 200	
<b>Carried to Collection</b>				R
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72	4mm <sup>2</sup> Wiring for plug circuits (Red)	m	1 200	
73	4mm <sup>2</sup> Wiring for plug circuits (Black)	m	1 200	
74	4mm <sup>2</sup> Wiring for plug circuits (Copper)	m	1 200	
75	6mm <sup>2</sup> Wiring for alternative circuits	m	30	
76	Draw wire	m	1 000	
<b><u>POWER SKIRTING</u></b>				
77	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover.	m	30	
78	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. Internal 90 degree elbow	EA	9	
79	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. End cap	EA	19	
80	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. Wall entry	EA	7	
81	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. T-off	EA	3	
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**TELEPHONE DISTRIBUTION BOARD**

**Supply, deliver, storage and installation of TELKOM  
nad DATA  
approved type distribution board size 450 x 450 x  
150mm deep to accommodate requirements as  
shown out in specification clause**

- 82 Telephone Distribution Board to be installed as per specifications

EA 1

- 83 Data Distribution Board to be installed as shown as per specifications

EA 1

**SOCKET OUTLETS / ISOLATORS /  
COMMUNICATION /  
DATA**

**SOCKET OUTLETS**

**Stainless steel / brush aluminium (or white) 100mm  
x 100mm with 2 x screws cover plate. White socket  
trimming and switch.  
Complete with yoke and fixing material.**

- 84 Double 16A socket outlet flush (normal)

EA 25

- 85 Single 16A socket outlet flush (normal)

EA 20

- 86 1 x Single 5A socket outlet flush. Non switchable (Install new complete with cover, round box, white with screws) Install in ceiling cavity for security circuits.

EA 12

- 87 Single 16A socket outlet in watertight weatherbox

EA 6

**Carried to Collection**

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EXISTING ADMINISTRATION BLOCK

R

**POWER SKIRTING ACCESSORIES**

**White to fit power skirting (except for dedicated outlets)**  
**MOS**

88	Double 16A Socket outlet in power skirting (normal)	EA	60
89	Single 16A socket outlet in power skirting (dedicated)	EA	60
90	Telecommunication jack RJ45 in power skirting	EA	60
91	Data jack RJ45 in power skirting	EA	60

**SWITCHES / LUMINIARIES****LIGHT SWITCHES**

**Stainless steel / brush aluminium 100mm x 50mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.**

92	Single lever 1 way light switch.	EA	48
93	Single lever 2 way light switch.	EA	12
94	Double lever 1 way light switch	EA	2
95	Rotary water tight light switch 1 way rated IP 65	EA	2
96	10A Photoelectric outdoor lighting control switch installed on wall	m	4

**Carried to Collection**

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 Bill No. 2  
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R

**LUMINARIES**

**Supply and install luminaries fixed to structures e.g.: concrete ceiling; Rhino board ceiling and walls. Price shall include lamps and the connecting thereof. Luminaires with battery back-up must be supplied with an additional core (4 core).**

97	Fluorescent: 1.2mx300mm tube 2 x 36W,parabolic, electronic ballast, surface mounted, with LBR Fitting	EA	40
98	Fluorescent: 1.5m, double tube x 58W, waterproof IP65, electronic ballast, surface mounted (dimensions: 1570 x 160 x 110)	EA	2
99	Bulkhead: rectangular 155mm (w) x 324mm (l) x 122mm (h), 2 x PL18 220V, matt white, electronic ballast, surface mounted	EA	32
100	Fluorescent: 600mm x 600mm, 4 x 18W, double, electronic ballast,with 1 x 18W battery back-up, flush mounted (dimensions: 595 x 595 x 90mm)	EA	20
101	Bulkhead: decorative round bulkhead, 2 x PL9 220V, matt white, electronic ballast, surface mounted - bathrooms	EA	24
102	Emergency exit lighting: single sided illuminated with battery back up ceiling mounted bracket. (down arrow with man running) (dimensions: 330 x 145 x 46 mm)	EA	1

Carried to Collection

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 EXISTING ADMINISTRATION BLOCK

# MANKWENG POLICE STATION

103	Emergency exit lighting: single sided illuminated with battery back up, surface mounted bracket. (horizontal arrow - right, man and stairs, green) (dimensions: 330 x 145 x 46mm)	EA	1		
104	Flourescent: 1.2m, 4 x 36W, double parabolic, electronic ballast, recessed, flush mounted. (436)	EA	64		
105	Down lighter: cut-out = 170mm, 1 x 70W 220V, matt white, electronic ballast, flush mounted	EA	13		
106	Bulkhead: square 274mm x 274mm x 104mm, 2 x PL18, 220V, matt white, electronic ballast, 1 x 18W battery back-up, surface mounted	EA	10		
107	Fluorescent: 1.5m, double tube x 58W, open channel, electronic ballast, surface mounted (dimensions: 1570 x 160 x 110) 1 x 58W battery backup.	EA	4		
<b><u>LIGHTNING PROTECTION</u></b>					
108	The building will be protected against lightning strikes according to SABS 0313. The successful contractor will use the building reinforce steel at distances not more than 20m apart and connect to the base prior to it being casted. Provide engineer with acompliance certificate.			SUM	
109	Allow for Earth resistance tests and reports			SUM	
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**UN-INTERRUPTED POWER SUPPLY**

- 110 Supply and install a new MGE Galaxy 3500 UPS, 20kVA 400V in and 400V out complete with accessories and batteries to provide emergency power for at least 10 min during power cuts for computer, fire and other essential emergency systems.

m

2

**FIRE / SMOKE DETECTION**

- 111 Install fire / smoke detection in all rooms as indicated in the drawings and specifications. 2 Loop system with 2 x break glass, 1 siren, 2 Heat detectors, 24 smoke detectors complete

SUM

- 112 PH30 cabling for above

m

206

**EARTHING AND BONDING**

- 113 Provide earthing and bonding in all ablution rooms, laundries and kitchens

SUM

**EXISTING ELECTRICAL INFRASTRUCTURE**

- 114 Make provision to remove all existing electrical equipment for e.g. luminaires, socket outlets, power skirting, wiring, etc

SUM

**GEYSER/HYDROBOIL/HAND DRYERS**

- 115 Supply and install 150l geyser with all valves, piping, etc. to supply the kitchen and bathrooms. Water distribution to form part of the Architects Bill of Materials

EA

2

**Carried to Collection**

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Section No. 4

Bill No. 2

EXISTING ADMINISTRATION BLOCK

- 116 Supply and install a under counter Hydroboil capable of supplying water for dishes only. Typical: K-prisma or better. All piping, supply stop valve/tap etc. to be included.

SUM

**GENERAL / TESTING AND COMMISSIONING**

- 117 Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power

SUM

- 118 Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer

SUM

- 119 Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.

SUM

- 120 Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required

SUM

- 121 Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.

SUM

- 122 Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

SUM

**Carried to Collection**

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EXISTING ADMINISTRATION BLOCK

**Rate**

Amount

## **BILL NO. 3**

## ELECTRICAL INSTALLATION

**Tenderers are advised to study the Department of Public Works - Construction works: General Specification (PW371-A) and Construction works: Particular Specification (PW371-B) before pricing this bill**

### **CONSTRUCTION OF NEW LIVING QUARTERS 3 STOREY**

**Carried to Collection**

R

Section No. 4  
Bill No. 3  
NEW LIVING QUARTERS BLOCK A



**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS**

**DISTRIBUTION BOARDS**

**Carried to Collection**

Section No. 4  
Bill No. 3  
NEW LIVING QUARTERS BLOCK A

R

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, busbars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

### **DB - GROUND**

#### **Normal**

1	40A, 15kA, 2 Pole, Earth Leakage	EA	1
2	20A, 6kA, 1 Pole MCB	EA	1
3	15A, 6kA, 1 Pole MCB	EA	2

### **DB - FIRST**

#### **Normal**

4	40A, 15kA, 2 Pole, Earth Leakage	EA	1
5	20A, 6kA, 1 Pole MCB	EA	1
6	15A, 6kA, 1 Pole MCB	EA	2

### **DB - SECOND**

**Carried to Collection**

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NEW LIVING QUARTERS BLOCK A

R

**Normal**

7 15A, 6kA, 1 Pole MCB

EA

2

**DB - G1**

8 60A, 10kA, 2 Pole MCB

EA

1

9 40A, 15kA, 2 Pole, Earth Leakage

EA

1

10 20A, 6kA, 2 Pole MCB

EA

1

11 20A, 6kA, 1 Pole MCB

EA

1

12 15A, 6kA, 1 Pole MCB

EA

1

**ISOLATORS**

**Supply and install new isolators for air conditioning units, ventilation equipment, stove, geyser, etc. complete with flexible conduit, connectors, compression glands, brackets, etc.**

13 20A 2 pole isolator in watertight box

EA

3

**CABLES AND BUS BARS**

**Supply and install the following cables drawn through ducts or laid on cable trays. Note that all earth conductors shall be strapped to their respective supply cables at intervals not more than 1m apart**

Carried to Collection

R

Section No. 4

Bill No. 3

NEW LIVING QUARTERS BLOCK A

**LV CABLES****16mm<sup>2</sup> 3 Core Copper cable.**

14	DB-Ground to DB-G3	m	30
15	DB-First to DB-F3	m	30
16	DB-First to DB-F4	m	30
17	16mm <sup>2</sup> BCC Earth conductor for above	m	90

**LV CABLE TERMINATIONS**

**Cable terminations to supply cables and earth continuity conductor, to include - cable glands, lugs and connections at Main DB and SDB's.**

18	16mm <sup>2</sup> 3 Core Cable (Indoor)	No	4
19	16mm <sup>2</sup> BCC	No	4

**RETICULATION****CONDUIT**

**Supply and install Bosal conduit with support fixings (saddles/ couplings/adaptors), cast in concrete, surface bed or screed, fixed to wood, roof members, suspended ceiling, steel, etc., run in roof space, chased and/or fixed in brickwork including bends**

Carried to Collection

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NEW LIVING QUARTERS BLOCK A

**20 mm diameter conduit**

20 Interior luminaire, communication and data circuits

m

20

**25 mm diameter conduit**

21 Socket outlet, air conditioning and isolator circuits

m

50

22 Exterior Luminaire circuits

m

20

**20 mm Diameter flexible conduit**

23 Supply and install 20mm diameter flexible conduit in 1m lengths with couplings complete.

EA

7

**CONDUIT ACCESSORIES AND DRAW BOXES**Supply and install Bosal conduit accessories and outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit.

24 100mm x 100mm x 50mm deep box

EA

7

25 100mm x 50mm x 50mm deep box

EA

5

26 65 mm Diameter round boxes

EA

5

**WIRING****Carried to Collection****R**

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Supply and install wiring for all power and light circuits. All light circuits will be wired with 2.5mm<sup>2</sup>, plug circuits with 4mm<sup>2</sup> and circuits feeding isolators with 4mm<sup>2</sup>

27	2,5mm <sup>2</sup> Wiring for light circuits (Red)	m	200
28	2,5mm <sup>2</sup> Wiring for light circuits (Black)	m	200
29	2,5mm <sup>2</sup> Wiring for light circuits (Copper)	m	200
30	4mm <sup>2</sup> Wiring for plug circuits (Red)	m	60
31	4mm <sup>2</sup> Wiring for plug circuits (Black)	m	60
32	4mm <sup>2</sup> Wiring for plug circuits (Copper)	m	60
33	6mm <sup>2</sup> Wiring for alternative circuits	m	12
34	Draw wire	m	250

**SOCKET OUTLETS / ISOLATORS /  
COMMUNICATION /DATA**

**SOCKET OUTLETS**

Stainless steel / brush aluminium 100mm x 100mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.

35	Double 16A socket outlet flush (normal)	EA	5
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**Carried to Collection**

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36	Single 16A socket outlet flush (normal)	EA	2		
37	Single 16A socket outlet in watertight weatherbox	EA	1		
<b><u>SWITCHES / LUMINIARIES</u></b>					
<b><u>LIGHT SWITCHES</u></b>					
<b><u>Stainless steel / brush aluminium 100mm x 50mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.</u></b>					
38	Single lever 1 way light switch.	EA	12		
39	Rotary water tight light switch 1 way rated IP 65	EA	2		
40	10A Photoelectric outdoor lighting control switch installed on wall	EA	3		
<b><u>LUMINARIES</u></b>					
<b><u>Supply and install luminaries fixed to structures e.g.: concrete ceiling; Rhino board ceiling and walls. Price shall include lamps and the connecting thereof. Luminaires with battery back-up must be supplied with an additional core (4 core). .</u></b>					
41	Bulkhead: square 274mm x 274mm x 104mm, 2 x PL18, 220V, matt white, electronic ballast, 1 x 18W battery back-up, surface mounted	EA	2		
42	Bulkhead: decorative round bulkhead, 2 x PL9 220V, matt white, electronic ballast, surface mounted - bathrooms	EA	2		
				R	
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43	Bulkhead: round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, outside, surface mounted	EA	4		
44	Bulkhead: rectangular 440mm (w) x 320mm (l) x 217mm (h), 125W mercury vapour, matt black complete with decorative skirt assembly, surface mounted	EA	5		
45	Bulkhead: decorative round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, surface mounted	EA	5		
46	Emergency exit lighting: single sided illuminated with battery back up ceiling mounted bracket. (down arrow with man running) (dimensions: 330 x 145 x 46 mm)	m	1		
47	Emergency exit lighting: single sided illuminated with battery back up, surface mounted bracket. (horizontal arrow - right, man and stairs, green) (dimensions: 330 x 145 x 46mm)	m	1		
48	Fluorescent: 1.2m tube 2 x 36W, electronic ballast, surface mounted, with LBR Fitting	EA	2		
<b><u>LIGHTNING PROTECTION</u></b>					
49	The building will be protected against lightning strikes according to SABS 0313. The successful contractor will use the building reinforce steel at distances not more than 20m apart and connect to the base prior to it being casted. Provide engineer with a compliance certificate.			SUM	
50	Allow for Earth resistance tests and reports			SUM	
<b>Carried to Collection</b>				R	
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**EARTHING AND BONDING**

- 51 Provide earthing and bonding in all ablution rooms, laundries and kitchens

SUM

**GEYSER/HYDROBOIL/HAND DRYERS**

- 52 Supply and install 150l geyser with all valves, piping, etc. to supply the kitchen and bathrooms. Water distribution to form part of the Architects Bill of Materials

EA

2

**GENERAL / TESTING AND COMMISSIONING**

- 53 Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power

SUM

- 54 Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer

SUM

- 55 Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.

SUM

- 56 Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.

SUM

- 57 Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.

SUM

**Carried to Collection**

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NEW LIVING QUARTERS BLOCK A

58 Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

SUM

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Quantity

Rate

Amount

**SECTION 4****BILL NO. 4****ELECTRICAL INSTALLATION**

NOTE: Tenderers are advised to study the Model  
Preambles for Trades before pricing this bill

Tenderers are advised to study the Department of  
Public Works - Construction works: General  
Specification (PW371-A) and Construction works:  
Particular Specification (PW371-B) before pricing this bill

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**CONSTRUCTION OF NEW LIVING QUARTERS 2  
STOREY**

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Bill No. 4  
NEW LIVING QUARTERS BLOCK B

**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS**

**DISTRIBUTION BOARDS**

**Carried to Collection**

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Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, busbars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

**DB - GROUND**

**Normal**

1	40A, 15kA, 2 Pole, Earth Leakage	EA	1
2	20A, 6kA, 1 Pole MCB	EA	1
3	15A, 6kA, 1 Pole MCB	EA	3

**DB - 1**

**Normal**

4	40A, 15kA, 2 Pole, Earth Leakage	EA	1
5	15A, 6kA, 1 Pole MCB	EA	2

**DB - G1**

6	60A, 10kA, 2 Pole MCB	EA	1
7	40A, 15kA, 2 Pole, Earth Leakage	EA	1

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8	20A, 6kA, 2 Pole MCB	EA	1		
9	20A, 6kA, 1 Pole MCB	EA	1		
10	15A, 6kA, 1 Pole MCB	EA	1		
<b><u>DB - G2</u></b>					
11	60A, 10kA, 2 Pole MCB	EA	1		
12	40A, 15kA, 2 Pole, Earth Leakage	EA	1		
13	20A, 6kA, 2 Pole MCB	EA	1		
14	20A, 6kA, 1 Pole MCB	EA	1		
15	15A, 6kA, 1 Pole MCB	EA	1		
<b><u>ISOLATORS</u></b>					
<b><u>Supply and install new isolators for air conditioning units, ventilation equipment, stove, geyser, etc. complete with flexible conduit, connectors, compression glands, brackets, etc.</u></b>					
16	20A 2 pole isolator in watertight box	EA	5		
<b><u>CABLES AND BUSBARS</u></b>					
<b>Carried to Collection</b>					
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Supply and install the following cables drawn through ducts or laid on cable trays. Note that all earth conductors shall be strapped to their respective supply cables at intervals not more than 1m apart

### LV CABLES

#### 16mm<sup>2</sup> 3 Core Copper cable.

17	DB-Ground to DB-G4	m	30
18	16mm <sup>2</sup> BCC Earth conductor for above	m	30

### LV CABLE TERMINATIONS

Cable terminations to supply cables and earth continuity conductor, to include - cable glands, lugs and connections at Main DB and SDB's

19	16mm <sup>2</sup> 3 Core Cable (Indoor)	No	2
20	16mm <sup>2</sup> BCC	No	4

### RETICULATION

### CONDUIT

Supply and install Bosal conduit with support fixings (saddles/ couplings/adaptors), cast in concrete, surface bed or screed, fixed to wood, roof members, suspended ceiling, steel, etc., run in roof space, chased and/or fixed in brickwork including bends

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	<u>20 mm diameter conduit</u>		
21	Interior luminaire, communication and data circuits	m	20
	<u>25 mm diameter conduit</u>		
22	Socket outlet, air conditioning and isolator circuits	m	20
23	Exterior Luminaire circuits	m	50
	<u>20 mm Diameter flexible conduit</u>		
24	Supply and install 20mm diameter flexible conduit in 1m lengths with couplings complete.	EA	10
<b><u>CONDUIT ACCESSORIES AND DRAW BOXES</u></b>			
<b><u>Supply and install Bosal conduit accessories and outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit.</u></b>			
25	100mm x 100mm x 50mm deep box	EA	10
26	100mm x 50mm x 50mm deep box	EA	5
27	65 mm Diameter round boxes	EA	12

**WIRING**

Carried to Collection

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**Supply and install wiring for all power and light circuits. All light circuits will be wired with 2.5mm<sup>2</sup>, plug circuits with 4mm<sup>2</sup> and circuits feeding isolators with 4mm<sup>2</sup>**

28	2,5mm <sup>2</sup> Wiring for light circuits (Red)	m	200
29	2,5mm <sup>2</sup> Wiring for light circuits (Black)	m	200
30	2,5mm <sup>2</sup> Wiring for light circuits (Copper)	m	200
31	4mm <sup>2</sup> Wiring for plug circuits (Red)	m	80
32	4mm <sup>2</sup> Wiring for plug circuits (Black)	m	80
33	4mm <sup>2</sup> Wiring for plug circuits (Copper)	m	80
34	6mm <sup>2</sup> Wiring for alternative circuits	m	20
35	Draw wire	m	280

**SOCKET OUTLETS / ISOLATORS / COMMUNICATION / DATA**

**SOCKET OUTLETS**

Stainless steel / brush aluminium 100mm x 100mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.

36	Double 16A socket outlet flush (normal)	EA	5
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37	Single 16A socket outlet flush (normal)	EA	3	
38	Single 16A socket outlet in watertight weatherbox	EA	1	
<b><u>SWITCHES / LUMINIARIES</u></b>				
<b><u>LIGHT SWITCHES</u></b>				
<b><u>Stainless steel / brush aluminium 100mm x 50mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.</u></b>				
39	Single lever 1 way light switch.	EA	5	
40	Rotary water tight light switch 1 way rated IP 65	EA	2	
41	10A Photoelectric outdoor lighting control switch installed on wall	EA	3	
<b><u>LUMINARIES</u></b>				
<b><u>Supply and install luminaries fixed to structures e.g.: concrete ceiling; Rhino board ceiling and walls. Price shall include lamps and the connecting thereof. Luminaires with battery back-up must be supplied with an additional core (4 core).</u></b>				
42	Bulkhead: square 274mm x 274mm x 104mm, 2 x PL18, 220V, matt white, electronic ballast, 1 x 18W battery back-up, surface mounted	EA	2	
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43	Bulkhead: decorative round bulkhead, 2 x PL9 220V, matt white, electronic ballast, surface mounted - bathrooms	EA	3		
44	Bulkhead: round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, outside, surface mounted	EA	3		
45	Bulkhead: rectangular 440mm (w) x 320mm (l) x 217mm (h), 125W mercury vapour, matt black complete with decorative skirt assembly, surface mounted	EA	4		
46	Bulkhead: decorative round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, surface mounted	EA	4		
47	Emergency exit lighting: single sided illuminated with battery back up ceiling mounted bracket. (down arrow with man running) (dimensions: 330 x 145 x 46 mm)	m	1		
48	Emergency exit lighting: single sided illuminated with battery back up, surface mounted bracket. (horizontal arrow - right, man and stairs, green) (dimensions: 330 x 145 x 46mm)	m	1		
49	Fluorescent: 1.2m tube 2 x 36W, electronic ballast, surface mounted, with LBR Fitting	EA	3		
<b><u>LIGHTNING PROTECTION</u></b>					
50	The building will be protected against lightning strikes according to SABS 0313. The successful contractor will use the building re enforce steel at distances not more than 20m apart and connect to the base prior to it being casted. Provide engineer with a compliance certificate.			SUM	
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51	Allow for Earth resistance tests and reports			SUM
	<b><u>EARTHING AND BONDING</u></b>			
52	Provide earthing and bonding in all ablution rooms, laundries and kitchens			SUM
	<b><u>GEYSER/HYDROBOIL/HAND DRYERS</u></b>			
53	Supply and install 150l geyser with all valves, piping, etc. to supply the kitchen and bathrooms. Water distribution to form part of the Architects Bill of Materials	EA	3	
	<b><u>GENERAL / TESTING AND COMMISSIONING</u></b>			
54	Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power			SUM
55	Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer			SUM
56	Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.			SUM
57	Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.			SUM
58	Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.			SUM
	<b>Carried to Collection</b>			R
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	NEW LIVING QUARTERS BLOCK B			

59 Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

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**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS**

**DISTRIBUTION BOARDS**

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NEW CELL BLOCK

R

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, busbars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

## **MAIN SUPPLY / DISTRIBUTION BOARDS**

### **DISTRIBUTION BOARDS**

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, bus bars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

### **DB - Cells**

#### **Standby**

1	120A, 15kA, 3 Pole MCCB	EA	1
2	80A, 6kA, 3 Pole MCB	EA	4
3	60A, 6kA, 2 Pole Earth Leakage	EA	1
4	40A, 6kA, 3 Pole MCB	EA	1
5	30A, 6kA, 3 Pole MCB	EA	1

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17	30A 2 pole isolator	EA	4	
18	20A 3 pole isolator	EA	1	
19	60A 3 Pole isolator (UPS)	EA	2	
<b><u>CABLES AND BUSBARS</u></b>				
<b><u>Supply and install the following cables drawn through ducts or laid on cable trays. Note that all earth conductors shall be strapped to their respective supply cables at intervals not more than 1m apart.</u></b>				
<b><u>LV CABLES</u></b>				
<u>16mm<sup>2</sup> 4 Core Copper cable.</u>				
20	DB-Cell Normal to AC outdoor unit 1	m	30	
21	16mm <sup>2</sup> BCC Earth conductor for above	m	30	
<u>10mm<sup>2</sup> 4 Core Copper cable.</u>				
22	DB-Cell Normal to Stove	m	40	
23	10mm <sup>2</sup> BCC Earth conductor for above	m	40	
<u>6mm<sup>2</sup> 4 Core Copper cable.</u>				
24	DB-Cell Normal to Pot	m	40	
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25	6mm <sup>2</sup> BCC Earth conductor for above	m	40
	<u>4mm<sup>2</sup> 4 Core Copper cable.</u>		
26	DB-Cell Normal to Extract Canopy	m	40
27	4mm <sup>2</sup> BCC Earth conductor for above	m	40
	<b><u>LV CABLE TERMINATIONS</u></b>		
	<b><u>Cable terminations to supply cables and earth continuity conductor, to include - cable glands, lugs and connections at Main DB and SDB's.</u></b>		
28	16mm <sup>2</sup> 4 Core Cable (Indoor)	No	2
29	10mm <sup>2</sup> 4 Core Cable (Indoor)	No	2
30	6mm <sup>2</sup> 4 Core Cable (Indoor)	No	2
31	4mm <sup>2</sup> 4 Core Cable (Indoor)	No	2
32	16mm <sup>2</sup> BCC	No	2
33	10mm <sup>2</sup> BCC	No	2
34	6mm <sup>2</sup> BCC	No	60
35	4mm <sup>2</sup> BCC	No	60

**RETICULATION**

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**CONDUIT**

**Supply and install Bosal conduit with support fixings (saddles/ couplings/adaptors), cast in concrete, surface bed or screed, fixed to wood, roof members, suspended ceiling, steel, etc., run in roof space, chased and/or fixed in brickwork including bends**

**20 mm diameter conduit**

- 36 Interior luminaire, communication and data circuits

m

50

**25 mm diameter conduit**

- 37 Socket outlet, air conditioning and isolator circuits

m

50

- 38 Exterior Luminaire circuits

m

80

- 39 Fire detection

m

110

**20 mm Diameter flexible conduit**

- 40 Supply and install 20mm diameter flexible conduit in 1m lengths with couplings complete.

EA

7

**CONDUIT ACCESSORIES AND DRAW BOXES**

**Supply and install Bosal conduit accessories and outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit.**

- 41 100mm x 100mm x 50mm deep box

EA

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**Carried to Collection**

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NEW CELL BLOCK

42	100mm x 50mm x 50mm deep box	EA	15	
43	65 mm Diameter round boxes	EA	7	
<b><u>TRUNKING / CABLE RACKS / WIRE MESH</u></b>				
<b><u>Supply and install trunking/cable racks/wire mesh installation complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee-pieces, 4 way cross overs, elbows, clamps, anchors, etc</u></b>				
<b><u>TRUNKING: LIGHT CIRCUITS</u></b>				
44	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid	m	20	
45	Galvanised ducting 76 x 51mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	m	1	
46	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 4 Way	EA	1	
47	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	EA	1	
48	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	1	
<b>Carried to Collection</b>				R
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**TRUNKING: PLUG CIRCUITS**

49	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid	m	80
50	Galvanised ducting 76 x 51mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	EA	2
51	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 4 Way	EA	1
52	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	m	1
53	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	1

**WIRING**

**Supply and install wiring for all power and light circuits. All light circuits will be wired with 2.5mm<sup>2</sup>, plug circuits with 4mm<sup>2</sup> and circuits feeding isolators with 4mm<sup>2</sup>**

54	2,5mm <sup>2</sup> Wiring for light circuits (Red)	m	300
55	2,5mm <sup>2</sup> Wiring for light circuits (Black)	m	300
56	2,5mm <sup>2</sup> Wiring for light circuits (Copper)	m	300

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57	4mm <sup>2</sup> Wiring for plug circuits (Red)	m	80	
58	4mm <sup>2</sup> Wiring for plug circuits (Black)	m	80	
59	4mm <sup>2</sup> Wiring for plug circuits (Copper)	m	80	
60	6mm <sup>2</sup> Wiring for alternative circuits	m	20	
61	Draw wire	m	400	
<b><u>POWER SKIRTING</u></b>				
62	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover.	m	20	
63	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. End cap	EA	4	
64	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. Wall entry	EA	1	
<b><u>TELEPHONE DISTRIBUTION BOARD</u></b>				
<b>Carried to Collection</b>				
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**Supply, deliver, storage and installation of TELKOM and DATA approved type distribution board size 450 x 450 x 150mm deep to accommodate requirements as shown out in specification clause**

65	Telephone Distribution Board to be installed as per specifications	EA	1
66	Data Distribution Board to be installed as shown as per specifications	EA	1

**SOCKET OUTLETS / ISOLATORS / COMMUNICATION / DATA**

**SOCKET OUTLETS**

**Stainless steel / brush aluminium 100mm x 100mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material**

67	Double 16A socket outlet flush (normal)	EA	11
68	Single 16A socket outlet flush (normal)	EA	6
69	1 x Single 5A socket outlet flush.Non switchable (Install new complete with cover, round box, white with screws) Install in ceiling cavity for security circuits	EA	8
70	Single 16A socket outlet in watertight weatherbox	EA	5

**POWER SKIRTING ACCESSORIES**

**Carried to Collection**

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**White to fit power skirting (except for dedicated outlets)**

71	Double 16A Socket outlet in power skirting (normal)	EA	2
72	Single 16A socket outlet in power skirting (dedicated)	EA	2
73	Telecommunication jack RJ11 in power skirting	EA	2
74	Data jack RJ45 in power skirting	EA	2

**SWITCHES / LUMINIARIES**

**LIGHT SWITCHES**

**Stainless steel / brush aluminium 100mm x 50mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.**

75	Single lever 1 way light switch.	EA	16
76	Single lever 2 way light switch.	EA	2
77	Single lever 2 way dimmer light switch	EA	2
78	Double lever 1 way light switch	EA	1
79	Rotary water tight light switch 1 way rated IP 65	EA	7
80	10A Photoelectric outdoor lighting control switch installed on wall	EA	2

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81	Rotary water tight light switch 2 way rated IP 65	EA	8	
	<b><u>LUMINARIES</u></b>			
	<b><u>Supply and install luminaries fixed to structures e.g.: concrete ceiling; Rhino board ceiling and walls. Price shall include lamps and the connecting thereof. Luminaires with battery back-up must be supplied with an additional core (4 core).</u></b>			
82	Fluorescent: 1.5m, double tube x 58W, open channel, electronic ballast, surface mounted with industrial wing (dimensions: 1531 x 73 x 87mm)	EA	6	
83	Fluorescent: 1.5m, double tube x 54W, vandal and tampered proof, electronic ballast, with a build in PL9 night lite, surface mounted, with 1 x 36W battery back-up (dimensions: 1531 x 73 x 87mm)	EA	15	
84	Fluorescent: 1.5m, double tube x 54W, vandal and tampered proof, electronic ballast, surface mounted, with 1 x 54W battery back-up (dimensions: 1531 x 73 x 87mm)	EA	7	
85	Fluorescent: 1.5m, double tube x 58W, waterproof IP65, electronic ballast, surface mounted (dimensions: 1570 x 160 x 110)	EA	3	
86	Bulkhead: rectangular 155mm (w) x 324mm (l) x 122mm (h), 2 x PL18 220V, matt white, electronic ballast, surface mounted	EA	5	
87	Floodlight: wide beam 400W mercury vapour, stirrup mounted, standard aluminium complete with hot dipped galvanised mounting accessories for wall mounting and 5A circuit breaker (dimensions: 650 x 425 x 175mm)	EA	8	
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88	Bulkhead: decorative round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, surface mounted	EA	17	
89	Bulkhead: decorative round bulkhead, 2 x PL9 220V, matt white, electronic ballast, surface mounted - bathrooms	EA	4	
90	Fluorescent: 1.2m, double tube x 36W, waterproof IP65, TAMPERED proof electronic ballast, surface mounted (dimensions: 1200 x 160 x 110)	EA	2	
91	Bulkhead: rectangular 440mm (w) x 320mm (l) x 217mm (h), 2 x PL9, matt black, with wire guard, surface mounted	EA	16	
92	Emergency exit lighting: single sided illuminated with battery back up ceiling mounted bracket. (down arrow with man running) (dimensions: 330 x 145 x 46 mm)	EA	2	
93	Emergency exit lighting: single sided illuminated with battery back up, surface mounted bracket. (horizontal arrow - right, man and stairs, green) (dimensions: 330 x 145 x 46mm)	EA	1	
94	Down lighter: cut-out Dia 170mm, 1 x 70W 220V, matt white, electronic ballast, flush mounted	EA	4	
<b><u>FIRE / SMOKE DETECTION</u></b>				
95	Install fire / smoke detection in Existing Administration part building in all rooms as indicated in the drawings and specifications. 2 Loop system with 1 x break glass, 1 siren, 23 smoke detectors complete	EA	1	
96	PH30 cabling for above	m	110	
<b>Carried to Collection</b>				R
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**EARTHING AND BONDING**

- 97 Provide earthing and bonding in all ablution rooms, laundries and kitchens

SUM

**UN-INTERRUPTED POWER SUPPLY**

- 98 Supply and install a new Theatre UPS, 20kVA complete with accessories to provide emergency power during power cuts for computer, fire and other essential emergency systems

SUM

**LIGHTNING PROTECTION**

- 99 The building will be protected against lightning strikes according to SABS 0313. The successful contractor will use the building re-inforce steel at distances not more than 20m apart and connect to the base prior to it being casted. Provide engineer with a compliance certificate.

SUM

- 100 Allow for Earth resistance tests and reports

SUM

**GENERAL / TESTING AND COMMISSIONING**

- 101 Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power

SUM

- 102 Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer

SUM

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**MANKWENG POLICE STATION**

- 103 Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.
- 104 Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.
- 105 Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.
- 106 Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

SUM

SUM

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**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**MAIN SUPPLY / DISTRIBUTION BOARDS****DISTRIBUTION BOARDS**

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R

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, busbars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

## MAIN SUPPLY / DISTRIBUTION BOARDS

### DISTRIBUTION BOARDS

Supply and install a new distribution board, complete with sheet metal trays, frames, sub-frames, bus bars, provision for future circuit breakers, legend card, circuit breakers, switches, relays, earth leakage units, etc. and as detailed on the schematic wiring diagrams. All DB's, switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

### DB - Ground

1	New Face plate complete with labeling etc	EA	1
	<u>Standby</u>		
2	120A, 15kA, 3 Pole MCCB	EA	1
3	100A, 15kA, 3 Pole MCCB	EA	1
4	80A, 15kA, 3 Pole MCB	EA	2
5	60A, 6kA, 3 Pole MCB	EA	1

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**MAN KWENG POLICE STATION**

6	60A, 6kA, 2 Pole Earth Leakage	EA	3
7	20A, 6kA, 1 Pole MCB	EA	17
8	15A, 6kA, 1 Pole MCB	EA	17
<b><u>Normal</u></b>			
9	120A, 15kA, 3 Pole MCCB	EA	1
10	80A, 6kA, 3 Pole MCB	EA	2
11	60A, 6kA, 3 Pole MCB	EA	2
12	30A, 6kA, 2 Pole MCB	EA	1
13	20A, 6kA, 2 Pole MCB	EA	1
14	16A, 6kA, 2 Pole MCB	EA	19
<b><u>DB - First</u></b>			
15	New Face plate complete with labeling etc	EA	1
<b><u>Standby</u></b>			
16	100A, 15kA, 3 Pole MCCB	EA	1
17	80A, 6kA, 3 Pole MCB	EA	1
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18	60A, 6kA, 3 Pole MCB	EA	2	
19	60A, 6kA, 2 Pole Earth Leakage	EA	3	
20	20A, 6kA, 1 Pole MCB	EA	17	
21	15A, 6kA, 1 Pole MCB	EA	6	
	<b><u>Normal</u></b>			
22	80A, 15kA, 3 Pole MCB	EA	2	
23	30A, 6kA, 2 Pole MCB	EA	1	
24	16A, 6kA, 2 Pole MCB	EA	18	
25	DB - Security	EA	2	
26	60A, 6kA, 3 Pole MCB	EA	3	
27	20A, 6kA, 1 Pole MCB	EA	22	
	<b><u>ISOLATORS</u></b>			
	<b><u>Supply and install new isolators for air conditioning units, ventilation equipment, stove, geyser, etc. complete with flexible conduit, connectors, compression glands, brackets, etc.</u></b>			
28	16A 2 pole isolator	EA	37	
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29	20A 2 pole isolator	EA	1		
30	30A 2 pole isolator	EA	2		
31	60A 2 Pole isolator in watertight box	EA	2		
32	60A 3 Pole isolator (UPS)	EA	2		
<b><u>RETICULATION</u></b>					
<b><u>CONDUIT</u></b>					
<b><u>Supply and install Bosal conduit with support fixings (saddles/ couplings/adaptors), cast in concrete, surface bed or screed, fixed to wood, roof members, suspended ceiling, steel, etc., run in roof space, chased and/or fixed in brickwork including bends</u></b>					
<b><u>20 mm diameter conduit</u></b>					
33	Interior luminaire, communication and data circuits	m	80		
<b><u>25 mm diameter conduit</u></b>					
34	Socket outlet, air conditioning and isolator circuits	m	40		
35	Exterior Luminaire circuits	m	40		
36	TV Circuits	m	5		
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**20 mm Diameter flexible conduit**

- 37 Supply and install 20mm diameter flexible conduit in 1m lengths with couplings complete.

EA

15

**CONDUIT ACCESSORIES AND DRAW BOXES**

**Supply and install Bosal conduit accessories and outlet boxes and cover plate to suit number, size or type of entries, fixed onto conduit.**

- 38 100mm x 100mm x 50mm deep box

EA

12

- 39 100mm x 50mm x 50mm deep box

EA

5

- 40 65 mm Diameter round boxes

EA

25

**TRUNKING / CABLE RACKS / WIRE MESH**

**Supply and install trunking/cable racks/wire mesh installation complete with fixings, example hangers, caddy clips, nuts, washers, rivets, splices, Tee-pieces, 4 way cross overs, elbows, clamps, anchors, etc**

**TRUNKING: LIGHT CIRCUITS**

- 41 OL 8300 Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A  
3 pin socket with hanging holders and connectors complete with lid

m

15

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42	Galvanised ducting 76 x 51mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	EA	2		
43	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 4 Way	EA	1		
44	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	EA	1		
45	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	1		
<b><u>TRUNKING: PLUG CIRCUITS</u></b>					
46	OL 8000 Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid	m	15		
47	Galvanised ducting 76 x 51mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - T-Off	EA	1		
48	Galvanised ducting 76 x 51 mm with 6nockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 4 Way	EA	1		
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49	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees horizontal	EA	1	
50	Galvanised ducting 76 x 51 mm with 6 knockouts per length for 5A 3 pin socket with hanging holders and connectors complete with lid - 90 degrees vertical	EA	1	
<b><u>WIRE MESH CABLE TRAYS (200mm)</u></b>				
51	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete	m	50	
52	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - T-off	EA	1	
53	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees horizontal	EA	2	
54	Welded wire mesh cable tray (200mm wide) with joiner sets and suspending equipment complete - 90 degrees vertical	EA	2	
<b><u>WIRING</u></b>				
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Supply and install wiring for all power and light circuits. All light circuits will be wired with 2.5mm<sup>2</sup>, plug circuits with 4mm<sup>2</sup> and circuits feeding isolators with 4mm<sup>2</sup>

55	2,5mm <sup>2</sup> Wiring for light circuits (Red)	m	200
56	2,5mm <sup>2</sup> Wiring for light circuits (Black)	m	200
57	2,5mm <sup>2</sup> Wiring for light circuits (Copper)	m	200
58	4mm <sup>2</sup> Wiring for plug circuits (Red)	m	180
59	4mm <sup>2</sup> Wiring for plug circuits (Black)	m	180
60	4mm <sup>2</sup> Wiring for plug circuits (Copper)	m	180
61	6mm <sup>2</sup> Wiring for alternative circuits	m	50
62	Draw wire	m	500

**POWER SKIRTING**

63	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover.	m	100
64	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. Internal 90 degree elbow	EA	12

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65	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. External 90 degree elbow	EA	3	
66	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. End cap	EA	20	
67	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. Wall entry	EA	12	
68	Supply and install power skirting complete with covers, fixed to brickwork or concrete. Galvanized steel, powder coated, matt white, three channel, double cover. T-off	m	3	
<b><u>TELEPHONE DISTRIBUTION BOARD</u></b>				
<b><u>Supply, deliver, storage and installation of TELKOM and DATA approved type distribution board size 450 x 450 x 150mm deep to accommodate requirements as shown out in specification clause</u></b>				
69	Telephone Distribution Board to be installed as per specifications	EA	1	
70	Data Distribution Board to be installed as shown as per specifications	EA	1	
<b><u>SOCKET OUTLETS / ISOLATORS / COMMUNICATION / DATA</u></b>				
<b><u>SOCKET OUTLETS</u></b>				
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**Stainless steel / brush aluminium 100mm x 100mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material**

71	Double 16A socket outlet flush (normal)	EA	4
72	Single 16A socket outlet flush (normal)	EA	2
73	1 x Single 5A socket outlet flush. Non switchable (Install new complete with cover, round box, white with screws) Install in ceiling cavity for security circuits	EA	2
74	Single 16A socket outlet in watertight weatherbox	EA	2

### **POWER SKIRTING ACCESSORIES**

**White to fit power skirting (except for dedicated outlets)**

75	Double 16A Socket outlet in power skirting (normal)	EA	15
76	Single 16A socket outlet in power skirting (dedicated)	EA	20
77	1 x Single 5A socket outlet flush. Non switchable (Install new complete with cover, round box, white with screws) Install in ceiling cavity for security circuits.	EA	5
78	Telecommunication jack RJ11 in power skirting	EA	20
79	Data jack RJ45 in power skirting	EA	20

### **SWITCHES / LUMINAIRES**

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**LIGHT SWITCHES**

**Stainless steel / brush aluminium 100mm x 50mm with 2 x screws cover plate. Black socket trimming and switch. Complete with yoke and fixing material.**

80	Single lever 1 way light switch.	EA	3
81	Single lever 2 way light switch.	EA	3
82	Single lever 1 way dimmer light switch	EA	1
83	Double lever 1 way light switch	EA	1
84	Rotary water tight light switch 1 way rated IP 65	EA	1
85	10A Photoelectric outdoor lighting control switch installed on wall	EA	3

**LUMINARIES**

**Supply and install luminaries fixed to structures e.g.: concrete ceiling; Rhino board ceiling and walls. Price shall include lamps and the connecting thereof. Luminaires with battery back-up must be supplied with an additional core (4 core).**

86	Fluorescent: 1.5m, double tube x 58W, open channel, electronic ballast, surface mounted with industrial wing (dimensions: 1531 x 73 x 87mm)	EA	2
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87	Flourescent: 4 x 18W, double parabolic, dimmeble electronic ballast, recessed, flush mounted (dimensions: 595 x 595 x 90mm)	EA	3	
88	Fluorescent: 1.5m, double tube x 58W, waterproof IP65, electronic ballast, surface mounted (dimensions: 1570 x 160 x 110)	EA	1	
89	Bulkhead: rectangular 155mm (w) x 324mm (l) x 122mm (h), 2 x PL18 220V, matt white, electronic ballast, surface mounted	EA	5	
90	Fluorescent: 600mm x 600mm, 4 x 18W, double, electronic ballast,with 1x 18W battery back-up, flush mounted (dimensions: 595 x 595 x 90mm)	EA	6	
91	Bulkhead: decorative round bulkhead, 2 x PL9 220V, matt white, electronic ballast, surface mounted - bathrooms	EA	1	
92	Bulkhead: round 280mm (d) x 104mm (h), 2 x PL9 220V, matt black, electronic ballast, outside, surface mounted	EA	4	
93	Fluorescent: 1.2m, double tube x 36W, waterproof IP65, TAMPERED proof electronic ballast, surface mounted (dimensions: 1200 x 160 x 110)	EA	1	
94	Emergency exit lighting: single sided illuminated with battery back up ceiling mounted bracket. (down arrow with man running) (dimensions: 330 x 145 x 46 mm)	EA	1	
95	Emergency exit lighting: single sided illuminated with battery back up, surface mounted bracket. (horizontal arrow - right, man and stairs, green) (dimensions: 330 x 145 x 46mm)	EA	1	
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96	Flourescent: 600mm x 600mm, three tube x 36W, double parabolic, electronic ballast, recessed, flush mounted (dimensions: 595 x 595 x 90mm)	EA	20	
97	Bulkhead: rectangular 155mm (w) x 324mm (l) x 122mm (h), 2 x PL18 220V, with battery back-up, matt white, electronic ballast, surface mounted	EA	6	
98	Down lighter: cut-out = 170mm, 1 x PL9, 220V, recessed	EA	20	
99	Bulkhead: square 274mm x 274mm x 104mm, 2 x PL18, 220V, matt white, electronic ballast, 1 x 18W battery back-up, surface mounted	EA	3	
<b><u>FIRE / SMOKE DETECTION</u></b>				
100	Test and commission fire / smoke detection in all rooms for the existing system which includes. 3 Loop system with 2 x break glass, 1 siren, 28 smoke detectors complete			SUM
<b><u>AUDIO VISUAL SYSTEM</u></b>				
<b><u>Conference room</u></b>				
101	Ceiling Mount Speakers Coaxial with Back Box @ 10w	EA	3	
102	15m VGA Cable (Laptop to Projector)	EA	2	
103	20m Coax Cable (DVD to Projector)	EA	1	
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104	F Connectors	EA	2		
105	Coax to RCA converters	EA	1		
106	Audio Connecting Cable	m	10		
107	Junction Box	EA	1		
108	Microphone complete with cables, connectors, etc	EA	1		
<b><u>LIGHTNING PROTECTION</u></b>					
109	The building will be protected against lightning strikes according to SABS 0313. The successful contractor will use the building reinforce steel at distances not more than 20m apart and connect to the base prior to it being casted. Provide engineer with a compliance certificate.			SUM	
110	Allow for Earth resistance tests and reports			SUM	
<b><u>UN-INTERRUPTED POWER SUPPLY</u></b>					
111	Supply and install a new MGE Galaxy 3500 UPS, 20kVA 400V in and 400V out complete with accessories and batteries to provide emergency power for at least 10 min during power cuts for computer, fire and other essential emergency systems			SUM	
112	Allow for rigging to install UPS at First floor			SUM	
<b>Carried to Collection</b>				R	
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### EARTHING AND BONDING

- 113 Provide earthing and bonding in all ablution rooms, laundries and kitchens

SUM

### GEYSER/HYDROBOIL/HAND DRYERS

- 114 Supply and install 150l geyser with all valves, piping, etc. to supply the kitchen and bathrooms. Water distribution to form part of the Architects Bill of Materials

EA

2

- 115 Supply and install a under counter Hydroboil capable of supplying water for dishes only. Typical: K-prisma or better. All piping, supply stop valve/tap etc. to be included.

SUM

### GENERAL / TESTING AND COMMISSIONING

- 116 Allow for testing, balancing of Phases and commissioning of the whole electrical installation - lighting and power

SUM

- 117 Allow for providing detailed manuals and marked up drawings of the electrical services installation to the Engineer

SUM

- 118 Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.

SUM

- 119 Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.

SUM

Carried to Collection

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Section No. 4  
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NEW INVESTIGATING UNIT

120    Labelling of all circuits and draw boxes with permanent screw on type labels as described in Project Detailed Specifications.

SUM

121    Supply and install 35mm locally manufactured padlocks and locking devices as well as master keys.(3 sets) with purpose-made pvc labels to lock and unlock all DB's, SDB's and lockable draw boxes.

SUM

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**SECTION 4**

**BILL NO. 7**

**ELECTRICAL INSTALLATION**

NOTE: Tenderers are advised to study the Model  
Preambles for Trades before pricing this bill

Tenderers are advised to study the Department of  
Public Works - Construction works: General  
Specification (PW371-A) and Construction works:  
Particular Specification (PW371-B) before pricing this bill

**SECURITY AND DATA**

**Carried to Collection**

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Section No. 4  
Bill No. 7  
DATA AND SECURITY

# PROJECT AND QUALITY SPECIFICATIONS

This Bill shall be read in conjunction with the Detailed Electrical Specification as well as the electrical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the electrical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points and prices for the measured conductors shall be deemed to be included

All DB's, Switch control boxes and draw boxes shall be of 3CR12, 1.6mm thick construction.

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

# DATA INSTALLATION

- 1 Supply and install 4 pair category 6, 100ohm UTP cable from switch to final data outlets. Complete with connection, glands etc.

m 900

- 2 Molex UTP Cat 5e Data Point complete with flylead and patchlead

EA 130

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3	Molex UTP Cat 5e for biometric readers with patchlead	EA	18	
4	Molex UTP Cat 5e Camera Point complete with flylead and patchlead	EA	48	
5	UTP Labelling	P/H	392	
6	UTP Testing	P/H	196	
7	Punch Plate Dual for powerskirting (As per power skirting)	EA	28	
8	Labour or items deemed necessary to complete and commission data system			SUM
<b><u>FIBRE OPTIC INSTALLATION</u></b>				
9	Multimode Heavy Duty Duct Cable 24f4e4t Hdd	m	400	
10	Midcouplers Multimode SC	EA	15	
11	Multimode 1m SC UNJACKETED PIGTAIL	EA	15	
12	Multimode 3m SC-LC PATCHCORD	EA	15	
13	PATCH PANEL 24WAY ST	EA	3	
14	ENTRY GLAND - Size 0	EA	3	
15	SPLICE CASSETTE - Plastic	EA	3	
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16	Splice Protectors 45mm - Clear	EA	15	
17	Splicing	EA	15	
18	Fibre testing	EA	15	
19	Fibre labeling	EA	15	
20	HP 8/24 SAN Fibre Optic Switch	EA	3	
21	Labour of all items deemed necessary to complete and commission fibre optic to main server room			SUM
<b><u>SECURITY CAMERA INSTALLATION</u></b>				
Please note: Install price must consist of: delivery and site offloading, placing in position, erection, fixing, commissioning, testing and handover.				
22	Hikvision 32 Channel Acusense 4K NVR pro series video recorder with display and playback in full resolution standalone embedded digital video recording unit with 7 days recording storage capacity and 1 x 55' LED monitor complete with anti-theft brackets.			SUM
23	PC for human interface with CCTV software, full loaded with all necessary original software, input devices such as key board and mouse as per specifications			SUM
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24	Hikvision 4MP IP ColorVu Fixed bullet network camera waterproof indoor/outdoor IR bullet camera with 2.8mm 50m IR range all cameras to support motion detection and be Power Over Ethernet (POE) supported complete with stainless steel 300mm x 200mm converter box mounted on pole	EA	26		
25	Hikvision 4MP IP ACUSENSE Fixed Dome network camera Water and dust resistant (IP67) and Vandal-resistant (IK10) indoor IR camera with 2.8mm all cameras to support motion detection and be Power Over Ethernet (POE) supported	EA	22		
26	Supply and install 4 pair category 6, 100ohm UTP cable from switch to final data outlets. Complete with connection, glands etc.	m	800		
27	2-core indoor fibre optic cable, including splicing etc..	m	2 800		
28	Allow for maintenance of the complete system for a period of 12 months after practical completion.	EA	3		
29	5,7m x 100mm x 100mm fibreglass pole completely installed with concrete base, all fixings, steel conduit, weather proof draw box and cap. Posts to be painted to architects specifications.	EA	18		
30	End User Training (Includes Operator Training; System Admin Training and Desktop Training)	EA	1		
31	Complete Installation and commissioning of security surveillance system. Provide for labor and additional material deemed necessary to complete system.	EA	1		
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**ACCESS CONTROL INSTALLATION**

32	Sagem MA520+D biometric fingerprint unit	EA	10
33	Sagem OMA520D biometric fingerprint unit	EA	8
34	Magnetic door lock (600kg) and ZL bracket	EA	21
35	Industrial Request to exit (no touch sensor)	EA	18
36	Access control break glass unit	EA	1
37	Client / Workstation PC with 23" LCD monitor (Windows license)	EA	2
38	Supply and install 4 pair category 6, 100ohm UTP cable from switch to final data outlets. Complete with connection, glands etc.	m	500
39	Access control software compatible to Sagem biometric units	EA	1
40	Sagem MSO300 USB take on reader with Morpho embedded software verification license	EA	1
41	Logitech USB webcam for image capture	EA	1
42	Labour or items deemed necessary to install and commission access control system	EA	1

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**TELEPHONE SYSTEM INSTALLATION**

43	3300 SMALL BUSINESS - CX EXPANDED BRI (52002626)	EA	3
44	3300 CX II Controller 50006093	EA	3
45	3300 CX(i) II Controller 80G SATA HDD 50006294	EA	3
46	QUAD BRI MMC 50004070	EA	3
47	MCD Standard User License 54004976	EA	32
48	5312 IP Phone 50005847	EA	60
49	Small Business Package 54005092	EA	3
50	MCD Mailbox license 54000297	EA	60
51	Operator Console 5550 (Global) 50006490 smb	EA	2
52	VSA RAMpage advance reporting call logger software for and licences for 40 users including a annual software update paid for the first year.	EA	2
53	Plantronics CS 60 DECT Cordless Headset Only	EA	2
54	Lightning Protection Unit for Basic Rate ISDN - 1 unit required per BRI unit 12-00700	EA	3
55	BELL RINGER / TONE CALLER	EA	3

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**MANKWENG POLICE STATION**

56	Labour or items deemed necessary to install and commission telephone system			SUM	
57	Supply and install 4 pair category 6, 100ohm UTP cable from switch to final data outlets. Complete with connection, glands etc.	m	1 000		
<b><u>INTERCOM</u></b>					
58	Supply and install Alphacom Stentofon IP based intercom system with nesseasry software cabable of maximum 48 units. Include 12V DC supply.			SUM	
59	Control Room Master IV part nu 1007006110 installed at prison guard desk (flush mounted).	EA	2		
60	Prison type tamper and vandal proof intercom station with 2.5 mm steel front. (128 X 264 X 51mm) Part number 1007061000	EA	12		
61	Supply and install wiring to connect intercom to master station.	m	200		
62	Provide for the installation and commissioning of the intercom system. Include cost to train personnel in the functioning of the system and support for three months into operation.			SUM	
63	Supply and install 4 pair category 6, 100ohm UTP cable from switch to final data outlets. Complete with connection, glands etc.	m	200		
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**SECTION SUMMARY - ELECTRICAL INSTALLATION**

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- 1 GENERAL: SITE
- 2 EXISTING ADMINISTRATION BLOCK
- 3 NEW LIVING QUARTERS BLOCK A
- 4 NEW LIVING QUARTERS BLOCK B
- 5 NEW CELL BLOCK
- 6 NEW INVESTIGATING UNIT
- 7 DATA AND SECURITY

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**SECTION 5**

**BILL NO. 1**

**MECHANICAL WORKS**

NOTE: Tenderers are advised to study the Model  
Preambles for Trades before pricing this bill

Tenderers are advised to study the Department of  
Public Works - Construction works: General  
Specification (PW371-A) and Construction works:  
Particular Specification (PW371-B) before pricing this bill

**REPAIR AND RENOVATIONS**

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MECHANICAL INSTALLATION

**PROJECT AND QUALITY SPECIFICATIONS**

This Bill shall be read in conjunction with the Detailed Mechanical Specification as well as the mechanical drawings

The project comprises the supply, delivery, installation, testing and commissioning of all the mechanical equipment together with other services as specified in the Detailed Specification.

The Tenderer shall be deemed to have perused the above mentioned document and considered fully conversant with the contents and allow for it in his price.

No allowance has been made in the measurement of conductors for additional lengths at connection points from the isolator, prices for the measured conductors shall be deemed to be included

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Conduits described as "fixed" shall be deemed to include for fixing to all types of surfaces, in chases or casting in or building into walls, etc, and prices shall include for the above

Price for cables shall be deemed to include installation as well as termination of all cables.

**Carried to Collection**

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MECHANICAL INSTALLATION

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**AIR CONDITIONING SYSTEM**

- 1 VRV Mid-wall Indoor Unit (ACU Type 1)  
(2.6kW Heat Recovery Unit)  
Unit installed complete with:  
Indoor Fan Unit  
Piping and Refrigerant  
Electrical Connections  
Condensate Drain  
Control Unit

EA

12

- 2 VRV Ceiling Cassette Indoor Unit (ACU Type 2)  
(5kW Heat Recovery Unit)  
Unit installed complete with:  
Indoor Fan Unit  
Piping and Refrigerant  
Electrical Connections  
Condensate Drain  
Control Unit

EA

2

- 3 VRV Ceiling Cassette Indoor Unit (ACU Type 3)  
(10kW Heat Recovery Unit)  
Unit installed complete with:  
Indoor Fan Unit  
Piping and Refrigerant  
Electrical Connections  
Condensate Drain  
Control Unit

EA

2

- 4 VRV Mid Wall Indoor Unit (ACU Type 4)  
(3.6kW Heat Recovery Unit)  
Unit installed complete with:  
Indoor Fan Unit  
Piping and Refrigerant  
Electrical Connections  
Condensate Drain  
Control Unit

EA

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5	Condensate pumps installed complete and connected to drain pipe. As per drawings	EA	24		
6	VRV Heat Recovery Outdoor Unit (ACU B and ACU C) (50kW Heat Recovery Unit) Unit installed complete with: Condensor Unit Piping and Refrigerant Electrical Connections Condensate Drain Control Unit	EA	1		
7	VRV Heat Recovery Outdoor Unit (ACU D) (55kW Heat Recovery Unit) Unit installed complete with: Condensor Unit Piping and Refrigerant Electrical Connections Condensate Drain Control Unit	m	1		
<b><u>FIRE PROTECTION</u></b>					
8	FM200 Gas Suppression System for Archive complete with 3 Zone Fire Panel Smoke Detectors Bell, Strobe, Siren etc. Suitable for 125m3 room.	EA	1		
9	FM200 Gas Suppression System for Records complete with 3 Zone Fire Panel Smoke Detectors Bell, Strobe, Siren etc. Suitable for 32m3 room.	EA	1		
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10	FM200 Gas Suppression System for Dockets complete with 3 Zone Fire Panel Smoke Detectors Bell, Strobe, Siren etc. Suitable for 45m3 room.	EA	1
11	Fire Hose Reel installed complete with relevant signage and connection to fire main at exterior of building. To include complete reel, hose, sign and connection	EA	14
12	9kg Dry Powder Handheld Fire Extinguisher installed complete with backing plate, holder, fixing, signage etc.	EA	24
13	5kg CO2 Handheld Fire Extinguisher installed complete with backing plate, holder, fixing, signage etc.	EA	8
<b><u>EXTRACTION AND VENTILATION</u></b>			
14	Wall Mounted Extract Air Fan 80m3/hr installed complete in wall with louver, connection to isolator.	EA	28
15	Ceiling Mounted Extract Air Fan for shower 90m3/hr installed complete in ceiling with grille, connection to isolator	EA	6
16	Ceiling Mounted Extract Air Fan for kitchenette 100m3/hr installed complete in ceiling with grille, connection to isolator	EA	2
17	Round Toilet Extract Grille to Engineers Specification installed complete with connection to duct, flexible ducting of min 1.5m length, connection to ceiling and making neat	EA	31
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### EXISTING EQUIPMENT

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27	Complete service of VRF system in New crimes building including all filters, new refrigerant and armourflex.				SUM
28	Repair of faulty HVAC equipment in the New crimes building				SUM
29	Test of existing VRF system in Cell Block for function and performance				SUM
30	Complete service of VRF system in Cell Block including all filters, new refrigerant and armourflex.				SUM
31	Repair of faulty HVAC equipment in Cell Block				SUM
32	Test of existing Heatpumps in Cell Block for function and performance	EA	4		
33	Complete service of Heatpumps in Cell Block including all filters, new refrigerant and armourflex.				SUM
34	Repair of faulty Hot water generation equipment in the Cell Block				SUM
<b><u>GENERAL / TESTING AND COMMISSIONING</u></b>					
35	Allow for testing, commisioning, additional test by Engineer, etc.				SUM
36	Allow for providing detailed manuals and marked up drawings of the mechanical services installation to the Engineer				SUM
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37 Allow for Certificate of Compliance in terms of the Occupational and Health Safety Act, OSHACT of 1993.

SUM

38 Compliance with OH SACT : Compiling and implementing of Safety Plan and issuing of safety clothes, shoes, gloves etc, as required.

SUM

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MECHANICAL INSTALLATION

**MAN KWENG POLICE STATION**

## FINAL SUMMARY

[illegible]**Carried to Form of Tender**

## **LIST OF SPECIFICATION ATTACHED**

**1: MECHANICAL AND ELECTRICAL.**

**2: HEALTH AND SAFETY .**

**3: HIV AND AIDS.**



**MANKWENG**  
**POLICE STATION**  
**MECHANICAL**  
**SUPPLEMENTARY TECHNICAL SPECIFICATION**

**1. GENERAL**

This specification consisting of (12) pages numbered consecutively and is for the supply, delivery and installation of Air Conditioning and Ventilation Equipment and Fire Protection Equipment for Mankweng Police Station Centre and is to be read as forming part of the Department of Public Works Standard Specification for Air Conditioning and Ventilation Installations, Issue XI, 1998. The clauses referred to herein are clauses of the Standard Specification, relevant clauses not specifically mentioned shall also apply.

All equipment and installations detailed in the specification shall comply with the requirements of the Occupational Health and Safety Act 85 of 1993.

The Department's Standard Specification for Electrical Installations and Electrical equipment pertaining to Mechanical Services, Issue IXa, December 1999, shall also apply to this contract.

Where conditions are at variance, this supplementary specification will have preference over both Standard Specification and drawings.

Copies of the Standard specifications are obtainable from the Director-General: Public Works, Private Bag X 65, Pretoria, 0001. All Standard Specifications are also available on the Department's Website [[www.publicworks.gov.za](http://www.publicworks.gov.za)].

**2. PRINCIPAL ITEMS OF WORK**

In general the air conditioning installation to the building will consist of the following:

- 2.1 VRV (Variable Refrigerant Volume) or VRF (Variable Refrigerant Flow) air-conditioning systems.
- 2.2 Integrated fire detection system
- 2.3 FM200 Gas suppression fire prevention system for the archives.
- 2.4 Making off in the switchboard of the main incoming cable reticulated by the site electrician, and the connection thereof.

- 2.5 Controls, switchgear and site wiring for the entire installation. Power supplies to small individual fans including their isolators will be provided by the site electrician. Making off inside isolators to be part of this contract.
- 2.6 All equipment base formers, pipe supports, vibration eliminators, spring hangers for piping, brackets and accessories to complete the installation as specified.
- 2.7 Hoisting of equipment on to or from roof slabs, if so required.
- 2.8 As built drawings
- 2.9 Detailed Operating and Maintenance Manuals.
- 2.10 Spares and tools as specified and where applicable, as provided with the equipment.
- 2.11 Maintenance and guarantee for 12 months after handing over and acceptance of the completed installations, in addition to any other requirements as detailed hereinafter.
- 2.12 Painting of all metal work including pipe hangers, steel structures, steel base formers, etc.

### 3. **COMPREHENSIVE CONTRACTS**

Only specialist sub-contractors who have previously successfully completed mechanical installations of the extent and type specified in this document should be considered.

**NOTE:** No changes in make, type or capacity of equipment specified in the schedule of particulars shall be allowed after acceptance of the tender without the written approval of the Department.

### 4. **FINAL DELIVERY**

Final delivery shall be as prescribed in clause 1.2 of PW 379.

### 5. **PERIOD OF LIABILITY**

The period of liability shall be as prescribed in clause 2.1 of PW 379.

6. **MATERIAL AND WORKMANSHIP**

All materials and equipment used shall be new, free from rust, defects, undamaged and be suitable for the purpose for which it will be used. Materials shall comply with the latest issue of the relevant SANS or BS specification where applicable.

If any material or workmanship is not to the satisfaction of the Department, it shall be rectified and/or replaced at the contractor's cost and all rejected material shall immediately be removed from site.

The contractor is responsible for the correct and complete erection of the installation and inspections executed by the Department do not exempt the contractor of this obligation.

(See clause 1.3.0)

7. **MANUFACTURER'S RATINGS**

All equipment shall be able to work within the rated capacity, as determined by the manufacturer. Any equipment offered for use out of these limits will not be considered.

Contractors shall hand in the rated capacities of all equipment as well as descriptive literature with the tender documents.

(See clause 1.8.0)

8. **DRAWINGS**

The drawings that accompany this specification (if any) are schematic and do not necessarily indicate the exact position, size or detail the construction of equipment. Tenderers must satisfy themselves that the equipment offered by them will fit into the available space and can be positioned so that access for maintenance, repair or removal is not encumbered.

**NOTE:** **All final dimensions are to be verified on site prior to any equipment or material being ordered or manufactured.**

(See clause 1.4.0)

## Drawing Index

Drawing Number	Description
05/ING/MAN/0018/XN-1D	Admin Building HVAC Layout
05/ING/MAN/0018/XN-3E	Crime Investigation HVAC Layout
05/ING/MAN/0018/XN-4D	Cell Block HVAC Layout

### 9. **BUILDERS WORK**

All building work such as cutting of openings, making good, bases for equipment, etc. shall be included for in this tender and tenderers must allow for it in their tender price.

### 10. **PAINTING**

All exposed steel surfaces, excluding new galvanized and stainless steel shall be painted. All steel surfaces to be painted shall be prepared according to SABS 064 (Code for the preparation of steel surfaces for painting). Thereafter the surfaces shall be painted with a zinc chromate primer to SABS 679 type 1, followed by one coat of universal undercoat and one final coat of high gloss enamel paint to SABS 630 Grade 1, the colour of which shall be determined by the Department's Representative.

(See clause 3.13.0)

### 11. **MAINTENANCE AND SERVICING**

(See clause 2.0)

### 12. **COMMISSIONING AND TESTING**

(See clause 1.12.0)

### 13. **DESIGN CONDITIONS**

Ambient Conditions:

When tendering the units offered must be de-rated to allow for outside conditions, altitude etc. as set out below.

Location	-	Mankweng
Altitude	-	1000m ASL
Outside Summer Conditions	-	35°C db / 21.5°C wb, 50% RH
Outside Winter Conditions	-	5°C db, 40% RH

#### 14. **VRV TYPE UNITS**

The VRV (variable Refrigerant Volume) or VRF (Variable Refrigerant Flow) system will be of the Heat Recovery type and will utilize R410 refrigerant.

Condensate from outdoor units shall be piped to drains. Condensate from indoor units shall be drained to the nearest drain point outside the building. Condensate pipes visible to the outside shall be copper piping. No PVC condensate piping will be allowed outside the building.

Both suction and liquid lines shall be insulated and vapor sealed to prevent dripping. Piping insulation joints shall be glued and taped. Where refrigerant piping is exposed the piping shall be installed in painted sheet metal trunking, complete with covers. Paint colour to be specified by architect.

All conduits shall be steel conduit. No PVC conduit will be allowed.

##### 14.1 Indoor Units

Indoor units shall be finished in white.

Each indoor unit will have a separate remote control, hard wired, located 1800mm AFL. This remote control to be positioned next to the main light switch for the room. Wireless remote controllers will not be acceptable.

##### 14.2 Outdoor units.

Outdoor units shall be finished in white, cream or off-white colour galvanized sheet. Placement of outdoor units to be verified on site with the architect to ensure minimal aesthetic disturbance.

#### 15. **ISOLATORS**

Outside isolators to be of Lockable Rotary Type and Weatherproof. Isolators to be fitted on outside of building on condenser side of air conditioner unit.

Each indoor unit will be fitted with an isolator. Isolator to be placed in ceiling void within reach of unit.

#### 16. **FILTERS**

Units to have permanent washable type filters. Disposable filters will not be accepted.

## 17. FIRE DETECTION AND PREVENTION EQUIPMENT

All fire protection equipment to have adequate fire protection signage as per National Building Regulations – SANS 0400

The installation includes an addressable fire detection system complete with addressable optical smoke detectors, control panel, break glass units and signage as indicated in the Bill of Quantities. The system must include REMRAD capability.

The installation also includes a FM200 gas suppression system for the archives. The system will be matched to the volume of the room. The system will be modular. The installation will be complete with bells, sirens, strobes, smoke detectors etc. **Provision to be made for the supply of a complete breathing apparatus for the archive.** The system must make provision to shut off the air-conditioning to the archive in event of a fire.

## 18. EQUIPMENT SCHEDULES

### 18.1 Indoor Units

Item	Location	Type	Outdoor unit	Cooling Capacity
ACU1/1	Investigating Officer 15&16	Mid Wall Type	ACU A	2.6kW
ACU1/2	Investigating Officer 17&18	Mid Wall Type	ACU A	2.6kW
ACU1/3	Investigating Officer 19&20	Mid Wall Type	ACU A	2.6kW
ACU1/4	Investigating Officer 21&22	Mid Wall Type	ACU A	2.6kW
ACU1/5	Investigating Officer 23&24	Mid Wall Type	ACU A	2.6kW
ACU1/6	Investigating Officer 25&26	Mid Wall Type	ACU A	2.6kW
ACU1/7	Investigating Officer 27&28	Mid Wall Type	ACU A	2.6kW
ACU1/8	Investigating Officer 29&30	Mid Wall Type	ACU A	2.6kW
ACU1/9	Investigating Officer 31&32	Mid Wall Type	ACU A	2.6kW
ACU1/10	Investigating Officer 33&34	Mid Wall Type	ACU A	2.6kW
ACU1/19	Administration	Mid Wall Type	ACU A	2.6kW
ACU1/20	Data Typist 1	Mid Wall Type	ACU A	2.6kW
ACU1/21	Data Typist 2	Mid Wall Type	ACU A	2.6kW
ACU1/22	Captain 1	Mid Wall Type	ACU A	2.6kW
ACU1/23	Captain 2	Mid Wall Type	ACU A	2.6kW
ACU1/24	Investigating Officer 1&2	Mid Wall Type	ACU A	2.6kW
ACU1/25	Investigating Officer 3&4	Mid Wall Type	ACU A	2.6kW
ACU1/26	Investigating Officer 5&6	Mid Wall Type	ACU A	2.6kW
ACU1/27	Investigating Officer 7&8	Mid Wall Type	ACU A	2.6kW

ACU3/1	Reception	Ceiling Cassette	ACU A	10kW
ACU1/11	Investigating Officer 35&36	Mid Wall Type	ACU B	2.6kW
ACU1/12	Investigating Officer 37&38	Mid Wall Type	ACU B	2.6kW
ACU1/13	Investigating Officer 39&40	Mid Wall Type	ACU B	2.6kW
ACU1/14	Investigating Officer 41&42	Mid Wall Type	ACU B	2.6kW
ACU1/15	Investigating Officer 43&44	Mid Wall Type	ACU B	2.6kW
ACU1/16	Investigating Officer 45&46	Mid Wall Type	ACU B	2.6kW
ACU1/17	Investigating Officer 47&48	Mid Wall Type	ACU B	2.6kW
ACU1/18	Investigating Officer 49&50	Mid Wall Type	ACU B	2.6kW
ACU1/32	Commander	Mid Wall Type	ACU B	2.6kW
ACU1/31	Interrogation Room	Mid Wall Type	ACU B	2.6kW
ACU1/16	Investigating Officer 9&10	Mid Wall Type	ACU B	2.6kW
ACU1/17	Investigating Officer 11&12	Mid Wall Type	ACU B	2.6kW
ACU1/18	Investigating Officer 13&14	Mid Wall Type	ACU B	2.6kW
ACU2/1	Lecture Room/ Tea Room	Ceiling Cassette	ACU B	5kW
ACU2/12	Lecture Room/ Tea Room	Ceiling Cassette	ACU B	5kW
ACU2/13	Lecture Room/ Tea Room	Ceiling Cassette	ACU B	5kW
ACU4/20	New Office	Mid Wall Type	ACU C	3.6kW
ACU4/18	Office	Mid Wall Type	ACU C	3.6kW
ACU4/19	Office	Mid Wall Type	ACU C	3.6kW
ACU4/1	Office	Mid Wall Type	ACU C	3.6kW
ACU1/44	Exhibit Clerk	Mid Wall Type	ACU C	2.6kW
ACU4/2	Office 1	Mid Wall Type	ACU C	3.6kW
ACU4/3	Office 2	Mid Wall Type	ACU C	3.6kW
ACU1/36	Office 3	Mid Wall Type	ACU C	2.6kW
ACU1/37	Office 4	Mid Wall Type	ACU C	2.6kW
ACU1/38	Office 5	Mid Wall Type	ACU C	2.6kW
ACU4/21	CAS Office	Mid Wall Type	ACU C	3.6kW
ACU4/6	Radio Room	Mid Wall Type	ACU C	3.6kW
ACU3/4	Rest Room/ Shift Change	Ceiling Cassette	ACU C	10kW
ACU4/23	Station Commander	Mid Wall Type	ACU D	3.6kW
ACU4/4	Existing Office 1	Mid Wall Type	ACU D	3.6kW
ACU4/5	Existing Office 2	Mid Wall Type	ACU D	3.6kW
ACU1/39	Existing Office 3	Mid Wall Type	ACU D	2.6kW
ACU1/40	Existing Office 4	Mid Wall Type	ACU D	2.6kW
ACU1/41	Existing Office 5	Mid Wall Type	ACU D	2.6kW
ACU4/6	Existing Office 6	Mid Wall Type	ACU D	3.6kW
ACU4/7	Existing Crime Office	Mid Wall Type	ACU D	3.6kW

ACU2/4	Statements	Ceiling Cassette	ACU D	5kW
ACU2/5	Statements	Ceiling Cassette	ACU D	5kW
ACU4/25	CSC Commander	Mid Wall Type	ACU D	3.6kW
ACU1/40	Sensitive Statements	Mid Wall Type	ACU D	2.6kW
ACU4/8	Parade Room	Mid Wall Type	ACU D	3.6kW
ACU3/3	Victim Support	Ceiling Cassette	ACU D	10kW
ACU4/9	Waiting Room 1	Mid Wall Type	ACU E	3.6kW
ACU4/10	Waiting Room 2	Mid Wall Type	ACU E	3.6kW
ACU4/13	Room	Mid Wall Type	ACU E	3.6kW
ACU4/12	Visitors	Mid Wall Type	ACU E	3.6kW
ACU4/14	Search Room	Mid Wall Type	ACU E	3.6kW
ACU1/43	Statements	Mid Wall Type	ACU E	2.6kW
ACU4/11	Cell Guard	Mid Wall Type	ACU E	3.6kW
ACU2/6	Finger Print	Ceiling Cassette	ACU E	5kW
ACU2/5	Viewing Room	Ceiling Cassette	ACU E	5kW

18.2				
Outdoor				
Units				
ACU A	Outside	Heat Recovery		60kW
ACU B	Outside	Heat Recovery		50kW
ACU C	Outside	Heat Recovery		50kW
ACU D	Outside	Heat Recovery		55kW
ACU E	Outside	Heat Recovery		34kW

## 19. SCHEDULES OF PARTICULARS AND INFORMATION

All schedules which accompany the mechanical work specification form an integral part of it and shall be duly completed in every detail: FAILING which, the tender in question may be rendered ineligible for consideration.

Under no circumstances will statements such as:

- See attached pamphlets
- Refer to catalogue
- Data to follow
- As given by the supplier, etc. be acceptable to the Department.

The principal contractor shall ensure that the equipment offered and listed on the schedules shall be capable of performing the specified duties and complying with the Specification requirements in all respects: SHOULD it transpire that such equipment, even when offered by make, model and/or type, is unsuitable or incapable of meeting,



or performing in accordance with the specification requirements in any respect, the Principle Contractor shall nevertheless be responsible for any additional costs incurred in providing the suitable equipment.

Whenever a specific make, model or type of equipment has been prescribed in the specification and the tenderer offers an alternative or equal make or type of equipment in his tender, the Department will on acceptance of such a tender inform the prospective contractor in writing as to the make, and/or type of equipment accepted. HOWEVER, it should be noted that the use of words "OR EQUAL" by the tender is to be discouraged and could lead to the disqualification of the tender.

### Schedule of Particulars

Item	Particulars		
<b>1.1</b>	<b>VRV Mid Wall Type Indoor Unit 2.6kW</b>		
1.1.1	Manufacturer		
1.1.2	Country of Origin		
1.1.3	Number of Units		
1.1.4	Size and Model Number		
1.1.5	Cooling Capacity at Specified Conditions	kW	
1.1.6	Heating Capacity at Specified Conditions	kW	
1.1.7	Noise Level	NC	
1.1.8	Refrigerant	Type	
<b>1.2</b>	<b>VRV Mid Wall Type Indoor Unit 3.6kW</b>		
1.2.1	Manufacturer		
1.2.2	Country of Origin		
1.2.3	Number of Units		
1.2.4	Size and Model Number		
1.2.	Cooling Capacity at Specified Conditions	kW	
1.2.6	Heating Capacity at Specified Conditions	kW	
1.2.7	Noise Level	NC	
1.2.8	Refrigerant	Type	
<b>1.3</b>	<b>VRV Ceiling Cassette Type Indoor Unit 5kW</b>		
1.3.1	Manufacturer		
1.3.2	Country of Origin		
1.3.3	Number of Units		
1.3.4	Size and Model Number		
1.3.5	Cooling Capacity at Specified Conditions	kW	
1.3.6	Heating Capacity at Specified Conditions	kW	
1.3.7	Noise Level	NC	
1.3.8	Refrigerant	Type	

<b>1.4</b>	<b>VRV Ceiling Cassette Type Indoor Unit 10kW</b>		
1.4.1	Manufacturer		
1.4.2	Country of Origin		
1.4.3	Number of Units		
1.4.4	Size and Model Number		
1.4.5	Cooling Capacity at Specified Conditions	kW	
1.4.6	Heating Capacity at Specified Conditions	kW	
1.4.7	Noise Level	NC	
1.4.8	Refrigerant	Type	
<b>1.5</b>	<b>VRV System - Outdoor Unit</b>		<b>60kW</b>
1.5.1	Manufacturer		
1.5.2	Country of Origin		
1.5.3	Number of Units		
1.5.4	Size and Model Number		
1.5.5	Cooling Capacity at Specified Conditions	kW	
1.5.6	Heating Capacity at Specified Conditions	kW	
1.5.7	Noise Level	NC	
1.5.8	Refrigerant	Type	
<b>1.6</b>	<b>VRV System - Outdoor Unit</b>		<b>50kW</b>
1.6.1	Manufacturer		
1.6.2	Country of Origin		
1.6.3	Number of Units		
1.6.4	Size and Model Number		
1.6.5	Cooling Capacity at Specified Conditions	kW	
1.6.6	Heating Capacity at Specified Conditions	kW	
1.6.7	Noise Level	NC	
1.6.8	Refrigerant	Type	
<b>1.7</b>	<b>VRV System - Outdoor Unit</b>		<b>55kW</b>
1.7.1	Manufacturer		
1.7.2	Country of Origin		
1.7.3	Number of Units		
1.7.4	Size and Model Number		
1.7.5	Cooling Capacity at Specified Conditions	kW	
1.7.6	Heating Capacity at Specified Conditions	kW	
1.7.7	Noise Level	NC	

1.7.8	Refrigerant	Type	
1.8	<b>VRV System - Outdoor Unit</b>		<b>34kW</b>
1.8.1	Manufacturer		
1.8.2	Country of Origin		
1.8.3	Number of Units		
1.8.4	Size and Model Number		
1.8.5	Cooling Capacity at Specified Conditions	kW	
1.8.6	Heating Capacity at Specified Conditions	kW	
1.8.7	Noise Level	NC	
1.8.8	Refrigerant	Type	

The automatic control shall make provision for three consecutive starting attempts. Thereafter the set must be switched off, and the start failure relay on the switchboard must give a visible and audible indication of the fault.

### **3.9 STARTER BATTERY**

The set must be supplied with a fully charged "Lead Acid" type battery, complete with the necessary electrolyte. The battery must have sufficient capacity to provide the starting torque stipulated by the engine makers, and for at least six consecutive starting attempts.

The batteries will form an integral part of the generator or will be in separate panels that are of same external appearance as the main panel.

### **3.10 COOLING**

The engine must be water-cooled type, a built-on heavy duty, tropical type pressurized radiator must be fitted.

All water cooled engines shall be equipped with a centrifugal pump to circulate the water through the engine and radiators. The radiator and engine cooling system shall be filled with a rust inhibitor solution.

Protection must be provided against running at excessive temperatures. The operation of this protective device must give a visual and audible indication on the switchboard. All air ducts for the cooling of the engines are to be allowed for. An air duct shall be supplied from the radiator face to the air outlet louver.

The radiator will be installed flush to the wall in the position as indicated on drawing 10/ING/HPC/0031/XS – A Generator Room Details. A grid of the same size as the radiator will be installed in the new opening. The existing opening will be closed and made neat. The grid will allow for sufficient air intake and manufactured from minimum 1.5mm steel and powder coated. No pests, insects or birds will be able to enter the grid.

Where louvers are to be fitted to accommodate the cooling system, such louvers shall be sized according to the requirements of the manufacturer of the Standby Alternator set.

Lubrication of the main bearing and other important moving parts shall be by forced feed system. An automatic low oil pressure cut-out must be fitted, operating the stop solenoid on the engine, and giving a visible and audible indication.

### **3.11 FUEL PUMP AND FUEL**

Fuel injection equipment must be suitable for operation with the commercial brands of diesel fuel normally available locally.

### **3.12 FUEL TANK**

A new fuel tank should be provided. Also see details described under 3.1 above. Additional to the above the following will apply:

Should the fuel tank require a fuel cooler this must be fitted.

The tank shall be fitted with a breather, a Rochester type fuel gauge, and a low level alarm, giving an audible and visible signal on the switchboard and on the outside of the building via a siren and red rotating signal light. A by-pass switch must be installed on the panel. A low level will be at 20% of the total fuel capacity.

An electric pump, fitted with a suitable length of oil-resistant hose, must be supplied, for filling the fuel tank from 200 liter drums placed at ground level or from a tanker at a distance of not less than 15m from the tank.

An electrical supply point must be installed at the electric pump of 16A and must consist of a watertight socket outlet unit. It will be supplied with a cable of 10mm<sup>2</sup> 2 Core Armored dimensions. The supply point must be fed from the Standby Generator Panel via a 20A single phase Circuit Breaker. The cable will be installed via a brick wall (the hole will be properly sealed around the cable) and saddled against the wall at spacing not more than 300mm apart.

Construct a bund wall either from brick or steel to house at least 20% of the tank capacity should leakage occur.

### **3.13 GOVERNOR**

The speed of the engine shall be controlled by an ELECTRONIC governor in accordance with Class A0 of BSS.5514.

When full load is suddenly switched off or on, the temporary speed variation shall not exceed 2%. The permanent speed variation shall not exceed +/- 0.8% of the nominal engine speed. External facilities must be provided on the engine to adjust the nominal speed setting.

### **3.14 FLYWHEEL**

A suitable flywheel must be fitted, so that lights fed from the set will be free from any visible flicker.

The cyclic irregularity of the set must be within the limit laid down in B.S.S.5514 of 1958.

### **3.15 EXHAUST SYSTEM**

## **SILENCERS**

It is essential to keep the noise level as low as possible. An effective exhaust silencing system of the residential type is also to be provided, as specified in SABS 0103-1983, as amended.

The exhaust pipe shall be installed in such a way that the expelled exhaust fumes will not cause discomfort to the public. The exhaust pipe must be flexibly connected to the engine to take up vibrations transmitted from the engine, which may cause breakage.

Contractors shall quote for the supply & installation of silencers and baffles to ensure that the environment around the canopy is suitable for day to day work, without exceeding acceptable daily noise levels as applicable to a residential environment. The muffler and piping shall be manufactured from 3CR12

## **ATTENUATION**

Sound attenuation must be provided to ensure that the maximum sound level generated by the unit when measured at a height of 1.2 meters at a distance of 7 meters in any direction from the outside of the unit must not exceed 65 dB when the plant is running at full load. All sound attenuation material must be of a non-flammable type

### **3.16 ACCESSORIES**

The engine must be supplied complete with all accessories, instruction manuals, spare parts lists, etc. A spare set of fuel filters is to be supplied with the necessary tools for removal and refitting.

### **3.17 SAFETY NOTICES**

All safety notices as specified in the OHS Act must be fitted to the container and a suitable 9kg dry powder fire extinguisher must be provided adjacent to the personnel access door.

A set of Laminated drawings of the switchboard/control panel must be affixed to the inside wall of the container adjacent to the switchboard.

### **3.18 ALTERNATOR**

The alternator shall be of the self excited brushless type, with enclosed ventilated drip-proof housing, and must be capable of supplying the specified output continuously with a temperature rise not exceeding the limits laid down in **B.S.S. 2613 for rotor and starter windings with Class F or II insulation.**

Both windings must be fully impregnated for tropical climate and must have an oil resisting varnish finish.

### **3.19 RATING**

Unless stated to the contrary, the alternator shall generate the specified voltages on three-phase and at 50 Hz. The alternator shall be rated for the specified output and power factor as detailed.

The alternator may be of the two bearing or single bearing type equipped with ball or roller bearings. The bearings must be pre-lubricated to ensure long service periods without attention.

The alternator must be equipped with damper windings, enabling the unit to accommodate an unbalanced load of at least 25% of full load at any load and at the normal operating conditions without incurring any damage.

The alternator shall be rated for 300kVA



### **3.20 CONSTRUCTION**

The rotor shall be dynamically balanced and all the windings and rotating components shall be suitable to withstand an over speed of 50%.

### **3.21 Excitation**

The excitation system shall be designed to promote rapid voltage recovery, following the sudden application of the full load. The voltage shall recover to within 2,5% of the steady state voltage within 0,3 seconds following the application of full load and the transient voltage dip shall not exceed 10%.

### **3.22 WAVE FORM**

The voltage wave form of the alternator shall be such that the total voltage of the harmonic frequencies shall not exceed 5% of the voltage of the fundamental frequency over the range from no load to full load.

### **3.23 RADIO INTERFERENCE**

The alternator shall be suppressed to comply fully with the requirements of BS 800 as revised, as well as with all South African Department of Posts and Telegraph requirements.

### **3.24 REGULATION**

The alternator must be self regulated, the inherent voltage regulation not exceeding plus or minus 2.5% of the nominal voltage specified above, at all loads with the power factor between unity and 0,8 and within the driving speed variations of 4.5% between no-load and full load.

### **3.25 PERFORAMNCE**

The excitation system shall be designed to promote rapid voltage recovery following the sudden application of the full load. The voltage shall recover to within 2.½% of the steady state within 300 milli-seconds following the application of full load and the transient voltage dip shall not exceed 10%.

### **3.26 COUPLING**

The engine and alternator must be directly coupled by means of a first class quality flexible coupling, or acceptable disc drive coupling.

### **3.27 AUTOMATIC CONTROL CUBICLE**

A set mounted automatic control cubicle shall be supplied, the cubicle to incorporate all equipment necessary for the control and protection of the generating set, the automatic change-over, and the battery charging.

The cubicle shall be a totally enclosed free standing unit, and shall consist of steel panels, carried on a substantial angle iron framework or pressed steel panels welded.

The cubicle shall be flush fronted; all equipment shall be mounted on the back of the front plate on suitable supports.

All equipment, connections and terminals shall be easily accessible. The front panels shall be hinged, with square key locking. Self tapping screws shall not be used in the construction of the cubicle. The ironwork of the cubicle shall be thoroughly de-rusted, primed with zinc-chromate, and finished with two coats of first class red enamel, or powder coated in Signal Red.

Suitably rated terminals shall be provided for all main circuits and for the control and protection circuits. Where cable lugs are used, these shall be crimped on the cable. All terminals shall be clearly marked.

For the fine wiring, each wire shall be fitted with a cable or wire marker of approved type, and the numbering of these markers shall be shown on the wiring diagram of the switchboard.

All equipment on the cubicle, such as contactors, isolators, bus-bars, etc., shall have ample current carrying capacity to handle the full load alternator current, as well as the rated fault current of the L V Panel.

### **3.28 SWITCHBOARD/CONTROL PANEL**

A switchboard/control panel using a PLC type controller in preference to a Proprietary controller shall be used. Note; Relay logic panels are not acceptable. The switchboard will be positioned in the plant room and the following switchgear rated for a 25kA fault level must be provided.

800 Amp triple pole drawout motorised isolator for isolation of the normal mains supply.

800 Amp triple pole draw-out motorized circuit breaker with overload and short circuit protection suitable for switching and protection of the generator output.

Note: the above switches shall perform the changeover and must be electrically and mechanically interlocked.

The following alarm circuits with the necessary sensors must be provided on the

control panel.

- START FAILURE
- LOW OIL PRESSURE
- HIGH ENGINE TEMPERATURE
- OVERSPEED
- UNDERSPEED
- LOW RADIATOR WATER LEVEL
- ABNORMAL GENERATOR VOLTAGE ( $\pm 10\%$  OF NORMAL)
- LOW DAY TANK FUEL LEVEL
- UNIT NOT ON AUTO
- BATTERY CHARGE FAILURE

In addition to the above supervisory indication lamps for MAINS-LOAD and GENERATOR-LOAD to indicate which system is supplying the load must be provided.

Controls must be provided in the control panel to control the fuel replenishment pump

### **3.29 EARTHING**

An earth bar shall be fitted in the control panel.

The neutral point of the system must be solidly connected to the earth of the control panel.

Suitable terminals must be provided on the earth bar for connection of the main earth conductors, which will be supplied and installed by others.

### **3.30 OPERATIONAL REQUIREMENTS**

An automatic changeover with electrical and mechanical interlocking shall be provided installed in an approved position in the control cubicle. This changeover switches shall open when the normal "supply" voltage is interrupted, and will automatically close when the terminal voltage of the alternator reaches it's nominal voltage, thereby connecting the alternator on load.

Voltage and frequency monitor shall be installed to monitor the normal "supply".

The starting cycle shall consist of three time relays, with two relays which will be adjustable between 0- 30 seconds. The two time relays shall perform the starting cycle. The starting cycle shall actuate the first time relay, which will energize the starter motor of the engine for the preset time. The second time relay shall perform the "wait period" before the second and third starting attempt has been actuated.

After three unsuccessful starting cycles the third time relay shall be actuated to

interrupt any further starting cycles and give an alarm "Start Failure". The third time relay shall have an adjustable time range of not less than 60 seconds.

When the alternator output voltage reaches the nominal value, the changeover contactor shall be activated to transfer load to the alternator.

A time delay shall be actuated when the supply network voltage is restored. This delay shall be adjustable between 0 - 10 minutes, and shall actuate the changeover contactor to connect the load on back to the supply network.

After the load has been re-established to the supply network, the alternator set shall be switched off, by means of a run down time, which will be adjustable between 0 - 10 minutes.

Should any of the above mentioned control circuits or relays fail, the load shall be transferred automatically from the alternator to the supply network.

A siren must be of the continuous duty type or must be connected to an intermittent duty time relay.

A switch must be installed in the hooter circuit, to stop the audible signal. This switch shall be inside the cubicle with a suitable notice on the exterior.

The output terminals from the alarms in the AMF panel shall be wired to terminals in a flush mounted white 300 x 300, flush mount enclosure in the "manager's" office (maximum 300m from the generator room) indicating the following:

- Common Alarm
- Low fuel alarm
- Generator on Load indicator lamp.
- Mains on Load indicator lamp.
- Audible common alarm with cancel push button.

All indicator lamps shall be of the LED type or suitable connections for connecting to a building management system.

A stop delay with timer is required for the set, to keep the set running for an adjustable period of one to fifteen minutes after the return of the mains supply, before changing back to that supply and keep the set running for a further adjustable cooling period at no-load before stopping.

A four-position selector must be provided on the control panel, marked "Auto", "manual", "test" and "off".

With the selector on "auto", the set shall automatically start and stop, according to the mains supply being available or not.

With the selector on "test" it shall only be possible to start and stop the set with the push buttons, but the running set shall not be switched to the load.

With the selector on "manual", the set must take the load when started with the push button, but it must not be possible to switch the set on to the mains, or the mains on to the running set.

With the selector on "off", the set shall be completely disconnected from the automatic controls, for cleaning and maintenance of the engine.

### **3.31 BATTERY INSTALLATION**

The starting batteries shall be adequately rated to suit the equipment provided. Battery terminals shall be coated with "Coprastip" or equivalent conductive grease. The battery shall preferably be mounted adjacent to the equipment.

Where electric starting is employed, the combination engine generator set shall be equipped with a fully charged lead-acid battery with the following requirements:

The battery shall have ample capacity for providing the starting torque stipulated by the engine manufacturer, and capacity for 3 such starts in a five minute period.

The battery shall be supplied with a charger unit as described below.

### **3.32 BATTERY CHARGER**

The switchboard detailed below shall contain facilities for charging the batteries from the mains.

The battery charger shall be of the fully automatic type and shall consist of an air cooled transformer, silicon bridge rectifier, fuses and switching arrangement. All equipment shall be suitably rated and designed to automatically deliver a trickle or boost charge as determined by the battery voltage. The boost charge in amps shall not exceed 20% of the rated battery capacity.

A constant trickle charge facility is not acceptable. The charger shall switch off automatically when the battery is fully charged.

The charger must be provided with a Voltmeter and charge ammeter. These instruments must be mounted on the control panel door.

### 3.33 SWITCHBOARD/CONTROL PANEL

A switchboard / control panel must be provided for the control, metering and switching of the diesel alternator set.

**Fault Level** - The board and its equipment shall be rated at not less than the 380V asymmetrical prospective fault level specified in the detailed specification of the Electrical Installation, minimum 30 kA.

### 3.34 EQUIPMENT IN SWITCHBOARD

The following equipment is required on the board:

One flush 96 mm square dial voltmeter, scaled 0 - 500V, reading the alternator voltage.

One flush voltmeter selector switch with three metering and one off position, connecting the voltmeter between phases and neutral.

One flush 96mm square dial indicating type frequency meter, indicating the alternator frequency.

One hour meter with cyclometer counter, reading the number of hours the plant has been operating. The smallest figure on this meter is to read 1/10th hours.

One set of fuses or m.c.b.'s for potential circuits of the meters.

Three flush 96mm square dial ammeters for measuring the alternator current, scaled to suit, complete with the necessary current transformer - **combined instantaneous and maximum demand meters are required.**

- One triple pole circuit breaker for mains isolation.
- One set triple pole automatic change-over equipment with voltage and time delay relays, fitted with mechanical interlocks.
- One triple pole circuit breaker for alternator protection against overload and short circuit conditions.
- One four position operation selector switch, as specified.
- Two push buttons or one switch marked "START" and "STOP" for manual starting and stopping the set.
- One battery charger as specified, complete with flush ammeter and voltmeter.
- One stop delay as specified.

- Relays with reset push buttons as specified, for engine protection.
- Two low fuel level alarm devices.
- One warning hooter and one siren.
- One low battery voltage alarm device.
- Suitable terminals for incoming main and alternator cables, for the outgoing feeder, and for the earth connection.
- Any other equipment necessary for the correct and safe operation of the installation.
- A "General Alarm" output contact which will be in fail safe position, and will initiate general alarm should any one of the above mentioned alarms be initiated.
- Panel lights to indicate: 1) Mains - Load; 2) Generator Load, to indicate which system is supplying the load.

The IP65 siren shall be wired to a point outside the plant room door.

### **3.35 MARKINGS**

All labels, markings or instructions on the switchgear shall be as per the section on Coding, Labelling and Notices.

All timers or adjustable controls within the control panel shall be clearly labeled. A label indicating the settings of all adjustable controls shall be fitted inside the control panel.



### **3.36      INSTALLATION**

Except for the supply and connection of the incoming main and outgoing feeder cables, tenderers must include for the complete installation and wiring of the plant in running order.

The installation must comply with the regulations of the "Factories, Machinery and Building Works Act" of 1941, as amended to date, and with the "Standard Regulations for the Wiring of Premises" second edition as amended, as well as the General Specification for Electrical Installations appended hereto, or available on request.

For the alternator circuit P V C SWA PVC sheathed cable shall be used. For the control circuits either multi-core P V C cable OR PVC insulated wires in conduit may be used. The neutral of the system must be solidly earthed.

Additional to the above, "Moving Machinery", "Noise" and "Danger" signs must be installed.

### **3.37      OCCUPATIONAL HEALTH & SAFETY ACT ( OHSACT)**

This installation shall comply in it's entirety with the Occupational Health & Safety Act, and its amendments to date, and with all other regulations and specifications governing the works.

#### **WARNING NOTICES**

In the plant room, a clearly legible and indelible warning notice shall be mounted in a conspicuous position. The notice shall be made of non-corrodible and non-deteriorating material, preferably plastic, and must read as follows:

This engine will start without notice. Turn selector switch on control board to "OFF" before working on the plant. Do not work on this plant without checking the status of the UPS and notifying the Main Control Room.

### **3.38 DRAWINGS**

The successful tenderer will submit for approval within four weeks after adjudication of the Tender, three paper copies of the following drawings:

Complete detailed general layout drawing.

Working drawings of the cooling and exhaust systems.

Complete detailed and dimensional drawings of the alternator set with all auxiliary equipment.

Wiring diagrams of the control protection and alarm circuitries.

Detailed layout of the equipment to be installed on the control panel.

All drawings shall be drawn on CAD (Caddie) and shall meet the requirements of SABS 0111-1980 as amended and SABS-1980 as amended, where applicable.

### **3.39 INFORMATION REQUIRED**

Tenderers must furnish detailed descriptions and illustrations of the equipment offered, and must complete the questionnaire following this specification. Failure to submit any of the information asked for may disqualify the tender.

### **3.40 GUARANTEE**

The successful tenderer will be required to guarantee the complete plant for a period of 12 months from the date it has been taken over by the client, in running order.

If during this period the plant is not in working order, or not working satisfactorily owing to faulty material, design, or workmanship, the contractor shall be notified, and immediate steps shall be taken by him to rectify the defects and/or replace the affected parts on site, at his own expense.

### **3.41 MAINTENANCE**

The successful tenderer shall be required to maintain the plant in good running condition to the approval of the Engineer for a period of 12 months after the plant has been taken over by the Client.

The cost of this maintenance must be excluded from the tender price of the Contractor, but shall be noted clearly on the form of tender.

All rates shall be as specified on the form of tender.

### **3.42 INSTRUCTION OF OPERATOR**

After completion of the installation, and when the plant is in running order, the successful tenderer will be required to instruct an attendant in the operation of the plant, until he is fully conversant with the equipment and the handling thereof.

Three copies of maintenance, fault-localizing and operating manual are to be handed over to the representative on site.

One set of manuals with all drawings shall be fixed in a plastic jacket inside the panel.

### **3.43 INTERNAL LABELLING**

An "Ozakling" type label showing the part number, description and setting of all removal relays, monitors and timers shall be affixed to the inside of the panel. Typical timer settings shall be noted.

All removable items shall be labeled both on the item, and on or adjacent to the plug-in base on the panel.

A full set of drawings, including schematics and general arrangement drawings shall be framed and mounted on the plant room wall behind a Perspex cover.

### **3.44 TESTS**

The following tests are to be carried out:

At the supplier's premises, before the generating set will be delivered to site. The Engineers may be present during the test to satisfy themselves that the generating set complies with the specification and delivers the specified output. The test must be carried out in accordance with B.S.S. 5514. The Engineer must be advised in time of the date of the test at least seven days prior to the test.

At the site after completion of the installation, all the instruments which may be required for the tests have to be provided by the successful tenderer.

Note that it will be necessary to conduct tests on load banks on site. On site tests shall be carried out for one hour on full load and one hour at 10% overload.

Test reports of both tests as specified under (a) and (b) are to be submitted to the Engineer.

### **3.45 LOCATION OF PLANTROOM**

The location of the plant room is as per the Architect's Drawings. The successful tenderer shall be responsible for lifting the set onto this plant room and positioning the set in the standby plant room.

The door of the generator room will be replaced if required with a new double door of adequate size to allow easy generator access and enough air flow for the generator according to the supplier's specifications. The door will be lockable, manufactured from at least 1.5mm steel and powder coated.

### **3.46      MANUALS**

Three copies of the complete set of manuals shall be provided to the full approval of the Engineer. A set of manuals shall consist of the following:

The contract shall be deemed as "Incomplete" until all manuals, drawings and descriptive literature are received and approved by the Engineer, and will result in a minimum of 10% of the contract moneys being withheld.

### **3.47      COMPLIANCE WITH SPECIFICATION**

Tenderers are to provide a clause by clause written confirmation that their offer complies with the clauses of this document. Where their offer does not comply, it is to be clearly indicated in the compliance schedule.

### **3.48      SIGNAGE**

All signage as required to comply with local Fire Regulations, as well as SABS-0142 & SABS 0400 shall be supplied and fitted both inside and outside the plant room.

## PART B

### ELECTRICAL PROJECT SPECIFICATIONS

#### 1. SCOPE OF WORKS

This specification covers the contract engineering, manufacture, supply, delivery, erection, wiring, commissioning, testing and handing over in complete working order for immediate use. **Guarantee for twelve months will be applicable** on all equipment and workmanship, calculated from the final completion date, for the following:

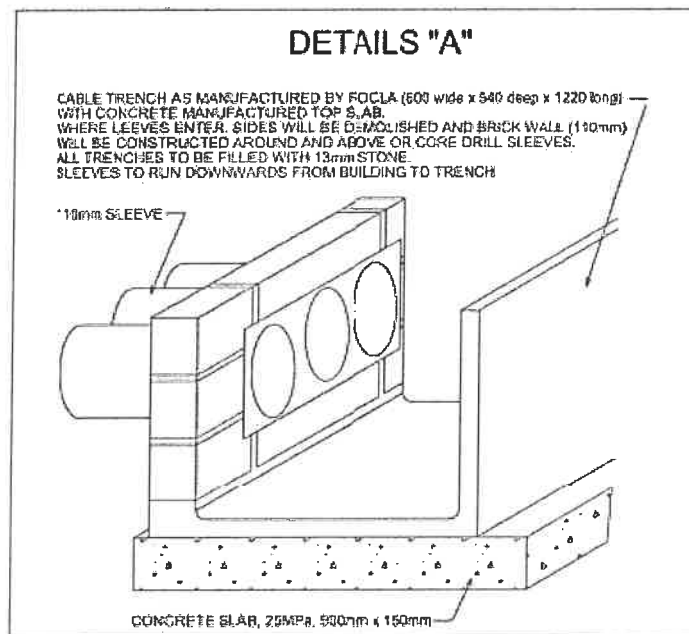
- The installation of the distribution boards with circuit breakers as specified;
- install all luminaries and socket outlets as specified and indicated on the drawings;
- complete all 2.5- and 4mm<sup>2</sup> wiring in 20- and 25mm conduit.;
- install cable racks and cables as specified;
- conduct tests and supply all paperwork as required and
- remove all redundant material from site.

## 2. TEMPORARY BUILDERS SUPPLY

The Contractor will allow for his own Builder's Supply and will connect from an existing power source on the station. The contractor will ensure that the electrical works are properly earthed and safe. A Certificate of Compliance will be issue for the distribution board.

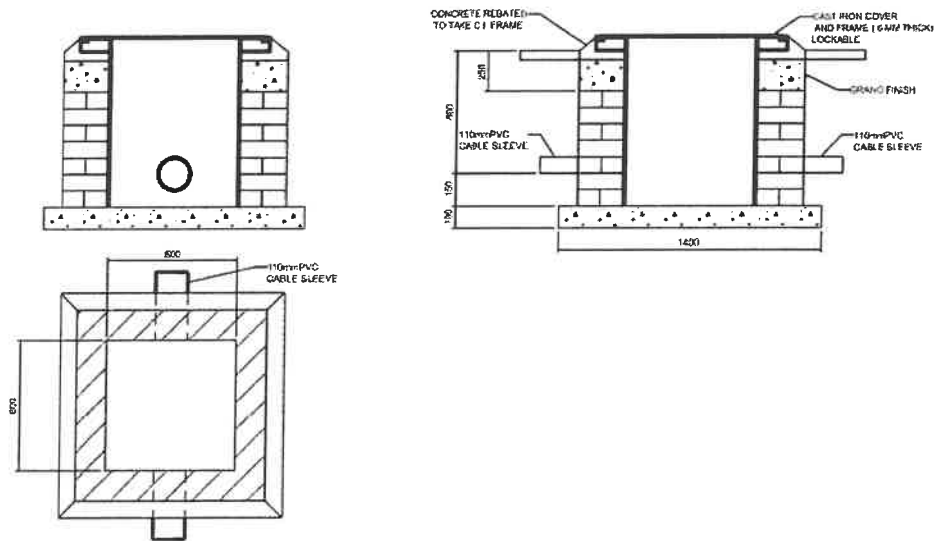
## 3. BULK SUPPLY

The bulk supply cable will be obtained from a New 500kVa transformer in the vicinity of the building. All the required cost should be provided for by the contractor. The cable will be connected and routed underground in a 110mm sleeve and manhole and cable trench arrangement to the building.



## POWER MANHOLE - DETAIL

NOT TO SCALE



## DETAILS FOR ALL ENTRIES OF SECURITY AND POWER INTO BUILDINGS

