

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
	<b><u>SECTION NO.4</u></b>			
	<b><u>MECHANICAL INSTALLATIONS</u></b>			
	<b><u>BILL NO.1</u></b>			
	<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>			
1	Scaffolding	Item		
2	Staff Organisation	Item		
3	Progress for Measurement	Item		
4	Attendance for Measurement	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals (x3 Copies)	Item		
7	As-built Drawings	Item		
8	12 Months Guarantee and Maintenance	Item		
9	Programming of the Work	Item		
10	Testing, Balancing & Commissioning	Item		
11	Equipment Submissions	Item		
12	Drawings (Shop drawings & As Built drawings)	Item		
13	Contract Management	Item		
14	Office Administration	Item		
15	Truck Trips	Item		
16	Van and Car Trips	Item		
17	Rigging and Crane Hire	Item		
	<b>Carried to Collection</b>			R
	Section No. 4 Mechanical Installations Bill No. 1 HVAC <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

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18	Equipment Labels  Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
19	Provisional sum for construction Changes	Item		
20	Contractor's overhead and profit on Item 1.028		SUM	
<b><u>EQUIPMENT, ACCESSORIES &amp; DUCTING</u></b>				
<b><u>NEW HVAC INSTALLATIONS: EQUIPMENT AND ACCESSORIES</u></b>				
<b><u>Midwal Split Units</u></b>				
<b><u>Midwall unit capacity to be based on Cooling On Coil temperatures of 27°C (db) and 19°C (wb)</u></b>				
21	Supply and install MIDWALL SPLIT UNIT - 2,5kW cooling & 3,2kW heating c/w remote controllers. Firmly support indoor units with support brackets and steel rods, from roof trusses/ slab (soffit) & walls as per industry best practice. Power source : 1PH,220-240V/50Hz.	No	2.00	
22	Supply and install MIDWALL SPLIT UNIT - 4,6kW cooling & 5,0kW heating c/w remote controllers. Firmly support indoor units with support brackets and steel rods, from roof trusses/ slab (soffit) & walls as per industry best practice. Power source : 1PH,220-240V/50Hz.	No	1.00	
23	Supply and install MIDWALL SPLIT UNIT - 6,1kW cooling & 7,0kW heating c/w remote controllers. Firmly support indoor units with support brackets and steel rods, from roof trusses/ slab (soffit) & walls as per industry best practice. Power source : 1PH,220-240V/50Hz.	No	2.00	
24	Supply and install MIDWALL SPLIT UNIT - 9,5kW cooling & 11,2kW heating c/w remote controllers. Firmly support indoor units with support brackets and steel rods, from roof trusses/ slab (soffit) & walls as per industry best practice. Power source : 1PH,220-240V/50Hz.	No	4.00	
<b>Carried to Collection</b>				R
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<b><u>Pipe Fittings</u></b>				
<b><u>MWUs</u></b>				
25	soft drawn refrigerant piping for liquid and gas lines, from BC1.8 to MSU'S. Gas line-12.7mm to 22,2mm flare and liquid line-6.35mm to 9,52mm flare.	m	35.00	
<b><u>Refrigerant Charge</u></b>				
26	Prepare both new and existing unit for refrigerant charge and charge with refrigerant, R410A, as per manufacturer's recommendation & tender specifications and test for leaks		Item	
<b><u>Condensate drainage piping sets c/w Long p-trap. Pipe Sets, including chasing in walls, core drilling and making good afterwards</u></b>				
27	Indoor Unit Drain piping to connect into the nearest Main drain piping c/w bends. TRF and Tees. Outside Dia-50mm.	m	45.00	
<b><u>FANS AND ATTENUATORS</u></b>				
<b><u>Centrifugal,Axial &amp; inline tube Fans complete with feet, flanges and support brackets and spring mounts/ Anti vibration mountings - Supply and Install</u></b>				
28	Dia. 400mm Axial Flow Fan for 1,100m <sup>3</sup> /s, 450Pa total pressure,1.5kW,400V, 50Hz)	No	1.00	
29	Dia. 315mm Axial Flow Fan for 0,330m <sup>3</sup> /s, 300Pa total pressure,1.5kW,400V, 50Hz)	No	2.00	
30	Dia. 315mm Inline tube Fan for 0,255m <sup>3</sup> /s, 250Pa total pressure,1.5kW,240V, 50Hz)	No	1.00	
31	Dia. 250mm Inline tube Fan for 0,055m <sup>3</sup> /s, 250Pa total pressure,1.5kW,240V, 50Hz)	No	1.00	
<b><u>Sound Attenuators complete with support brackets - Supply and Install</u></b>				
32	Sound Attenuators to suit Dia. 400 Fan	No	2.00	
<b>Carried to Collection</b>				R
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33	Sound Attenuators to suit Dia. 315 Fan	No	6.00		
34	Sound Attenuators to suit Dia. 250 Fan	No	2.00		
<b><u>Electrical and Electronic Connections - Supply and Install</u></b>					
35	Electrical starter/isolator with overload protection, wired to fan and to isolator	No	5.00		
36	Electrical cabling and wiring of fans (all cabling and wiring measured as one item per fan)	No	5.00		
<b><u>Fan Control - Supply and Install</u></b>					
37	7 day/24 hour control timer	No	4.00		
38	Manual Stop/Start controller	No	1.00		
<b><u>KITCHEN EXTRACTION</u></b>					
<b><u>Duct - Supply and Install</u></b>					
39	Dia. 500	m	4.00		
<b><u>Transformation piece - Supply and Install</u></b>					
40	Dia. 500 to Dia. 400	No	2.00		
<b><u>90° Bends - Supply and Install</u></b>					
41	Dia. 500	No	2.00		
<b><u>EQUIPMENT, ACCESSORIES &amp; DUCTING</u></b>					
<b><u>NEW HVAC INSTALLATIONS: EQUIPMENT AND ACCESSORIES</u></b>					
<b><u>ADMINISTRATION BLOCK - FAF01</u></b>					
<b><u>Duct - Supply and Install</u></b>					
42	Dia. 200	m	7.00		
43	Dia. 150	m	3.00		
<b>Carried to Collection</b>					R
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**DPWFS (T) XXX/XXXX**  
**CONSTRUCTION OF PROPOSED NEW**  
**DOME PRIMARY SCHOOL IN PARYS**

	<b><u>Transformation piece - Supply and Install</u></b>				
44	Dia. 250 to Dia. 200	No	1.00		
45	Dia. 250 to 200 x 200	No	1.00		
	<b><u>90° Bends - Supply and Install</u></b>				
46	Dia. 200	No	1.00		
	<b><u>Stop Ends - Supply and Install</u></b>				
47	Dia. 200	No	1.00		
	<b><u>Spigots - Supply and Install</u></b>				
48	Dia. 150	No	3.00		
	<b><u>Flexible duct (max length = 1,5m) - Supply and Install</u></b>				
49	Dia. 150	No	3.00		
	<b><u>ADMINISTRATION BLOCK - FAF02</u></b>				
	<b><u>Duct - Supply and Install</u></b>				
50	Dia. 250	m	1.00		
	<b><u>Transformation piece - Supply and Install</u></b>				
51	300 x 300 to Dia. 315	No	1.00		
52	Dia. 315 to Dia. 250	No	1.00		
	<b><u>Flexible duct (max length = 1,5m) - Supply and Install</u></b>				
53	Dia. 250	No	1.00		
	<b><u>COMPUTER ROOM 1 - FAF01</u></b>				
	<b><u>Duct - Supply and Install</u></b>				
54	Dia. 300	m	2.00		
	<b>Carried to Collection</b>				R
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	<b><u>Transformation piece - Supply and Install</u></b>				
55	400 x 400 to Dia. 315	No	1.00		
56	Dia. 315 to Dia. 300	No	1.00		
	<b><u>Flexible duct (max length = 1,5m) - Supply and Install</u></b>				
57	Dia. 300	No	1.00		
	<b><u>COMPUTER ROOM 2 - FAF02</u></b>				
	<b><u>Duct - Supply and Install</u></b>				
58	Dia. 300	m	3.00		
	<b><u>Transformation piece - Supply and Install</u></b>				
59	400 x 400 to Dia. 315	No	1.00		
60	Dia. 315 to Dia. 300	No	1.00		
	<b><u>Flexible duct (max length = 1,5m) - Supply and Install</u></b>				
61	Dia. 300	No	1.00		
	<b><u>EQUIPMENT, ACCESSORIES &amp; DUCTING</u></b>				
	<b><u>NEW HVAC INSTALLATIONS: EQUIPMENT AND ACCESSORIES</u></b>				
	<b><u>Supply &amp; Install door grilles/extract disc valves - Metal, white epoxy coated - Supply and Install</u></b>				
62	Dia. 300 Supply Air Ceiling Diffusers	No	2.00		
63	Dia. 250 Supply Air Ceiling Diffusers	No	1.00		
64	Dia. 150 Supply air disc valves	No	4.00		
65	400 x 300 Aluminium Door Grilles	No	8.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 1 HVAC <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

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<b><u>Diffuser &amp; Disc Valve Clamps - Supply and Install</u></b>			
66	300mm diam. clamps	No	4.00
67	250mm diam. clamps	No	2.00
68	150mm diam. clamps	No	8.00
<b><u>Balancing Dampers - Supply and Install</u></b>			
69	Dia. 300	No	2.00
70	Dia. 250	No	1.00
71	Dia. 150	No	4.00
<b><u>Kitchen Extraction Canopy, External Weather Louvres, Discharge Cowls, Burglar Bars &amp; Wire Mesh Screens - Supply and Install</u></b>			
72	2600 x 850 Kitchen Extraction Canopy complete with wire mesh screens & burglar bars	No	1.00
73	400 x 400 weather louvre complete with filter bank, wire mesh screens & burglar bars	No	2.00
74	300 x 300 weather louvre complete with filter bank, wire mesh screens & burglar bars	No	1.00
75	200 x 200 weather louvre complete with filter bank, wire mesh screens & burglar bars	No	1.00
76	Dia. 500 Dispersion Dispersion Cowl	No	1.00
<b>Carried to Collection</b>			
			R
Section No. 4 Mechanical Installations Bill No. 1 HVAC <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
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Mechanical Installations

Bill No. 1

HVAC

**COLLECTION**

Total Brought Forward from Page No.

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 No**

**Amount**

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R

Section No. 4

Mechanical Installations

Bill No. 1

HVAC

**BILL OF ESTIMATE**

**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**

**CONSTRUCTION OF PROPOSED NEW  
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		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish	Item		
2	Retention Interest	Item		
3	Site Establishment & Clearance	Item		
4	Scaffolding	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals	Item		
7	As-built Drawings	Item		
8	12 Months Guarantee and Maintenance	Item		
9	Programming of the Work	Item		
10	Testing, Balancing & Commissioning	Item		
11	Equipment Submissions	Item		
12	Contract Drawings	Item		
13	Equipment Labels	Item		
14	Water & Power for commissioning If JBCC Document	Item		
15	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)	Item		
16	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
<b><u>External services</u></b>				
<b>Carried to Collection</b>			R	
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

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17	<p><b><u>TANKS: THE SUPPLY INSTALLATION AND FULL COMMISSIONING OF TANKS</u></b></p> <p>Supply/ Intall a Ground water storage tank complete with pipe work and commissioning of tankswater storage shall be a CUBIC TANK, total effective capacity including free board 65m<sup>3</sup> 60Amps, 3 Phase power supply for welding of tanks on site</p>	No	1.00		
18	<p><b><u>PUMPS: THE SUPPLY INSTALLATION AND FULL COMMISSIONING OF PUMPS</u></b></p> <p><b><u>ELECTRICAL MOTOR DRIVEN PUMP</u></b></p> <p>Supply, install, test and commission Electric motor driven pump suitable for automatic operation consisting of the following (as per specification) End suction Vertical centrifugal pump type, fire pump complete with 6.5l/s at a total head of 4.0 Bar. including by pass arrangement for periodical testing of the working of the pump set as required, strainer on suction side and pressure gauge on delivery side etc. The pump shall be provided with mechanical seals.                  All coupling of pump and motor should be covered with safety guard                  Squirrel cage A.C induction motor suitable for operation on 415V, 3 Phase 50Hz A.C supply and of minimum 5.5 kW for the above pump with flexible coupling as per specification</p>	No	2.00		
19	<p><b><u>PUMP ROOM</u></b></p> <p><b><u>PUMPHOUSE PIPEWORK &amp; ELECTRICAL CONNECTIONS</u></b></p> <p>All pumphouse pipework and necessary valves as per tender drawings and specification</p>		Item		
20	<p>All electrical panels, cabling, safeties, switches, etc for electrical pump, jockey pump and any other equipment housed within the pump house</p>		Item		
<p><b><u>MULTI PURPOSE HALL</u></b></p>					
<p><b><u>WET SERVICES</u></b></p>					
<p style="text-align: center;"><b>Carried to Collection</b></p>					
<p style="text-align: right;">R</p>					
<p>Section No. 4                  Mechanical Installations                  Bill No. 2                  Wet Services  <b>BILL OF ESTIMATE</b>  <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>					

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	<b><u>uPVC Piping</u></b>				
	<b><u>Pipework to include for all bracketing, anchor points and electofusion couplings, expansion joints, required to meet the uPVC installation requirements. Bracketing to allow for all eventualities inc. fixing to walls, soffits and in ceiling space irrespective of lengths of rods required.</u></b>				
21	50mm Diameter pipes	m	46.00		
22	75mm Diameter pipes	m			
23	110mm Diameter pipes	m	50.00		
	<b><u>uPVC pipe and fittings as before described laid in trenches on imported bedding as per uPVC recommendations including all excavations, filling and compaction to 93% Modasho all in normal ground not exceeding 1m deep</u></b>				
24	50mm Diameter pipes	m			
25	75mm Diameter pipes	m	12.00		
26	110mm Diameter pipes	m	30.00		
	<b><u>Galvanised pipe and fittings laid in trenches on imported bedding as per recommendations including all excavations, filling and compaction to 93% Modasho all in normal ground not exceeding 1m deep</u></b>				
27	110mm Diameter pipes	m	12.00		
	<b><u>Water Hand Basin fittings</u></b>				
28	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastic cover	No	17.00		
29	50 x 32mm reseal "P" or "S" trap c/w with clamps	No	17.00		
30	50mm x 90° bend	No	17.00		
	<b>Carried to Collection</b>				R
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31	50mm x 45° equal junction	No	17.00		
32	50mm stopped end cap	No			
33	50mm inspection eye pipe	No	17.00		
	<b><u>Sink fittings</u></b>				
34	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastioc cover	No	4.00		
35	50 x 40mm reseal "P" or "S" trap c/w with clamps	No	4.00		
36	50mm x 90° bend	No	4.00		
37	50mm x 45° equal junction	No	4.00		
38	50mm stopped end cap	No			
39	50mm inspection pipe	No	4.00		
	<b><u>Urinal waste fittings</u></b>				
40	Urinal waste (1 1/2" x 85mm) universal	No	5.00		
41	40mm Plastic Bottle reseal	No	5.00		
42	50mm x 45° equal junction	No	5.00		
43	50mm inspection pipe	No	5.00		
	<b><u>Water closet fittings</u></b>				
44	110mm pan Connector	No	18.00		
45	110m Moisture seal	No	18.00		
46	110mm x 90° bend	No	36.00		
47	110mm x 45° bend	No	19.00		
48	110mm x 45° equal junction	No	23.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

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<b><u>Shower fittings</u></b>					
49	A shower tray waste trap in a diameter of 90 mm, with 50mm outlet,featuring a polished cover cap with stainless steel small grill	No	5.00		
<b><u>Extra over uPVC Piping for fittings</u></b>					
50	50mm x 90° bend	No	15.00		
51	50mm x 45° bend	No			
52	50mm inspection pipe	No	15.00		
53	110mm rodding eye	No	3.00		
54	100mm x 45° equal junction	No	20.00		
55	110mm x 50mm x 45° reducing junction	No	6.00		
56	110mm inspection pipe	No	18.00		
57	110mm x 50mm reducer	No	4.00		
58	110mm PVC gully underground P-trap and joint to uPVC piping	No	2.00		
59	110mm PVC gully head C/W grate	No	2.00		
60	Approved Gully tops/concrete SABS 0252-2	No	2.00		
61	SANS 10400 compliant 110mm Floor Drain 304/316 stainless steel grade c/w Dia. 75mm outlet.	No	4.00		
<b><u>inspection chamber: A chamber not deeper than 1 m and of such dimensions that permanent access may be obtained to a drain without a person's being required to enter into such chamber.</u></b>					
62	Supply and install IC 600 x 600 c/w internal cover to suit	No	1.00		
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

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	<p><b><u>ventilation pipe; vent pipe: A pipe, other than a discharge pipe, that leads to the open air at its highest point and that provides ventilation throughout a drainage installation for the purpose of preventing the destruction of water seals.</u></b></p> <p><b><u>Supply and install vent Pipe complete with vent valves as per drawing:</u></b></p>				
63	Dia.100	m	6.00		
	<p><b><u>Stack pipe:</u></b></p> <p><b><u>Supply and install stub pipe as per drawing:</u></b></p>				
64	Dia.100	m	12.00		
	<p><b><u>Fat traps</u></b></p>				
65	Supply and install 304/ 316 s/steel internal fat trap designed for 1l/s	No	1.00		
	<p><b><u>Stainless steel drain channel</u></b></p>				
66	Supply and install 300 (W) x 6m (L) of stainless steel drain channel			Item	
	Design 300 W x 200 Depth channel to accommodate steel drain channel				
	<p><b><u>SUNDRIES</u></b></p>				
67	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative			Item	
68	Allow for chasing brickwall for piping not exceeding 65mmØ. Make good by Contractor			Item	
69	PVC Sleeve n/e 75mmØ average length 250mm	No	4.00		
70	PVC Sleeve n/e 125mmØ average length 250mm	No	20.00		
	<p><b><u>Note: Subsidiary manholes shown on pipe in ground and at grease trap by Civil Contactor</u></b></p>				
	<p><b>Carried to Collection</b></p>			R	
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<b><u>WATER SUPPLIES - COLD WATER</u></b>			
Chased piping to be wrapped with brown plumbing paper.			
<b><u>Copper Class 1 Piping</u></b>			
<b><u>Above Ground piping Exposed</u></b>			
71	22mm Pipes	m	106.00
72	28mm Pipes	m	40.00
73	35mm Pipes	m	
74	42mm Pipes	m	
75	54mm Pipes	m	
<b><u>Copper Class 2 Piping</u></b>			
<b><u>Chased in walls</u></b>			
76	15mm Pipes	m	12.00
77	22mm Pipes	m	38.00
78	28mm Pipes	m	24.00
<b><u>HDPE Class 12 Piping</u></b>			
<b><u>Underground</u></b>			
79	35mm Pipes	m	26.00
<b><u>Flare-type compression fittings complying with SANS 1067-1</u></b>			
80	Ø 15 mm Elbow	No	20.00
81	Ø 22 mm Elbow	No	18.00
82	Ø 28 mm Elbow	No	4.00
83	Ø 22 mm Equal Teas	No	10.00
<b>Carried to Collection</b>			
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84	Ø 28 mm Equal Teas	No	2.00		
85	Ø 28mm Tee with to Ø 22mm Branch	No	4.00		
86	Ø 22mm Tee with to Ø 15mm Branch	No	12.00		
	<b><u>Backflow Prevention Devices</u></b>				
87	Vacuum Breakers to Suit	No	4.00		
	<b><u>TAPS, VALVES, ETC</u></b>				
88	Taps - By others		Item		
	<b><u>Valves</u></b>				
89	15mm diam shut-off valves	No	30.00		
90	20mm diam shut-off valves	No	23.00		
91	25mm diam shut-off valves	No			
92	32mm diam shut-off valves	No	2.00		
93	40mm diam shut-off valves	No			
	<b><u>CONNECTORS</u></b>				
	<b><u>Overflow and Service pipe</u></b>				
94	15mm Braided connector 300mm long	No	54.00		
	<b><u>HOT WATER GENERATION &amp; STORAGE</u></b>				
	<b><u>Hydroboils and Geysers</u></b>				
95	15 Litre Hydroboil, size 310x180x460mm high, 1.5Kw, 240V/1Ph/50Hz, plumbed directly into the cold water inlet and waste water reticulation.	No	2.00		
96	200 Litre hot water (Solar Geyser), complete with safety valves, vacuum breakers and all accessories and mounting brackets. Geyser to be plumbed directly into the cold water inlet, hot water supply piping and waste water reticulation.	No	2.00		
	<b>Carried to Collection</b>				R
<p>Section No. 4          Mechanical Installations          Bill No. 2          Wet Services  <b>BILL OF ESTIMATE</b>  <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>PIPE INSULATION</u></b>			
<b><u>Pre-formed external insulating zipped fire retarded, flexible, closed cell Polyethylene material.</u></b>			
97	15mm Lagging around pipes	m	
98	22mm Lagging around pipes	m	42.00
<b><u>Extra over pipe insulation for insulation around</u></b>			
99	15mm Lagging around 20mm fittings	No	6.00
100	22mm Lagging around 20mm fittings	No	6.00
<b><u>TESTING &amp; COMMISSIONING</u></b>			
101	Allow for chasing brickwall for piping not exceeding 50mmØ. Make good by Contractor		Item
102	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative		Item
103	Color coding and directional arrows as per engineers requirements		Item
104	Flushing out of and sterilisation of the complete system to local bye laws and the engineers requirements in the presence of the engineer		Item
<b><u>SCIENCE LABS</u></b>			
<b><u>WET SERVICES</u></b>			
<b><u>Valcuhine Piping</u></b>			
<b><u>Pipework to include for all bracketing, anchor points and electrofusion couplings, expansion joints, required to meet the uPVC installation requirements. Bracketing to allow for all eventualities inc. fixing to walls, soffits and in ceiling space irrespective of lengths of rods required.</u></b>			
105	50mm Diameter pipes	m	30.00
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<p><b><u>Valcathine pipe and fittings as before described laid in trenches on imported bedding as per recommendations including all excavations, filling and compaction to 93% Modasho all in normal ground not exceeding 1m deep</u></b></p>			
106	50mm Diameter pipes	m	12.00
107	75mm Diameter pipes	m	30.00
<p><b><u>Water Hand Basin fittings</u></b></p>			
108	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastic cover		Item
109	50 x 32mm reseal "P" or "S" trap c/w with clamps	No	20.00
110	50mm x 90° bend	No	20.00
111	50mm x 45° equal junction	No	20.00
112	50mm inspection eye pipe	No	20.00
<p><b><u>Extra over Valcathine Piping for fittings</u></b></p>			
113	50mm x 90° bend	No	8.00
114	50mm x 45° bend	No	7.00
115	50mm inspection pipe	No	8.00
<p><b><u>inspection chamber: A chamber not deeper than 1 m and of such dimensions that permanent access may be obtained to a drain without a person's being required to enter into such chamber.</u></b></p>			
116	Supply and install IC 600 x 600 c/w internal cover to suit	No	12.00
<p><b>Carried to Collection</b></p>			R
<p>Section No. 4                  Mechanical Installations                  Bill No. 2                  Wet Services  <b>BILL OF ESTIMATE</b>  <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>SUNDRIES</u></b>			
117	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative		Item
118	Allow for chasing brickwall for piping not exceeding 65mmØ. Make good by Contractor		Item
119	PVC Sleeve n/e 75mmØ average length 250mm	No	2.00
Note: Subsidiary manholes shown on pipe in ground and at grease trap by Civil Contactor			
<b><u>WATER SUPPLIES - COLD WATER</u></b>			
<b><u>Chased piping to be wrapped with brown plumbing paper.</u></b>			
<b><u>Copper Class 1 Piping</u></b>			
<b><u>Above Ground piping Exposed</u></b>			
120	15mm Pipes	m	25.00
121	22mm Pipes	m	12.00
122	28mm Pipes	m	12.00
<b><u>Copper Class 2 Piping</u></b>			
<b><u>Chased in walls</u></b>			
123	15mm Pipes	m	12.00
124	22mm Pipes	m	30.00
<b><u>Flare-type compression fittings complying with SANS 1067-1</u></b>			
125	Ø 15 mm Elbow	No	8.00
126	Ø 22 mm Elbow	No	4.00
127	Ø 22mm Tee with to Ø 15mm Branch	No	4.00
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>TESTING &amp; COMMISSIONING</u></b>			
128	Allow for chasing brickwall for piping not exceeding 50mmØ. Make good by Contractor		Item
129	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative		Item
130	Color coding and directional arrows as per engineers requirements		Item
131	Flushing out of and sterilisation of the complete system to local bye laws and the engineers requirements in the presence of the engineer		Item
<b><u>ADMINISTRATION</u></b>			
<b><u>WET SERVICES</u></b>			
<b><u>uPVC Piping</u></b>			
<b><u>Pipework to include for all bracketing, anchor points and electrofusion couplings, expansion joints, required to meet the uPVC installation requirements. Bracketing to allow for all eventualities inc. fixing to walls, soffits and in ceiling space irrespective of lengths of rods required.</u></b>			
132	50mm Diameter pipes	m	12.00
133	75mm Diameter pipes	m	
134	110mm Diameter pipes	m	30.00
<b><u>uPVC pipe and fittings as before described laid in trenches on imported bedding as per uPVC recommendations including all excavations, filling and compaction to 93% Modasho all in normal ground not exceeding 1m deep</u></b>			
135	110mm Diameter pipes	m	6.00
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Water Hand Basin fittings</u></b>					
136	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastioc cover	No	7.00		
137	50 x 32mm reseal "P" or "S" trap c/w with clamps	No	7.00		
138	50mm x 90° bend	No	7.00		
139	50mm x 45° equal junction	No	7.00		
140	50mm stopped end cap	No			
141	50mm inspection eye pipe	No	7.00		
<b><u>Sink fittings</u></b>					
142	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastioc cover			Item	
143	50 x 40mm reseal "P" or "S" trap c/w with clamps	No	1.00		
144	50mm x 90° bend	No	1.00		
145	50mm x 45° equal junction	No	1.00		
146	50mm stopped end cap	No			
147	50mm inspection pipe	No	1.00		
<b><u>Urinal waste fittings</u></b>					
148	Urinal waste (1 1/2" x 85mm) universal	No	2.00		
149	40mm Plastic Bottle reseal	No	2.00		
150	50mm x 45° equal junction	No	2.00		
151	50mm stopped end cap	No			
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

152	50mm inspection pipe	No	2.00		
	<b><u>Water closet fittings</u></b>				
153	110mm electroweld coupling to engineers requirement	No			
154	110mm pan Connector	No	5.00		
155	110m Moisture seal	No	5.00		
156	110mm x 90° bend	No	10.00		
157	110mm x 45° bend	No	5.00		
158	110mm x 45° equal junction	No	5.00		
159	110mm x 90° equal junction	No			
	<b><u>Extra over uPVC Piping for fittings</u></b>				
160	50mm x 90° bend	No	8.00		
161	50mm inspection pipe	No	15.00		
162	110mm rodding eye	No	1.00		
163	100mm x 45° equal junction	No	5.00		
164	110mm x 50mm x 45° reducing junction	No	4.00		
165	110mm x 75mm x 45° reducing junction	No			
166	110mm stopped end cap	No			
167	110mm inspection pipe	No	5.00		
168	110mm x 50mm reducer	No	4.00		
169	110mm PVC gully underground P-trap and joint to uPVC piping	No	1.00		
170	110mm PVC gully head C/W grate	No	1.00		
171	Approved Gully tops/concrete SABS 0252-2	No	1.00		
	<b>Carried to Collection</b>				
				R	
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>SUNDRIES</u></b>			
172	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative		Item
173	Allow for chasing brickwall for piping not exceeding 65mmØ. Make good by Contractor		Item
174	PVC Sleeve n/e 75mmØ average length 250mm	No	4.00
175	PVC Sleeve n/e 125mmØ average length 250mm	No	5.00
Note: Subsidiary manholes shown on pipe in ground and at grease trap by Civil Contactor			
<b><u>WATER SUPPLIES - COLD WATER</u></b>			
<b><u>Chased piping to be wrapped with brown plumbing paper.</u></b>			
<b><u>Copper Class 1 Piping</u></b>			
<b><u>Above Ground piping Exposed</u></b>			
176	22mm Pipes	m	50.00
177	28mm Pipes	m	20.00
<b><u>Copper Class 2 Piping</u></b>			
<b><u>Chased in walls</u></b>			
178	15mm Pipes	m	24.00
179	22mm Pipes	m	48.00
180	28mm Pipes	m	12.00
<b><u>HDPE Class 12 Piping</u></b>			
<b><u>Underground</u></b>			
181	35mm Pipes	m	12.00
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Flare-type compression fittings complying with SANS 1067-1</u></b>			
182	Ø 15 mm Elbow	No	18.00
183	Ø 22 mm Elbow	No	11.00
184	Ø 28 mm Elbow	No	2.00
185	Ø 22 mm Equal Teas	No	14.00
186	Ø 28 mm Equal Teas	No	1.00
187	Ø 28mm Tee with to Ø 22mm Branch	No	4.00
188	Ø 28mm Tee with to Ø 15mm Branch	No	
189	Ø 22mm Tee with to Ø 15mm Branch	No	16.00
<b><u>Backflow Prevention Devices</u></b>			
190	Vacuum Breakers to Suit	No	2.00
<b><u>TAPS, VALVES, ETC</u></b>			
191	Taps - By others		Item
<b><u>Valves</u></b>			
192	15mm diam shut-off valves	No	17.00
193	20mm diam shut-off valves	No	5.00
194	25mm diam shut-off valves	No	
195	32mm diam shut-off valves	No	1.00
196	40mm diam shut-off valves	No	
<b><u>CONNECTORS</u></b>			
<b><u>Overflow and Service pipe</u></b>			
197	15mm Braided connector 300mm long	No	21.00
<b><u>HOT WATER GENERATION &amp; STORAGE</u></b>			
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Hydroboils and Geysers</u></b>					
198	7.5 Litre Hydroboil, 1.5Kw, 240V/1Ph/50Hz, plumbed directly into the cold water inlet and waste water reticulation.	No	1.00		
199	200 Litre hot water (Solar Geyser), complete with safety valves, vacuum breakers and all accessories and mounting brackets. Geyser to be plumbed directly into the cold water inlet, hot water supply piping and waste water reticulation.	No	1.00		
<b><u>PIPE INSULATION</u></b>					
<b><u>Pre-formed external insulating zipped fire retarded, flexible, closed cell Polyethylene material.</u></b>					
200	15mm Lagging around pipes	m	12.00		
201	22mm Lagging around pipes	m	60.00		
<b><u>Extra over pipe insulation for insulation around</u></b>					
202	15mm Lagging around 20mm fittings	No	10.00		
203	22mm Lagging around 20mm fittings	No	8.00		
<b><u>TESTING &amp; COMMISSIONING</u></b>					
204	Allow for chasing brickwall for piping not exceeding 50mmØ. Make good by Contractor			Item	
205	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative			Item	
206	Color coding and directional arrows as per engineers requirements			Item	
207	Flushing out of and sterilisation of the complete system to local bye laws and the engineers requirements in the presence of the engineer			Item	
<b><u>3X Classroom toilets , Care taker room</u></b>					
<b><u>uPVC Piping</u></b>					
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

	<b><u>Pipework to include for all bracketing, anchor points and electrofusion couplings, expansion joints, required to meet the uPVC installation requirements. Bracketing to allow for all eventualities inc. fixing to walls, soffits and in ceiling space irrespective of lengths of rods required.</u></b>				
208	50mm Diameter pipes	m	16.00		
209	75mm Diameter pipes	m			
210	110mm Diameter pipes	m	70.00		
	<b><u>uPVC pipe and fittings as before described laid in trenches on imported bedding as per uPVC recommendations including all excavations, filling and compaction to 93% Modasho all in normal ground not exceeding 1m deep</u></b>				
211	75mm Diameter pipes	m	24.00		
	<b><u>Water Hand Basin fittings</u></b>				
212	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastic cover	No	30.00		
213	50 x 32mm reseal "P" or "S" trap c/w with clamps	No	30.00		
214	50mm x 90° bend	No	30.00		
215	50mm x 45° equal junction	No	30.00		
216	50mm inspection eye pipe	No	30.00		
	<b><u>Sink fittings</u></b>				
217	The Belatori Pulse unslotted Waste with plug is made from solid brass and coated in a 200 hour salt spray test chrome, making it suitable for both coastal and inland areas. C/w Brass body,plug,silicone washer,brass back nut and plastic cover			Item	
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

218	50 x 40mm reseal "P" or "S" trap c/w with clamps	No	1.00		
219	50mm x 90° bend	No	1.00		
220	50mm x 45° equal junction	No	1.00		
221	50mm inspection pipe	No	1.00		
	<b><u>Urinal waste fittings</u></b>				
222	Urinal waste (1 1/2" x 85mm) universal		Item		
223	40mm Plastic Bottle reseal	No	9.00		
224	50mm x 45° equal junction	No	9.00		
225	50mm inspection pipe	No	9.00		
	<b><u>Water closet fittings</u></b>				
226	110mm pan Connector	No	30.00		
227	110m Moisture seal	No	30.00		
228	110mm x 90° bend	No	60.00		
229	110mm x 45° bend	No	5.00		
230	110mm x 45° equal junction	No	5.00		
	<b><u>Shower fittings</u></b>				
231	A shower tray waste trap in a diameter of 90 mm, with 50mm outlet,featuring a polished cover cap with stainless steel small grill	No	1.00		
	<b><u>Extra over uPVC Piping for fittings</u></b>				
232	50mm x 90° bend	No	19.00		
233	50mm inspection pipe	No	19.00		
234	50mm x 45° equal junction	No			
235	110mm rodding eye	No	10.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

236	100mm x 45° equal junction	No	30.00		
237	110mm x 50mm x 45° reducing junction	No	4.00		
238	110mm inspection pipe	No	30.00		
239	110mm x 50mm reducer	No	4.00		
240	110mm PVC gully underground P-trap and joint to uPVC piping	No	1.00		
241	110mm PVC gully head C/W grate	No	1.00		
242	Approved Gully tops/concrete SABS 0252-2	No	1.00		
243	SANS 10400 compliant 110mm Floor Drain 304/316 stainless steel grade c/w Dia. 75mm outlet.	No	6.00		
	<b><u>ventilation pipe; vent pipe: A pipe, other than a discharge pipe, that leads to the open air at its highest point and that provides ventilation throughout a drainage installation for the purpose of preventing the destruction of water seals.</u></b>				
	<b><u>Supply and install vent Pipe complete with vent valves as per drawing:</u></b>				
244	Dia.100	m	9.00		
	<b><u>Stack pipe:</u></b>				
	<b><u>Supply and install stub pipe as per drawing:</u></b>				
245	Dia.100	m	18.00		
	<b><u>SUNDRIES</u></b>				
246	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative			Item	
247	Allow for chasing brickwall for piping not exceeding 65mmØ. Make good by Contractor			Item	
248	PVC Sleeve n/e 75mmØ average length 250mm	No	6.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

249	PVC Sleeve n/e 100mmØ average length 250mm	No			
250	PVC Sleeve n/e 125mmØ average length 250mm	No	30.00		
<p>Note: Subsidiary manholes shown on pipe in ground and at grease trap by Civil Contactor</p> <p><b><u>3X Classroom toilets , Care taker room</u></b></p> <p><b><u>WATER SUPPLIES - COLD WATER</u></b></p> <p>Chased piping to be wrapped with brown plumbing paper.</p> <p><b><u>Copper Class 1 Piping</u></b></p> <p><b><u>Above Ground piping Exposed</u></b></p>					
251	15mm Pipes	m	6.00		
252	22mm Pipes	m	60.00		
253	28mm Pipes	m	60.00		
254	35mm Pipes	m			
255	42mm Pipes	m			
256	54mm Pipes	m			
<p><b><u>Copper Class 2 Piping</u></b></p> <p><b><u>Chased in walls</u></b></p>					
257	15mm Pipes	m	42.00		
258	22mm Pipes	m	66.00		
259	28mm Pipes	m	60.00		
<p><b><u>HDPE Class 12 Piping</u></b></p> <p><b><u>Underground</u></b></p>					
260	35mm Pipes	m	36.00		
<b>Carried to Collection</b>				R	
<p>Section No. 4  Mechanical Installations  Bill No. 2  Wet Services  <b>BILL OF ESTIMATE</b>  <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Flare-type compression fittings complying with SANS 1067-1</u></b>			
261	Ø 15 mm Elbow	No	30.00
262	Ø 22 mm Elbow	No	13.00
263	Ø 28 mm Elbow	No	12.00
264	Ø 15 mm Equal Teas	No	3.00
265	Ø 22 mm Equal Teas	No	12.00
266	Ø 28 mm Equal Teas	No	3.00
267	Ø 28mm Tee with to Ø 22mm Branch	No	4.00
268	Ø 22mm Tee with to Ø 15mm Branch	No	16.00
<b><u>3X Classroom toilets , Care taker room</u></b>			
<b><u>Backflow Prevention Devices</u></b>			
269	Vacuum Breakers to Suit	No	2.00
<b><u>TAPS, VALVES, ETC</u></b>			
270	Taps - By others		Item
<b><u>Valves</u></b>			
271	15mm diam shut-off valves	No	41.00
272	20mm diam shut-off valves	No	33.00
273	25mm diam shut-off valves	No	
274	32mm diam shut-off valves	No	3.00
<b><u>CONNECTORS</u></b>			
<b><u>Overflow and Service pipe</u></b>			
275	15mm Braided connector 300mm long	No	66.00
<b><u>HOT WATER GENERATION &amp; STORAGE</u></b>			
<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Hydroboils and Geysers</u></b>					
276	50Litre hot water heater and storage tank, complete with 2Kw backup electrical, safety valves, vacuum breakers and all accessories and mounting brackets. Geyser to be plumbed directly into the cold water inlet, hot water supply piping and waste water reticulation.	No	1.00		
<b><u>PIPE INSULATION</u></b>					
<b><u>Pre-formed external insulating zipped fire retarded, flexible, closed cell Polyethylene material.</u></b>					
277	15mm Lagging around pipes	m	12.00		
278	22mm Lagging around pipes	m	6.00		
<b><u>Extra over pipe insulation for insulation around</u></b>					
279	15mm Lagging around 20mm fittings	No	9.00		
280	22mm Lagging around 20mm fittings	No	4.00		
<b><u>TESTING &amp; COMMISSIONING</u></b>					
281	Allow for chasing brickwall for piping not exceeding 50mmØ. Make good by Contractor			Item	
282	Allow for successful testing of systems in sections during construction, each to be witnessed and signed by the engineer's representative			Item	
283	Color coding and directional arrows as per engineers requirements			Item	
284	Flushing out of and sterilisation of the complete system to local bye laws and the engineers requirements in the presence of the engineer			Item	
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 2 Wet Services <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

Mechanical Installations

Bill No. 2

Wet Services

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Mechanical Installations

Bill No. 2

Wet Services

**BILL OF ESTIMATE**

**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

Mechanical Installations

Bill No. 2

Wet Services

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Mechanical Installations

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Wet Services

**BILL OF ESTIMATE**

**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish	Item		
2	Retention Interest	Item		
3	Site Establishment & Clearance	Item		
4	Scaffolding	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals	Item		
7	As-built Drawings	Item		
8	12 Months Guarantee and Maintenance	Item		
9	Programming of the Work	Item		
10	Testing, Balancing & Commissioning	Item		
11	Equipment Submissions	Item		
12	Shop Drawings	Item		
13	Equipment Labels	Item		
14	Water & Power for commissioning If JBCC Document	Item		
15	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)	Item		
16	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
17	Provisional sum for construction Changes	Item		
<b>Carried to Collection</b>			R	
Section No. 4 Mechanical Installations Bill No. 3 Refrigeration Systems <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

18	Contractor's overhead and profit on Item 1.015		Item		
<b><u>REFRIGERATION SYSTEM INSTALLATIONS</u></b>					
<b><u>Condensing units and Evaporators units</u></b>					
19	Supply and install Condensing and Evaporator unit with for cold rooms c/w controls a capacity: 380v/1PH/50Hz,3.6 kw @ - 5°C & 45 °C (Condensate ) with a design temperature + 2 °C. Refer to notes for additional details	No	1.00		
20	Supply and install Condensing and Evaporator unit or freezer room c/w controls with a capacity: 380v/1PH/50Hz,5.3 kw @ - 25°C & 45 °C (Condensate ) with a design temperature -18 °C. Refer to notes for additional details	No	1.00		
<b><u>Dial Thermometer</u></b>					
21	Supply and install thermometer Dia.100mm round dial type with flush-mounted chrome-plated or PVC housing. Mount the thermometer in a neat manner centered above each door architrave. Thermometers must have removable covers. The thermometer temperature range must be -40°C to +30°C approximately or nearest standard.	No	2.00		
<b><u>Controls</u></b>					
22	Supply & install electric controller for Control of the temperature, Run non-run indication lamps, Audible trip alarm,operating temperature and set point temperature indication Over temperature alarm if temperature exceeds set point by 4 °C, Temperature sensor fault indication and alarm, Keypad inputs, Set point security, Memory loss protection	No	2.00		
<b><u>Panels</u></b>					
<b>Carried to Collection</b>					
				R	
Section No. 4 Mechanical Installations Bill No. 3 Refrigeration Systems <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

23	<p><b><u>cold rooms</u></b></p>	<p>Supply and install cold room panels 3660 x 2670 x 2700 (h) (Walls, ceilings and doors), to be 100mm thick polystyrene. Floor panel is not required. Insulation on walls, ceilings, floors and doors must be of fire retardant expanded polystyrene as per SANS 1508.</p>	Item	R
24	<p><b><u>Freezer rooms</u></b></p>	<p>Supply and install freezer room panels 3660 x 2670 x 2700 (h) (Walls, ceilings and doors), to be 150mm thick polystyrene. Floor panel is required. Insulation on walls, ceilings, floors and doors must be of fire retardant expanded polystyrene as per SANS 1508.</p>	No	1.00
25	<p><b><u>Doors</u></b>  <b><u>cold room door</u></b></p>	<p>supply and install cold room doors and must be of standard, robust construction and can be either of the hinged (slam on). The clear opening must be not less than 815mm. Frame doors all round by channel section aluminum profiles, sealed and riveted to the door panels.</p>	No	1.00
26	<p><b><u>Freezer room door</u></b></p>	<p>supply and install freezer room doors and must be of standard, robust construction and can be either of the hinged (slam on). The clear opening must be not less than 815mm. Frame doors all round by channel section aluminum profiles, sealed and riveted to the door panels. Freezer room doors with heater elements of the double trace type, rated at 20 W/m and fixed to the door frame. They must remain switched on while cooling is in use.</p>	No	1.00
<p><b>Carried to Collection</b></p>				
<p>Section No. 4                  Mechanical Installations                  Bill No. 3                  Refrigeration Systems  <b>BILL OF ESTIMATE</b>  <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>Floor drains, drain piping and refrigeration piping</u></b>					
27	supply and install all cold/freezer rooms with floor drains in the position as indicated on the project drawing/w floor trap, Dia.100 PVC drain line, P trap etc.	No	2.00		
28	supply and install Class 0 copper drain pipes of 22mm diameter for cold rooms, must be carried from the drip-trays of cooling units to the floor drain.	m	8.00		
29	supply and install Class 0 copper drain pipes of 28mm diameter for freezer rooms, must be carried from the drip-trays of cooling units to the floor drain. Cover drain pipes from the units in freezer rooms with heater tape and insulate with "no-drip" tape.	m			
30	Hard drawn refrigerant piping c/w all pipe fittings, insulation, dryers, sight glasses, capillary tubes, etc, for liquid and gas lines, from Condensor to the Evaporator Unit. Gas line - 25.4 mm and liquid line - 19.05 mm.	m	21.00		
<b><u>REFRIGERATION SYSTEM INSTALLATIONS</u></b>					
31	Additional items : 650 L chest Freezer	No	2.00		
32	Trimmings and Smalls		Item		
33	PVC strip curtain 900mm (W) x 2000mm(H) -200mm x 2mm with galvenised rail	No	2.00		
34	4 FT light, 15m 1.5 2+E wire, single lever light switch, 15m 16 x 16 trunking		Item		
35	Supply and install 5 tier s/steel vegetable rack 1650x1200, Each corner post shall be manufactured from type 304 stainless steel tubing and shall have die cast adjustable floor pieces.		Item		
<b><u>NOTES:</u></b>					
<b>Carried to Collection</b>					
Section No. 4 Mechanical Installations Bill No. 3 Refrigeration Systems <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					R

**Condensers**

Compressors must be of the hermetic or semi-hermetic type. Compressor protection must be effected effected by a pressure control device.

Condensing unit/s must be of the air-cooled type and the units must be complete with base, liquid receiver, air-cooled condenser, pressure control, suction and discharge service valves, electric fan and compressor.

Evaporators

Cooling unit/s must be of the forced air flow type. The units must be complete with electric fan, drip tray, thermostatic expansion valve and heat exchanger.

When cooling units are mounted from the ceiling, these must clear the back wall by the minimum distance as recommended by the cooling unit manufacturer. The space so provided must in any event be adequate for the servicing of the unit and must not be less than 300mm.

Drip trays must be large enough to collect drip from the expansion valves and cooling coils, and must incorporate a heater element if used for operation below 0°C. Cross break drip trays and provide the drain in the centre of the drip tray.

**Carried to Collection**

R

Section No. 4  
 Mechanical Installations  
 Bill No. 3  
 Refrigeration Systems  
**BILL OF ESTIMATE**  
**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**



**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

			<b>Quantity</b>	<b>Rate</b>	<b>Amount</b>
	<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish		Item		
2	Retention Interest		Item		
3	Site Establishment & Clearance		Item		
4	Scaffolding		Item		
5	Tests and Inspections		Item		
6	Preparation of Operating and Maintenance Manuals	No	3.00		
7	As-built Drawings		Item		
8	12 Months Guarantee and Maintenance		Item		
9	Programming of the Work		Item		
10	Testing, Balancing & Commissioning		Item		
11	Equipment Submissions		Item		
12	Shop Drawings		Item		
13	Equipment Labels		Item		
14	Water & Power for commissioning If JBCC Document		Item		
15	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)		Item		
16	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.		Item		
17	Provisional sum for construction Changes		Item		
	<b>Carried to Collection</b>			R	
	Section No. 4 Mechanical Installations Bill No. 4 Kitchen equipment <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

18	Contractor's overhead and profit on Item 1.015		Item		
	<b><u>SCHEDULE 2 : Kitchen Equipment</u></b>				
19	Supply and install s/s tabe 1650x 750x910mm c/w splash back	No	7.00		
20	supply and install 4 burner boiling table2100 x 600mm complete with a sturdy long nose reliable lighter.	No	1.00		
21	Supply and install DEFY domestic stove- model: 731 M/Function stove black c/w condensate canopy	No	1.00		
22	Supply and install double bowl pot sink s/s	No	3.00		
23	Supply and install 15L hydroboil	No	2.00		
24	Supply and install Fire Blanket	No	2.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 4 Kitchen equipment <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

<p>Mechanical Installations</p> <p>Bill No. 4</p> <p>Kitchen equipment</p> <p><b><u>COLLECTION</u></b></p> <p>Total Brought Forward from Page No.</p>	<p><b>Page No</b></p> <p>199</p> <p>200</p>		<p><b>Amount</b></p>
<p><b>Carried Forward to Summary of Section No. 4</b></p>			<p>R</p>
<p>Section No. 4</p> <p>Mechanical Installations</p> <p>Bill No. 4</p> <p>Kitchen equipment</p> <p><b>BILL OF ESTIMATE</b></p> <p><b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b></p>			

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish	Item		
2	Retention Interest	Item		
3	Site Establishment & Clearance	Item		
4	Scaffolding	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals	Item		
7	End User Training	Item		
8	As-built Drawings	Item		
9	12 Months Guarantee and Maintenance	Item		
10	Programming of the Work	Item		
11	Testing, Balancing & Commissioning	Item		
12	Equipment Submissions	Item		
13	Shop Drawings	Item		
14	Equipment Labels	Item		
15	Water & Power for commissioning If JBCC Document	Item		
16	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)	Item		
17	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
18	Provisional sum for construction Changes	Item		
<b>Carried to Collection</b>			R	
Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

19	Contractor's overhead and profit on Item 1.016	No	10.00		
	<b><u>FIRE PROTECTION EQUIPMENT &amp; EMERGENCY EVACUATION</u></b>				
	<b><u>TANKS: THE SUPPLY INSTALLATION AND FULL COMMISSIONING OF TANKS</u></b>				
20	Supply/ Intall a Ground FIRE storage tank complete with pipe work and commissioning of tanks.Fire water storage shall be a CUBIC TANK, total effective capacity including free board 88m <sup>3</sup> . 60Amps, 3 Phase power supply for welding of tanks on site Cubic or SBS Tanks Prefered instead of welding	No	1.00		
	<b><u>PUMPS: THE SUPPLY INSTALLATION AND FULL COMMISSIONING OF PUMPS</u></b>				
	<b><u>ELECTRICAL MOTOR DRIVEN PUMP</u></b>				
21	Supply, install, test and commission Electric motor driven fire pump suitable for automatic operation consisting of the following (as per specification) End suction Vertical centrifugal pump type, fire pump complete with 1.5l/s at a total head of 4.5 Bar. including by pass arrangement for periodical testing of the working of the pump set as required, strainer on suction side and pressure gauge on delivery side,NRV,Isolation valves and expansion tank, etc. MCC to be mounted together with pumps on common baseplate.The pump shall be provided with mechanical seals. Squirel cage A.C induction motor suitable for operation on 415V, 3 Phase 50Hz A.C supply and of minimum 2.5 kW for the above pump with flexible coupling as per specification All coupling of pump and motor should be covered with safety guard	No	2.00		
22	Jockey Pump: 1. L/s @ 4.5 Bar Jockey Electrically driven	No	1.00		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

23	<b><u>Pressure &amp; Flow Test at communication pipe</u></b>	Water pressure and flow readings test is required at the connection point to site. The readings will assist in indicating whether: On-site tank storage is required - for fire fighting purposes, Pumps will be required if the static head does not meet SANS 10400 – W requirements, and the reading shall be taken over a period of seven (7) days minimum.	Item		
	<b><u>PUMP ROOM</u></b>				
	<b><u>PUMPHOUSE PIPEWORK &amp; ELECTRICAL CONNECTIONS</u></b>				
24		All pumphouse pipework and necessary valves as per tender drawings and specification	Item		
25		All electrical panels, cabling, safeties, switches, etc for electrical pump, jockey pump and any other equipment housed within the pump house	Item		
	<b><u>FIRE HYDRANT MAINS</u></b>				
26		Supply and installation of main reticulation HDPE CLASS 16 pipe work not limiting municipal supply connection and including all pipe work, fittings, hangers, klambons, fixing equipment , painting as per specification and tender drawings. Size 110mm	m	370.00	
27		Supply and installation of main reticulation HDPE CLASS 16 pipe work including all pipe work, fittings, hangers, klambons, fixing equipment , painting as per specification and tender drawings. Size 75mm	m	65.00	
28		Supply and installation of main reticulation HDPE CLASS 16 pipe work including all pipe work, fittings, hangers, klambons, fixing equipment , painting as per specification and tender drawings. Size 32mm	m	250.00	
29		Bitument wrapping tape (or equivalent) of all underground Galvenised piping. ( Note; Long pipe length must be factory protected with Bitumen with only the joints and fittings wrapped on site.)	m	50.00	
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>FIRE PROTECTION EQUIPMENT &amp; EMERGENCY EVACUATION</u></b>					
30	High Volume Hydrant: 100mm Diameter high volume Pillar Type Fire Hydrant with standard Instantaneous coupling supplied and fitted as per specification and tender drawings.	No	1.00		
31	Twin Booster Hydrant: 65mm Diameter Pillar Type Fire Hydrant with twin booster connection c/w blank cap, with pressure guage on riser and painted as per specifications.	No	1.00		
32	Normal Hydrants: 65mm Standard instantaneous coupling with wheel valves supplied and fitted as per the specification and tender drawings, including valves and pressure gauge.	No	5.00		
33	Supply delivery and fitment of 100mm non-return valve and two gate valves as per tender specification and drawings.	No	1.00		
34	F15, Size:190mm x 380mm (h x w) Photoluminescent double sided sign with back plate framed in natural anodised aluminium frame. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	6.00		
35	F18/F21, Size:190mm x 380mm (h x w) double sided Photoluminescent sign framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	6.00		
36	Emergency Assembly Point (Custom sign to industry standards) Size:600mm x 600mm (h x w), three sided vinyl sign without back plate (0.8) and mild steel frame of square tubing (30 x 30mm) mounted onto Diameter 80mm pole. Bottom of sign to be at least 2.4m from finishe floor level and mounted with 4 M10 rawl bolts. Supply and Install the entire scope.	No	3.00		
<b><u>INTERNAL SERVICES</u></b>					
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>FIRE PROTECTION EQUIPMENT &amp; EMERGENCY EVACUATION</u></b>					
<b><u>FIXED HOSE REELS AND STAND PIPES</u></b>					
FIRE HOSE REELS, HOSE COUPLINGS, CONNECTORS, BRANCH PIPE, STAND PIPES AND NOZZLE FITTINGS SHALL CONFORM TO SANS 1128					
37	Supply and installation of main reticulation HDPE pipe work including all pipe work, fittings, hangers, klambons, fixing equipment ,plasson female adaptor,brass coupling valve,hose swivel and painting as per specification and tender drawings. Size 32mm	m	12.00		
38	Supply and installation of vertical stand pipes GALVANISED STEEL pipe work including all pipe work, fittings, hangers, klambons, fixing equipment ,pressure gauge and painting as per specification and tender drawings. Size 50mm	m	12.00		
39	Supply and installation of vertical stand pipes GALVANISED STEEL pipe work including all pipe work, fittings, hangers, klambons, fixing equipment ,pressure gauge and painting as per specification and tender drawings. Size 25mm	m	50.00		
40	25mm Dia Fire Hose Reels SANS approved and supplied and fitted including, stop valves,hose reel base, clamps,nozzle brackets,fixing brackets,presure gauge etc including length of 30m connecting pipe per reel as per the specification and tender drawings.	No	20.00		
41	25mm Dia Fire portable Hose Reels SANS approved and supplied and to be fitted to vertical stand pipes during emergency including, length of 30m connecting pipe per reel as per the specification and tender drawings.	No	5.00		
42	Fire Hose Reel Cabinet	No	5.00		
<b>Carried to Collection</b>					
				R	
Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

<b><u>HOSE REEL SUPPORT BRACKETS (WHERE HOSE REELS ARE INSTALLED IN DRY WALLING)</u></b>					
43	Supply and install a steel support bracket for hose reels installed against dry walling. Support bracket to include all anchor bolts, painting, etc	No			
<b><u>HAND-HELD PORTABLE FIRE FIGHTING EQUIPMENT</u></b>					
44	Supply and install fire extinguishers SANS approved. Complete with meranti backing boards, steel bases, mounting brackets and wall anchors as per the tender drawings or detailed specifications. 5 kg CO2	No	2.00		
45	Supply and install fire extinguishers SANS approved. Complete with meranti backing boards, steel bases, mounting brackets and wall anchors as per the tender drawings or detailed specifications. 9.0 kg DCP	No	5.00		
46	Fire Extinguishers Cabinet for 5 kg CO2, Fire cabinets must be of a glass fibre with clear polycarbonate lids.	No	2.00		
47	Fire Extinguishers cabinet 9.0 kg DCP, Fire cabinets must be of a glass fibre with clear polycarbonate lids.	No	5.00		
48	Fire Blanket 1.0 x 1.2 m Complete with signage	No	1.00		
<b><u>INTERNAL SERVICES</u></b>					
<b><u>FIRE PROTECTION EQUIPMENT &amp; EMERGENCY EVACUATION</u></b>					
49	E1/E2, Size:190mm x 380mm (h x w) double sided Photoluminescent sign framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	4.00		
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

50	E3, Size:190mm x 380mm (h x w) double sided Photoluminescent sign with back plate framed in natural anodised aluminium frame. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	8.00		
51	F5/F6, Size:190mm x 570mm (h x w) double sided Photoluminescent sign framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	5.00		
52	F4, Size:190mm x 570mm (h x w) double sided Photoluminescent sign with back plate framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	14.00		
53	F13, Size:190mm x 380mm (h x w) double sided Photoluminescent sign without back plate and framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	8.00		
54	F14, Size:190mm x 380mm (h x w) double sided Photoluminescent sign without back plate and framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	11.00		
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 5 19-P05 - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

Mechanical Installations

Bill No. 5

19-P05 - Fire

**COLLECTION**

Total Brought Forward from Page No.

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Section No. 4

Mechanical Installations

Bill No. 5

19-P05 - Fire

**BILL OF ESTIMATE**

**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish	Item		
2	Retention Interest	Item		
3	Site Establishment & Clearance	Item		
4	Scaffolding	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals	Item		
7	Fire Department approvals before installations	Item		
8	As-built Drawings	Item		
9	12 Months Guarantee and Maintenance	Item		
10	Programming of the Work	Item		
11	Testing, Balancing & Commissioning	Item		
12	Equipment Submissions	Item		
13	Shop Drawings	Item		
14	Equipment Labels	Item		
15	Water & Power for commissioning If JBCC Document	Item		
	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)			
16	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
17	Provisional sum for construction Changes	Item		
	<b>Carried to Collection</b>		R	
Section No. 4 Mechanical Installations Bill No. 6 LP Gas Lab <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

18	Contractor's overhead and profit on Item 1.015		Item		
<b><u>LP GAS SYSTEM INSTALLATIONS</u></b>					
As per the requirements SANS 10087-1					
19	Supply and install Gas tanks with cylinder capacity and mass of 19 kg, with 13.3kw Ernegy supply.	No	2.00		
20	Supply and install Gas tanks with cylinder capacity and mass of 48 kg, with 13.3kw Ernegy supply.	No			
21	Supply & install 28mm diameter LP Gas manifold (2 x 2) c/w change over valves, safeties, etc	No			
22	Supply & install 22mm diameter LP Gas manifold (2 x 2) c/w change over valves, safeties, etc	No	1.00		
23	Supply and install Class 1 Schedule 80 pipes of 28mm diameter for gas reticulation c/w manifold elbows, unions, accessories for cooking gas, etc.	m			
24	Supply and install Schedule 80 pipes of 20mm diameter for gas reticulation c/w manifold elbows, unions, accessories for cooking gas, etc.	m	64.00		
25	Supply and install Schedule 80 pipes of 15mm diameter for gas reticulation c/w elbows, unions, etc.	m	18.00		
26	Supply and install Class 1 Schedule 80 pipes of 8mm diameter for gas reticulation c/w elbows, unions, etc.	m			
27	Supply and install 8mm diameter connecting hoses, c/w clamps, fasteners, tested for LP Gas use, etc	No			
28	Supply and install gas bottle cage with dimensions not greater than 1600(L)x500(W)x2000(H). Cage to be of steel frame with heavy duty diamond, expanded steel mesh finish, complete with locable double gate at least 1500mm wide	No	1.00		
29	Supply and install gas low pressure regulators, first & second stage regulators	No	2.00		
30	Supply and install safety & warning signage around the gas cage as required by regulations		Item		
<b>Carried to Collection</b>				R	
Section No. 4 Mechanical Installations Bill No. 6 LP Gas Lab <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

31	Supply and install fire signage: F13, Size:290mm x 580mm (h x w) double sided Photoluminescent sign without back plate and framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	2.00		
32	Supply and install fire extinguishers SANS approved with backing boards as per the tender drawings 9.0 kg DCP	No	1.00		
33	Fire Extinguishers Cabinet for 5 kg DCP (300x290x750) weather proof box.	No			
34	Supply & Install 28mm diameter LP Gas Fire Man's isolation valves	No			
35	Supply & Install 22mm diameter LP Gas Fire Man's isolation valves	No	2.00		
36	Supply & Install 22mm diameter LP Gas isolation valves	No	1.00		
37	Supply & Install 15mm diameter LP Gas isolation valves	No	26.00		
38	Supply and install 8mm diameter LP Gas isolation valves	No			
39	Supply & Install 40 x 40 steel trunking to cover Schedule 80 piping	m	40.00		
<b><u>EQUIPMENT</u></b>					
40	Supply and install 180° bench cock & accessories, etc.	No	1.00		
<b><u>PAINTING</u></b>					
41	Paint all Schedule 80 piping with C37 paint (stone colour) as per SANS 10087-1			Item	
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 6 LP Gas Lab <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					



**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Clearance of Rubbish	Item		
2	Retention Interest	Item		
3	Site Establishment & Clearance	Item		
4	Scaffolding	Item		
5	Tests and Inspections	Item		
6	Preparation of Operating and Maintenance Manuals	No	3.00	
7	Fire Department approvals before installations	Item		
8	As-built Drawings	Item		
9	12 Months Guarantee and Maintenance	Item		
10	Programming of the Work	Item		
11	Testing, Balancing & Commissioning	Item		
12	Equipment Submissions	Item		
13	Shop Drawings	Item		
14	Equipment Labels	Item		
15	Water & Power for commissioning If JBCC Document	Item		
16	Any additional items of preliminary nature that the tenderer may wish to add to comply with requirements of the specification and/or bill of quantities. (To be listed hereunder by the Tenderer)	Item		
17	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.	Item		
	<b>Carried to Collection</b>			R
Section No. 4 Mechanical Installations Bill No. 7 LPG Kitchen <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

18	Provisional sum for construction Changes		Item		
19	Contractor's overhead and profit on Item 1.015		Item		
	As per the requirements SANS 10087-1				
20	Supply and install Gas tanks with cylinder capacity and mass of 19 kg, with 13.3kw Ernegy supply.	No			
21	Supply and install Gas tanks with cylinder capacity and mass of 48 kg, with 13.3kw Ernegy supply.	No	4.00		
22	Supply & install 28mm diameter LP Gas manifold (2 x 2) c/w change over valves, safeties, etc	No	1.00		
23	Supply & install 22mm diameter LP Gas manifold (2 x 2) c/w change over valves, safeties, etc	No			
24	Supply and install Class 1 Schedule 80 pipes of 28mm diameter for gas reticulation c/w manifold elbows, unions, accessories for cooking gas, etc.	m			
25	Supply and install Class 1 Schedule 80 pipes of 20mm diameter for gas reticulation c/w manifold elbows, unions, accessories for cooking gas, etc.	m	52.00		
26	Supply and install Class 1 Schedule 80 pipes of 15mm diameter for gas reticulation c/w elbows, unions, etc.	m	12.00		
27	Supply and install Class 1 Schedule 80 pipes of 8mm diameter for gas reticulation c/w elbows, unions, etc.	m			
28	Supply and install 8mm diameter connecting hoses, c/w clamps, fasteners, tested for LP Gas use, etc	No	8.00		
29	Supply and install gas bottle cage with dimensions not greater than 3200(L)x2500(W)x2000(H). Cage to be of steel frame with heavy duty diamond, expanded steel mesh finish, complete with locable double gate at least 1500mm wide	No	1.00		
30	Supply and install gas low pressure regulators, first & second stage regulators	No	2.00		
31	Supply and install safety & warning signage around the gas cage as required by regulations		Item		
	<b>Carried to Collection</b>				R
	Section No. 4 Mechanical Installations Bill No. 7 LPG Kitchen <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

32	Supply and install fire signage: F13, Size:290mm x 580mm (h x w) double sided Photoluminescent sign without back plate and framed in natural anodised aluminium. Supply and Install with steel wire and ceiling tee hook/onto Mild steel bracket at 3.0meters from finished floor level/mechanically mounted onto wall/fixture	No	2.00		
33	Supply and install fire extinguishers SANS approved with backing boards as per the tender drawings 9.0 kg DCP	No	2.00		
34	Fire Extinguishers Cabinet for 5 kg DCP (300x290x750) weather proof box.	No	2.00		
35	Supply & Install 28mm diameter LP Gas Fire Man's isolation valves	No	1.00		
36	Supply & Install 22mm diameter LP Gas Fire Man's isolation valves	No	2.00		
37	Supply & Install 22mm diameter LP Gas isolation valves	No	1.00		
38	Supply & Install 15mm diameter LP Gas isolation valves	No	16.00		
39	Supply and install 8mm diameter LP Gas isolation valves	No			
40	Supply & Install 40 x 40 steel trunking to cover Schedule 80 piping	m	40.00		
<b><u>EQUIPMENT</u></b>					
41	Supply and install 3 burner LP Gas stove c/w pipe terminations, & accessories, etc.	No	2.00		
<b><u>PAINTING</u></b>					
42	Paint all Schedule 80 piping with C37 paint (stone colour) as per SANS 10087-1			Item	
<b>Carried to Collection</b>					R
Section No. 4 Mechanical Installations Bill No. 7 LPG Kitchen <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>					



**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

		Quantity	Rate	Amount
<b><u>PRELIMINARY &amp; GENERAL ITEMS</u></b>				
1	Retention Interest	Item		
2	Site Establishment & Clearance	Item		
3	Scaffolding	Item		
4	Tests and Inspections	Item		
5	Preparation of Operating and Maintenance Manuals	No	3.00	
6	As-built Drawings	Item		
7	12 Months Guarantee and Maintenance	Item		
8	Programming of the Work	Item		
9	Testing, Balancing & Commissioning	Item		
10	Equipment Submissions	Item		
11	Shop Drawings	Item		
12	Equipment Labels	Item		
	Sub-contractors to be present at all site meeting at least on a two weekly basis and more frequently as buildings become ready/ available for installations.			
13	Provisional sum for construction Changes	Item		
14	Contractor's overhead and profit on Item 1.015		SUM	
<b><u>SMOKE VENTILATION INSTALLATIONS</u></b>				
<b>Carried to Collection</b>				R
Section No. 4 Mechanical Installations Bill No. 8 Smoke Vent - Fire <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>				

**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

**NATURAL SMOKE VENTILATION**

15	Natural Smoke Ventilation System; Ridge mounted natural ventilation panels, Louvre type mechanically (fusible link) operated as per specification. Chromadeck Fish Eagle White finish; mechanical; fusible link 79°C; AvCv 2.29m2 per ventilator ; 1400 purlin spacing; complete working compliant system.	No	15.00
16	Plastic Egg Crate Grilles (1200 x 600mm) grilles.	No	14.00
17	H- Frames to suite the smoke ventilator	No	15.00

**Carried to Collection**

R

Section No. 4  
 Mechanical Installations  
 Bill No. 8  
 Smoke Vent - Fire  
**BILL OF ESTIMATE**  
**QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD**



**CONSTRUCTION OF PROPOSED NEW  
 DOME PRIMARY SCHOOL IN PARYS**

Bill No	Mechanical Installations	Page No	Amount
<b>SECTION SUMMARY - Mechanical Installations</b>			
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8	Smoke Vent - Fire	220	
<b>Carried to Final Summary</b>			R
Section No. 4 Mechanical Installations <b>BILL OF ESTIMATE</b> <b>QUANTUM BUILT AND ENVIRONMENT CONSULTANTS (PTY) LTD</b>			