41	Franke Grade 304 18/10 stainless steel WB001 wall mounted wash hand basin, size 520 x 432mm wide with a one piece pressed bowl, 32 x 10mm high apron, standard 40mm waste outlet, fixed to wall with pair of galvanized mild steel Eagle brackets bolted with 6mm stainless steel anchor bolts.	No	95		
42	Franke Grade 304 18/10 stainless steel RONDO RDX 610-45 insert type sink to cupboards (elsewhere measured), size 380mm diameter x 160mm deep with standard 40mm waste outlet.	No	12		
43	Franke S/S heavy duty mirror (code M600HD, size 590 x 490mm) for wall mounting, mirror with a reflective polished surface, material thickness 1mm, hidden thief resistant fixings, reinforced with polystyrene plate incl. stainless steel screws and dowels.	No	120		
	WASTE UNIONS ETC				
	Waste unions etc:				
44	32mm Code 301 chrome plated basin waste union.	No	120		
45	40mm Code 316 chrome plated unslotted bath or sink waste union.	No	67		
46	40mm Rough brass shallow seal shower 'P' trap with FI outlet and chrome plated grating.	No	58		
	TRAPS ETC				
	Traps etc:				
47	32mm Cobra Watertech chrome plated deep seal bottle trap with outlet for 50mm PVC (Code 345/50).	No	134		
48	40mm Chrome plated deep seal bottle trap with outlet for 50mm PVC (code 365/50).	No	55		
49	Floor Drain: Built in ACO gulley for flexible vinyl sheet flooring and suitabel for a 110mm diameter vertical pvc outlet (vertical spigot slab penetration gulley, Model 405855 with 1.2 l/s flow rate & 1.7kg & K3 load class BS EN 1253). Grating to be slip resistant perforated circular code 104048 with 157mm diameter steel for flexible sheet flooring.	No	105		
50	Grease Trap: HB GT 700 Full Flow Grease Trap.	No	5		
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

TAPS, VALVES, ETC

Valves:

51	Cobra 232-10 Angle Regulating chrome plated Valve/tap with sliding wall flange.	No	349	

Pillar taps:

52	15mm Chrome plated pillar tap as Cobra Star code 111-15 (Hot and Cold).	No	213	
53	15mm Chrome plated pillar tap as Cobra Star - Stoptap - code 138-15 undertile with 15mm copper inlets, SANS 226 Type 1 including sliding wall flange, extra indice with temperature indicator, 1/2 inch heavy pattern low resistance for low pressure water demand installations.	No	116	
54	Cobra Watertech Star 15mm Hi-waist pillar taps with flanged backnut (Code: 113), manufactured in accordance with SANS 226:2004 Type 1. Chrome plated.	No	40	
55	Cobra Watertech 15mm chrome plated elbow action pillar tap with blue indicator for cold water (Code: 503-21B), manufactured in accordance with SANS 226:2004 Type 2 (BS 5412). Chrome Plated.	No	12	
56	Cobra Watertech 15mm chrome plated elbow action pillar tap with Red indicator for hot water (Code: 503-21R), manufactured in accordance with SANS 226:2004 Type 2 (BS 5412). Chrome Plated.	No	12	

Bib Tap:

57	'Cobra Watertech', Star Bib Tap Plain (Hot and Cold), Product Code 206-15.	No	62	
58	'Cobra Watertech', Hose Bib Tap, Product Code 108-15, without hose 3/4 inch Union + Wingnut + lining for 1/2 inch BSP male inlet, SANS 226 Type 1.	No	11	

Mixers:

59	15mm Chrome plated Sink Mixer as Cobra Star code 166/041.	No	1	

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Bill No. 14
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60	'Cobra Watertech' Code 151 Star 'Bath/Shower Mixer', CP with wall type concealed connections with sliding wall flanges.	No	12		
	Shower sets and accessories:				
61	'Walcro CIRS-JS' Vandal resistent jet spray shower rose with inlet connection diameter 15mm BSP Female.	No	58		
62	Cobra 007V/ CP Varella: 2 functions and removable water saving insert 15mm BSP Male Inlet supplied with flexible hose (Cobra 008CO - 950mm flexible braided nylon tube).	No	12		
63	15mm Cobra Watertech Chrome plated KP2.61 single function, classic spray, vandal resistant shower head with 1/2BSP male inlet and self-cleaning spray nozzle. Minimum Flow Pressure 50Kpa.	No	58		
64	Vaal Sanitaryware single soap dish, size 170 x 170 x 100mm deep (code: 71511084).	No	58		
65	White Anti-mould Shower Curtain fitted tpo CP rail (elsewhere measured) to suit 900mm opening.	No	58		
	Sundries, etc:				
66	Standard 15mm stainless steel braided female swivel connection piece 350mm long.	No	424		
	SANITARY PLUMBING				
	Galvanised steel pipes with 2mm Wall thickness (SABS 62) including all couplings:				
67	40mm Pipe and fixing to walls.	m	82		
	Extra over steel pipes for galvanised fittings:				
68	40mm Bend.	No	70		
69	40mm Junction.	No	70		
	Black Mild steel pipes with 2mm Wall thickness (SABS 62) including all couplings:				
70	25mm Pipe and fixing to walls.	m	161		
71	110mm Pipe and fixing to walls.	m	570		
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

	Extra over steel pipes for wrought steel fittings:				
72	25mm Bend.	No	23		
73	25mm Tee.	No	11		
74	110mm Bend.	No	43		
75	110mm Tee.	No	43		
	uPVC piping (SABS 967-1987):				
76	40mm Waste piping fixed to walls.	m	1,302		
77	50mm Ditto.	m	438		
78	110mm Ditto.	m	967		
	Extra over uPVC piping for:				
79	40mm Bend.	No	267		
80	50mm Bend.	No	138		
81	110mm Bend.	No	82		
82	40mm Access bend.	No	534		
83	50mm Access bend.	No	150		
84	110mm Access bend.	No	82		
85	40mm Access bend with anti-syphon horn.	No	255		
86	50mm Access bend with anti-syphon horn.	No	63		
87	110mm Access bend with anti-syphon horn.	No	82		
88	40mm Junction.	No	510		
89	50mm Junction.	No	138		
90	110mm Junction.	No	82		
91	40mm Access junction.	No	255		
92	50mm Access junction.	No	126		
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

93	110mm Access junction.	No	82	
94	110mm Double reducing junction.	No	94	
95	110mm Pan collar.	No	82	
	Testing:			
96	Testing waste water pipe system.		Item	
	WATER SUPPLIES			
	Class 2 medium copper pipes (SANS 10460):			
97	15mm Pipe building into walls.	m	1,750	
98	22mm Ditto.	m	1,946	
99	28mm Ditto.	m	698	
100	35mm Ditto.	m	412	
101	42mm Ditto.	m	289	
102	54mm Ditto.	m	214	
103	67mm Ditto.	m	131	
104	76mm Ditto.	m	13	
	Extra over class 2 copper pipes for capillary fittings:			
105	15mm Fittings.	No	106	
106	22mm Fittings.	No	424	
107	28mm Fittings.	No	188	
108	35mm Fittings.	No	76	
109	42mm Fittings.	No	40	
110	54mm Fittings.	No	41	
111	67mm Fittings.	No	15	
112	76mm Fittings.	No	5	
	Carried to Collection			R

Bill No. 14
Plumbing and Drainage

	Extra over class 2 copper pipes for brass compression fittings:				
113	15mm Fittings.	No	1,089		
114	22mm Fittings.	No	1,387		
115	28mm Fittings.	No	522		
	Valves:				
116	15mm Fullway Gate Valve (1003/125).	No	41		
117	22mm Fullway Gate Valve (1003/125).	No	114		
118	28mm Fullway Gate Valve (1003/125).	No	41		
119	35mm Fullway Gate Valve (1003/125).	No	8		
120	42mm Fullway Gate Valve (1003/125).	No	12		
121	54mm Fullway Gate Valve (1003/125).	No	10		
122	65mm Fullway Gate Valve (1002/125) with 2 x 67mm Copcal CXM Couplers.	No	4		
123	80mm Fullway Gate Valve (1002/125) with 2 x 76mm Copcal CXM Couplers.	No	2		
124	20mm 'Walcro' or equal approved Pressure valve & Gauge.	No	10		
125	25mm 'Walcro' or equal approved Pressure valve & Gauge.	No	1		
126	32mm 'Walcro' or equal approved Pressure valve & Gauge.	No	2		
127	40mm 'Walcro' or equal approved Pressure valve & Gauge.	No	8		
128	28mm Non-Return Valve.	No	4		
129	42mm Non-Return Valve.	No	2		
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

	Sundry work in connection with all plumbing:				
130	Form hole in 280mm brickwall not exceeding 50mm diameter including making good.	No	82		
131	Form hole in 280mm brickwall exceeding 100mm not exceeding 200mm diameter including making good.	No	82		
	Testing:				
132	Testing water supply pipe system.		Item		
	PIPE PROTECTION				
	"Densyl" petrolatum anti-corrosion tape as manufactured by Denso SA (Pty) Ltd with 55% overlaps:				
133	Wrapping around 15mm pipes, including couplings.	m	1,357		
134	Wrapping around 22mm pipes, including couplings.	m	1,456		
	PIPE INSULATION				
	25mm Thick Preformed Polystyrene sections pipe insulation (50kg/m3 Density and 0.035 W/m degree celcius thermal conductivity), factory covered with stippled 5 ply Alumnium Foil ('Ventureclad' or Equal approved having a 10 year warranty), bonded to the external surface of the pipe:				
	The insulation is to be secured in position using foil overlap and duct tape.				
135	Insulation to 35mm pipes including couplings.	m	119		
136	Insulation to 42mm pipes including couplings.	m	268		
137	Insulation to 54mm pipes including couplings.	m	98		
138	Insulation to 76mm pipes including couplings.	m	6		
	FIRE STOPS				
	Carried to Collection			R	

Bill No. 14
Plumbing and Drainage

	All annular gaps around the PVC piping penetrating a fire wall, are to be tightly packed with mineral wool (CP670), and sealed with 10-15 mm of intumescent sealer (CP601S / FS ONE MAX / CP606) on either side of the fire wall. Once the sealant is set, a collar, cut to size, (CFS-EL) is to be placed on both sides of the fire wall to complete the installation and create a 120 minute fire rated fire wall (in accordance with SANS 10177) all as per Specifications attached to tender document:				
139	20mm diameter piping fire stop.	No	16		
140	25mm diameter piping fire stop.	No	84		
141	32mm diameter piping fire stop.	No	16		
142	50mm diameter piping fire stop.	No	16		
143	110mm diameter piping fire stop.	No	16		
	All annular gaps around the Steel piping penetrating a fire wall, are to be tightly packed with mineral wool (CP670), and sealed with 10-15 mm of intumescent sealer (CP601S / FS ONE MAX / CP606) on either side of the fire wall to complete the installation and create a 120 minute fire rated fire wall (in accordance with SANS 10177) all as per Specifications attached to tender document:				
144	15mm diameter piping fire stop.	No	8		
145	22mm diameter piping fire stop.	No	28		
146	28mm diameter piping fire stop.	No	3		
147	35mm diameter piping fire stop.	No	9		
148	54mm diameter piping fire stop.	No	2		
149	67mm diameter piping fire stop.	No	6		
150	110mm diameter piping fire stop.	No	10		
	FIRE APPLIANCES ETC.				
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

	Portable fire extinguishers:				
151	4,5 Kg DCP(Dry Chemical Portable) fire extinguisher SABS 1910 complete with full load, wall hook and bracket, bracket fixed to and including 25 mm Wrot Meranti backboard, size 250 x 500mm high with chamfered edges, varnish and fixed to wall. Note: Meranti backboard- colour: finish to matching relevant building colour scheme sheet.	No	42		
152	5 Kg carbon dioxide (dry powder chemical) portable fire extinguisher complete with full load, wall hook and bracket, bracket fixed to and including 25 mm Wrot Meranti backboard, size 250 x 500mm high with chamfered edges, varnish and fixed to wall. Note: Meranti backboard- colour: finish to matching relevant building colour scheme sheet.	No	18		
	Hydrants, Valves				
153	110mm Isolating valve	No	19		
154	25mm Isolating valve	No	19		
155	Everyway or other approved 19mm diameter non-swinging rotary first aid fire hose reel complete with wall brackets 19mm ballvalve marked "open" and "shut" 30m length of special four ply red rubber canvas non-kinkable hose with chromium plated shut off nozzle and bolting to wall and jointing to iron pipe.	No	19		
	Carried to Collection			R	
	Bill No. 14 Plumbing and Drainage				

Bill No. 14

Plumbing and Drainage

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Bill No. 14
Plumbing and Drainage

Item No			Quantity	Rate	Amount
	TILING				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (1999 Edition), the Department of Public Works document No. PW 371 Specification of Materials and Methods to be used and to the Supplementary Preambles which are incorporated at the front of these Bills of Quantities.				
	SUPPLEMENTARY PREAMBLES				
	Proprietary products in descriptions:				
	Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent.				
	Fixing:				
	Tiling shall be fixed with an approved tile adhesive to a plaster backing. Plaster backing is measured elsewhere.				
	WALL TILING				
	60mm wide Sandstone Rivens cladding fixed with 'Tal Goldflex' or equal Architect approved to the backround. Sandstone Rivens thickness to vary between 25 and 35mm thick. Lengths to be mixed lengths of 100, 200, 300, 400 and 500mm long. Standard 60 x 100mm long Sandstone Rivens used at all corners. No horizontal and vertical joints:				
1	On smooth plastered walls.	m2	180		
2	On narrow widths.	m2	4		
	200 x 200 x 6,5mm Matt glazed white ceramic wall tiles (grade 1), with 6mm straight joints fixed with approved tile adhesive and grouted with dark-grey tylon grout mixed with tylon bond-it anti-fungicidal solution:				
3	On smooth plastered walls.	m2	3,401		
4	Ditto, on narrow widths.	m2	282		
	Carried to Collection			R	
	Bill No. 15 Tiling				

	Glass mosaic tiles (White), in 300 x 300mm sheets with 22 x 22 x 3mm thick tiles, flush pointed with epoxy mortar:				
5	On shower floors to falls.	m2	63		
	Sundries:				
6	400 x 400mm Access panel of 6mm tempered hardboard with 200 x 200mm white glazed ceramic tiles fixed with adhesive, fitted flush with tile face and screwed with 6 chromium plated dome-capped screws to and including 38 x 38mm sawn softwood framing plugged to wall.	No	12		
7	152 x 152mm Ceramic semi-recessed soapdish flush with wall tiles built into brickwork.	No	70		
8	152 x 152mm Ceramic semi-recessed toilet paper holder flush with wall tiles built into brickwork.	No	20		
9	PVC quadrant bead strips to corners and edges (colour by Architect).	m	1,163		
	Carried to Collection			R	

Bill No. 15
Tiling

Bill No. 15

Tiling

COLLECTION

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Bill No. 15
Tiling

Item No			Quantity	Rate	Amount
	GLAZING				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (1999 Edition), the Department of Public Works document No. PW 371 Specification of Materials and Methods to be used and to the Supplementary Preambles which are incorporated at the front of these Bills of Quantities.				
	SUPPLEMENTARY PREAMBLES				
	Proprietary products in descriptions:				
	Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent.				
	GLAZING TO STEEL WITH PUTTY				
	6,38mm Normal strength clear laminated safety glass:				
1	Panes exceeding 0,1m2 and not exceeding 0,5m2.	m2	6		
	GLAZING TO WOOD WITH NEOPRENE GASKETS				
	6,38mm Normal strength clear laminated safety glass:				
2	Panes exceeding 0,1m2 and not exceeding 0,5m2.	m2	2		
	Carried to Summary			R	
	Bill No. 16 Glazing				

Item No			Quantity	Rate	Amount
	PAINTWORK				
	The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (1999 Edition), the Department of Public Works document No. PW 371 Specification of Materials and Methods to be used and to the Supplementary Preambles which are incorporated at the front of these Bills of Quantities.				
	SUPPLEMENTARY PREAMBLES				
	Proprietary products in descriptions:				
	Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent.				
	All work to be executed in strict accordance with the specifications of the paint manufacturer.				
	Where surfaces of plaster etc are sandy / friable, the first coat must be replaced with plaster primer thinned 10% with turpentine.				
	PAINTWORK ETC TO NEW WORK				
	ON FIBRE-CEMENT				
	Prepare and apply two coats pure acrylic roof paint on:				
1	Gable infill panels.	m2	13		
	Prepare and prime nail heads and apply one coat plaster primer thinned 5 parts to 1 part Mineral Turpentine and paint with two coats pure acrylic paint on:				
2	Ceilings and cornices.	m2	11,503		
	Prepare and apply one coat universal primer, one undercoat and two coats superior quality eggshell enamel:				
3	On sills.	m2	93		
	Carried to Collection			R	

Bill No. 17
Paintwork

	ON PLASTERED SURFACES				
	Prepare and apply one undercoat and paint with two coats premium quality pure acrylic PVA on:				
4	Exterior walls in patterned multi-colours.	m2	615		
5	Interior walls in patterned multi-colours.	m2	11,768		
6	Ceilings.	m2	456		
	Scrub surface with degreaser, rinse thoroughly with tap water, allow to dry and free from rising damp and apply one coat primer (flowprime @ 0.25kg/m2) and 2mm Gloss topping coat (flowshield quartz @ 3.0kg/m2, colour: Goosewing Grey 222) epoxy paint, all by an approved installer with a documented quality assurance scheme to supply a guarantee, on:				
7	Concrete floated or screeded floors (Provisional).	m2	237		
	Prepare surface and apply a three component polyurethane primer, followed by a three component polyurethane mortar screeded to 8-10mm providing a NON-SLIP floor. Finish with a solvent one pack moisture curing polyurethane floor sealer. Polyurethane must be SABS approved. Equally approved (colour to be LIGHT GREY) all by an approved installer:				
	Note: All the surfaces must be clean & free from dust, curing agents & loose particles. Concrete & other cementitious substrates must be visibly dry & have a minimum strength of 1.5N/mm2. Remove all traces of contaminants such as paint residues, chemicals, oils, fats, grease, algae & laitance by suitable means.				
8	Concrete floated or screeded floors (Provisional).	m2	324		
	ON BRICK SURFACES				
	Clean down with spirits of salts solution and apply two coats silicone-based brick dressing on:				
9	Facings (Internally).	m2	2,497		
10	Facings (Externally).	m2	4,825		
	Carried to Collection			R	

Bill No. 17
Paintwork

	ON WOOD				
	Prepare and apply one coat wood primer, one undercoat and two coats superior quality smooth gloss enamel on:				
11	General surfaces of timbers at eaves.	m2	1,662		
	Prepare and apply one coat wood primer, one undercoat and two coats superior quality eggshell enamel on:				
12	Doors (all surfaces measured).	m2	10		
13	Skirtings, Frames, rails, etc not exceeding 300mm girth.	m	9,562		
	Prepare and apply three coats polyurethane matt varnish on:				
14	Doors (all surfaces measured).	m2	1,314		
15	General surfaces of fittings.	m2	479		
16	Skirtings, Frames, rails, etc not exceeding 300mm girth.	m	8,630		
	Two coats wood primer on:				
17	Backs of frames, linings, etc not exceeding 300mm wide.	m	1,573		
	ON METAL				
	Clean down thoroughly with galvanised iron cleaner, wash down with water, and apply one coat bituminous paint on:				
18	On backs of pressed steel door linings.	m2	38		
19	Backs of steel window frames not exceeding 300mm girth.	m	36		
	Clean down thoroughly with galvanised iron cleaner, wash down with water, prime with one coat galvanised metal primer and finish with two coats superior universal non drip enamel on:				
20	Exterior gates, grilles, burglar screens, balustrades, etc. (both sides measured over the full flat area).	m2	31		
	Carried to Collection			R	

Bill No. 17
Paintwork

21	Interior rails, bars, pipes, etc.	m2	200		
22	Interior rails, bars, pipes, etc, not exceeding 300mm girth.	m	951		
	Clean down thoroughly with galvanised iron cleaner, wash down with water, prime with one coat metal primer and finish with two coats superior quality enamel on:				
23	Doors (all surfaces measured).	m2	56		
24	On door frames.	m2	18		
25	Windows with burglar bars (both sides measured).	m2	12		
	Carried to Collection			R	

Bill No. 17
Paintwork

Bill No. 17

Paintwork

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Bill No. 17
Paintwork

Item No	Labour Ref		Unit	Quantity	Rate	Amount
		EXTERNAL WORK (PROVISIONAL)				
		The Tenderer is referred to the relevant Clauses in the separate document Model Preambles for Trades (1999 Edition), the Department of Public Works document No. PW 371 Specification of Materials and Methods to be used and to the Supplementary Preambles which are incorporated at the front of these Bills of Quantities.				
		The specifications pertinent to the civil and structural engineering component of the Project is the SANS 2001 series as indicated in the general notes on the drawings. In some instances sections from SABS 1200 also apply as indicated.				
		SUPPLEMENTARY PREAMBLES				
		Proprietary products in descriptions:				
		Proprietary products shall be used as specified. Substitute products of similar quality and specification may only be used with prior approval by the Principal Agent.				
		OXIDATION POND DECOMMISIONING				
		Sludge removal and reshaping of existing ponds, etc.:				
		Carried to Collection			R	
		Bill No. 18 External Work				

	This part of the works must be undertaken when the new sewage treatment works has been successfully commissioned. Work must only commence when all water has been allowed to evaporate or the pond has been de watered by pumping excess water into the new works in a controlled manner according to the instructions of the engineer.				
1	Establish on site (and remove) mobile diesel driven contractors sludge pumping equipment for pumping out of ponds. The pumping equipment must have a collective capacity of 200m3/h at a static head of 5,0m (Pumps can be electric and driven by diesel generator or mounted on sleigh).		Item		
2	Operate pumping equipment for keeping dry (only upon instruction).		7		
3	Cut down reeds and vegetation from verges and strip roots and transport to the Queenstown Solid Waste Site (including all transport and charges to the municipality).	m2	300		
4	Strip sludge and other contaminants from the surface of the ponds and transport to the Queenstown Solid Waste site (including all transport and charges by the municipality).	m3	990		
5	Demolish existing inlet and outlet structures of masonry and unreinforced concrete.	m3	15		
6	Reshape ponds by excavating, filling and compacting 90% mod. AASHTO density.	m3	1,000		
7	Remove sludge from 2,5 deep existing septic tank and transport to the Queenstown Solid Waste site (including all transport and charges by the municipality).	m3	50		
	EMBANKMENT PROTECTION				
	Carried to Collection			R	
	Bill No. 18 External Work				

		Grassing, Topsoil, etc.:				
8		Spread topsoil from stockpiles in 150mm layer and tamp down on embankments and trim.	m2	2,090		
9		Mix 2:3:2 fertilizer into topsoil at a rate of 50g/m2.	m2	2,090		
10		Sow Eragrostis Curvula and Teff seed in a ratio of 4:5 by weight at a rate of 2g/m2 and water until growth is sustained.	m2	2,090		
11		Protect with Hessian Soil Protection Blankets retained with wooden pins into soil.	m2	2,090		
		RAMPS AND STAIRS				
	LI	**Site clearance:**				
12		Digging up and removing rubbish, debris, vegetation, hedges, shrubs and trees not exceeding 200mm girth, bush, etc.	m2	50		
	LI	**Open face excavation not exceeding 2m deep:**				
13		Over site to reduce levels and depositing excavated material in prescribed stock piles on site.	m3	12		
	LI	**Excavation in earth not exceeding 2m deep:**				
14		Trenches.	m3	42		
		Extra over trench and hole excavations in earth for excavation in:				
15		Soft rock.	m3	17		
16		Hard rock.	m3	11		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Extra over all excavations for carting away:**				
17		Surplus material from stock piles on site to a dumping site to be located by the contractor.	m3	32		
		Risk of collapse of excavations:				
18		Sides of trench and hole excavations not exceeding 1,5m deep.	m2	171		
		Keeping excavations free of water:				
19		Keeping excavations free of water.		Item		
	LI	**Earth filling obtained from the excavations and/or prescribed stock piles on site compacted to 93% Mod AASHTO density:**				
20		Backfilling to trenches, holes, etc.	m3	22		
	LI	**Earth filling supplied by the contractor compacted to 93% Mod AASHTO density:**				
21		Under floors, steps, pavings, etc.	m3	14		
	LI	**Compaction of surfaces.**				
22		Compaction of ground surface under floors 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	39		
	LI	**20MPa/20mm concrete:**				
23		Strip footings.	m3	17		
24		Steps.	m3	1		
25		Ramps.	m3	3		
	LI	**Finishing top surfaces of concrete smooth with a wood float:**				
26		Concrete to falls.	m2	42		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Rough Formwork to Sides:				
27		Edges, risers, ends and reveals not exceeding 300mm high or wide.	m	76		
		Expansion joints with bitumen impregnated softboard between vertical concrete or brick surfaces:				
28		10mm Joints not exceeding 300mm high (Provisional).	m	14		
		Approved polysulphide sealing compound including backing cord, bond breaker, primer etc.:				
29		10 x 10mm In expansion joints in floors or walls including raking out expansion joint filler as necessary (Provisional).	m	14		
	LI	**Brickwork of NFX bricks (14 MPa nominal compressive strength) in Class I mortar:**				
30		One brick walls.	m2	48		
	LI	**Brickwork reinforcement:**				
31		150mm Wide reinforcement built in horizontally.	m	186		
		Facebricks Heritage Travertine pointed with square ruled recessed horizontal and vertical joints:				
32		Extra over brickwork for face brickwork externally.	m2	27		
	LI	**Untinted granolithic on concrete:**				
33		20mm Thick on treads and risers of steps including reedings.	m2	11		
	LI	**Reinforced concrete pipes with interlocking joints, Class 75D stormwater pipe as described:**				
		Carried to Collection			R	
		Bill No. 18 External Work				

		Note: Joints of pipes to be twice wrapped with grade U24 filter fabric 200mm wide and with 200mm overlap.				
34		300mm Stormwater laid in ground under ramp not exceeding 1000mm including all excavations in earth, bedding cradle and blanket fill of selected granular material, main fill compacting in layers not exceeding 150mm thick and carting off surplus displaced material.	m	14		
35		Extra for building ends into one brick wall and making good.	No	16		
		SOIL DRAINAGE				
	LI	**Polyvinyl chloride (unplasticised) (uPVC Class 34) heavy duty piping with bedding and filling as laid out in SABS 1200 LB - bedding flexible pipes, and excavation and backfilling as SABS 1200 DB of 1982:**				
36		160mm Pipe and excavations not exceeding 1m deep.	m	44		
37		Ditto, but exceeding 1m and not exceeding 2m deep.	m	161		
38		Ditto, but exceeding 2m and not exceeding 3m deep.	m	74		
		Extra over trench excavation in earth for excavation in:				
39		Soft rock.	m3	30		
		Extra over U PVC pipes for fittings:				
40		160mm End cap.	No	2		
41		160mm Bend.	No	2		
42		160mm Junction.	No	3		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Manholes:**				
43		Manhole (Type 1) size 770 x 600mm x not exceeding 1,5m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick mass concrete (25 MPa at 28 days in 19mm stone) bottom projecting 150mm beyond sides and mass concrete (15 MPa at 28 days in 12mm stone) benching, rendered internally in 1:3 cement plaster with 150mm thick mass concrete (25 MPa at 28 days in 19mm stone) kerb on top including 40 x 40mm chamfered edge, rebated for and fitted with cast iron double seal cover and frame type 9B in accordance with SABS 558 (elsewhere measured), bedded in 1:3 cement mortar and sealed in tallow including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc	No	4		
44		Manhole (Type 2) size 1,200 x 770mm x exceeding 1,5m not exceeding 3m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick mass concrete (25 MPa at 28 days in 19mm stone) bottom projecting 150mm beyond sides and mass concrete (15 MPa at 28 days in 12mm stone) benching, rendered internally in 1:3 cement plaster with 150mm thick mass concrete (25 MPa at 28 days in 19mm stone) kerb on top including 40 x 40mm chamfered edge, rebated for and fitted with cast iron double seal cover and frame type 9B in accordance with SABS 558 (elsewhere measured), bedded in 1:3 cement mortar and sealed in tallow including cast iron step irons (SABS 1200 LD) at 300mm centres as well as all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc.	No	5		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Gratings, covers, etc:				
45		600 x 600mm Type 9B (SABS 558) cast iron double seal manhole cover and frame according to 'Saint-Gobain' product no. 2130.	No	61		
46		Lifting key for manhole cover.	No	5		
	LI	**Sundries:**				
47		Mass concrete (20MPa) encasement around 110mm diameter horizontal, raking or vertical drainpipes including all necessary excavations, formwork, etc.	m3	91		
48		Mass concrete (20MPa) Back drop around 160mm diameter junctions or vertical drainpipes at manholes including all necessary excavations, formwork, etc.	m3	9		
49		Mass concrete (20MPa) concrete collar around 160mm diameter junction size 400 x 400 x 300mm deep including all necessary excavations, formwork, etc.	No	41		
50		100mm Cast iron straight or skew ABC cleaning eye with removable plate cover jointed to 110mm PVC pipe and set in and including concrete (25MPa) around with exposed surface trowelled smooth.	No	41		
51		Precast concrete (15MPa) block size 300 x 300 x 75 mm thick finished smooth on top and four edges with letters "I.E." formed in top, set in ground over top of inspection fitting.	No	41		
		Testing:				
52		Allow for testing all drains to the satisfaction of the Representative/Agent. All defective work is to be taken out and replaced at the Contractor's expense.		Item		
		WATER SUPPLY & FIRE RETICULATION				
		Carried to Collection			R	
		Bill No. 18 External Work				

		uPVC (Class 6) piping (SABS 967-1987):				
53		160mm Pipes laid in and including trenches 1m deep.	m	257		
54		110mm Pipes laid in and including trenches 1m deep.	m	796		
55		90mm Pipes laid in and including trenches 1m deep.	m	100		
56		75mm Pipes laid in and including trenches 1m deep.	m	2,040		
57		63mm Pipes laid in and including trenches 1m deep.	m	122		
		HDPE Class 6 water pipes and laid in pipe trenches as SABS 1200 LB (flexible pipe bedding) of 1979 and excavation and backfilling as SABS 1200 DB of 1982:				
58		25mm Pipes laid in and including trenches not exceeding 1m deep.	m	590		
59		32mm Pipes laid in and including trenches not exceeding 1m deep.	m	8		
60		40mm Pipes laid in and including trenches not exceeding 1m deep.	m	46		
61		50mm Pipes laid in and including trenches not exceeding 1m deep.	m	2,809		
		Extra over trench excavation in earth for excavation in:				
62		Soft rock.	m3	128		
63		Hard rock.	m3	76		
		Extra over uPVC piping for:				
64		160mm Bend.	No	4		
65		110mm Bend.	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

66		90mm Bend.	No	2		
67		75mm Bend.	No	12		
68		90mm Tee.	No	1		
69		75mm Tee.	No	3		
70		160mm Reducing Tee.	No	4		
71		110mm End cap.	No	1		
		Extra over HDPE pipes for "Plasson" or other approved fittings:				
72		50mm Nipple.	No	4		
73		40mm Nipple.	No	4		
74		32mm Nipple.	No	2		
75		25mm Nipple.	No	2		
76		50mm Bend.	No	7		
77		40mm Bend.	No	4		
78		32mm Bend.	No	7		
79		25mm Bend.	No	18		
80		40mm Tee.	No	1		
81		25mm Tee.	No	22		
82		50 x 25mm Reducing Tee.	No	32		
		Valves/Taps:				
83		110mm Gate Valve to uPVC pipes.	No	7		
84		110mm Non-Return Valve to uPVC pipes.	No	1		
85		50mm Gate Valve to HDPE pipes.	No	29		
86		40mm Gate Valve to HDPE pipes.	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

87		40mm Non-Return Valve to HDPE pipes.	No	2			
88		25mm Gate Valve to HDPE pipes.	No	76			
89		25mm Non-Return Valve to HDPE pipes.	No	59			
90		22mm Hose bibtap with locksheild and loose key as Cobra 108 LK including wallplate elbow and fixing to steel standpipe.	No	1			
		Hydrants, valves etc. including joints to HDPE pipes.					
91		Supply and Install on fire Hydrant post 600mm high on 800 x 800 x 300mm (30Mpa) concrete base, including 80 x 65mm right angle hydrant with hand wheel, with bayonet type connection and cap, medium class 100mm diameter galvanised iron pipe, galvanised iron barrel nipple, 100mm diameter galvanised iron long radius bend, 100mm diameter galvanised iron screwed flange adaptor and cast iron hydrant tee, all as per Drawing no. E569 - 211.	No	7			
		Air Valve (Refer Drawing E569-212):					
92		Manhole size 770 x 770mm x not exceeding 1,5m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 100mm thick no fines concrete bottom projecting 100mm beyond sides, rendered internally in 1:3 cement plaster with 100mm thick reinforced concrete (25 MPa at 28 days in 19mm stone with 395 mesh) kerb on top including 20 x 20mm chamfered edge, rebated for and fitted with cast iron single seal cover and frame type 14C in accordance with SABS 558 (elsewhere measured), bedded in 1:3 cement mortar and sealed in tallow including all necessary excavations, formwork, holes through sides for pipes, etc	No	3			
		Carried to Collection			R		
		Bill No. 18 External Work					

93		'Vent-o-mat 080RBX 1601' or equal approved double action air valve.	No	3		
94		80mm diameter galvanised iron screwed flange to suit air valve.	No	3		
95		80mm diameter galvanised iron screwed steel pipe 200mm long.	No	3		
96		80mm diameter Brass gate valve with 1200kPa working pressure.	No	3		
97		80mm diameter galvanised iron screwed flange to suit T-piece.	No	3		
98		'Duroflo' 75mm flanged Cast Iron Hydrant Tee.	No	3		
		Scour Valve (Refer Drawing E569-212):				
99		Valve Box Type 3A to SABS 558 bedded in 200 x 100mm x 1:2 mortar on staggered hard burnt one brick sides average 500 x 500 x 425mm high internally in 1:3 cement mortar on well compacted fill including all necessary excavations, etc.	No	2		
100		80mm Flanged Water Works Gate Valve.	No	2		
101		80 x 75mm diameter Cast Iron Hydrant Tee.	No	2		
102		80mm diameter medium duty screwed galvanised pipe 1400mm long.	No	2		
103		80mm diameter medium duty screwed galvanised pipe 2600mm long.	No	2		
104		80mm diameter galvanised steel elbow.	No	2		
105		80mm diameter galvanised steel 45 degree bend.	No	2		
106		2500 x 2500 x 150mm Stone Pitching at scour outlet.	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Booster Pump Connection (Refer Drawing E569-211):				
107		100mm Stortz coupling (115LUG) C/W Blank Cap and chain.	No	1		
108		100mm gate valve.	No	1		
109		2500kPa 100mm diameter face, glycerine filled pressure gauge with stopcock.	No	2		
110		Pretoria tamperproof hydrant valve with bayonet outlet.	No	2		
111		100mm Galvanised iron pipe 1200mm long.	No	1		
112		100 diameter screwed flange adaptor.	No	2		
113		160 x 110mm cast iron hydrant tee.	No	2		
114		150mm diameter cast iron flanged non-return valve.	No	1		
115		160mm diameter duroflow cast iron flange adaptor.	No	2		
116		65mm Male Booster connection C/W blank cap.	No	1		
117		100mm T-piece.	No	1		
118		100mm diameter galvanised iron pipe 1500mm long.	No	1		
		Gratings, covers, etc:				
119		450 x 600mm Type 14C (SABS 558) cast iron single seal manhole cover and frame according to 'Saint-Gobain' product no. 2062 with BDP prod. No. 6600 locking device and pipe cover over padlock for inaccessability.	No	3		
120		100mm diameter Mild Steel vent pipe with insectproof gauze.	No	3		
121		Lifting key for manhole cover.	No	3		
		Carried to Collection			R	
		Bill No. 18 External Work				

	Sundries:				
122	Mass concrete (20MPa) Thrust Blocks 500 x 500 x 300mm deep including all necessary excavations, formwork, etc.	No	266		
123	50mm Galvanised mild steel fence standard 1500mm long as support for and including fixing water pipe to standard and embedded in ground in 200 x 200 x 400mm concrete (15MPa) base.	No	1		
	FIRE BOOSTER PUMP INSTALLATION				
	Pump Installation:				
124	Fire booster pump set in accordance with EN 12854 consisting of electrically driven main booster pump, diesel driven standby pump and electrically driven jockey pump (Duty Point 550 kPa @ 42 lit/sec) (Grundfos Hydro EN 80-200/202 YJS ASD-U3-BV or similar approved) assembled on skids, including interconnecting, pipework, valves, non-return valves etc., ready to be connected to 2No ø100 suction flanges and ø200 delivery flange.	No	1		
125	Control panel.	No	1		
126	Diesel tank and supply lines (4h storage).	No	1		
127	Electrical cabling, cable trays to pump sets from DB board 5m away in new plant room.	No	1		
128	Testing of pump set and submission of test data.		Item		
129	Training of staff of the Employer in system operation.		Item		
130	Commissioning of pumps and hydrant system.		Item		
	Carried to Collection			R	
	Bill No. 18 External Work				

131		Provision of complete manuals an part lists for pump equipment.		Item		
132		Submission of Operation and Maintenance schedule and training curriculum.		Item		
		"Duroflo" or similar approved cast iron fittings with sockets and rubber seals to SABS 966, packings, nuts and bolts:				
133		200ø Flange adaptor drilled to SABS 1123 Table 1600/3.	No	2		
		Manufactured welded special pipe fittings:				
		The following items are for welded manufactured steel pipe fittings SABS 719 Grade B for pump stations, pipe bridges, connections to storage tanks and other locations on site, regardless of position, with "3M SchotchKote 162 PWX" or similar approved epoxy coating to 500µm coat thickness, enamel paint final coats, packings, bolts, nuts and trial assembly prior to final installation, completely installed.				
134		200ø.	m	7		
135		150ø.	m	5		
		Extra over for welded flanges to SABS 1123 Table 1600/3 including packings, bolts and nuts:				
136		200ø.	No	6		
137		150ø.	No	8		
		Blank flanges to SABS 1123 Table 1600/3:				
138		200ø.	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Extra over for welded T-piece branch intersections for the following diameters) (Branches measured under pipes):					
139		200ø.	No	1			
		Tapered reducers:					
140		150x200ø.	No	1			
		Short radius bends for the following diameters:					
141		200ø.	No	2			
142		150ø.	No	2			
		Sundries items to welded steel fittings:					
143		50mm male screwed nipple.	No	1			
		Special Fittings, valves, including packings, bolts and nuts, complete:					
144		150mm flanged CI waterworks gate valve to SABS 664, right hand closing with hand wheel.	No	1			
145		50mm "Vent-O-Mat RPS" pressurized air release valve on 50ø GI pipe riser with 50ø Cobra brass gate valve.	No	1			
		RAINWATER TANKS AND STANDS					
	LI	**Excavation in earth not exceeding 2m deep:**					
146		Trenches.	m3	343			
147		Bases.	m3	4			
		Extra over trench and hole excavations in earth for excavation in:					
148		Soft rock.	m3	27			
		Carried to Collection			R		
		Bill No. 18 External Work					

149		Hard rock.	m3	13		
	LI	**Extra over all excavations for carting away:**				
150		Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor.	m3	229		
		Risk of collapse of excavations:				
151		Sides of trench and hole excavations not exceeding 1,5m deep.	m2	758		
		Keeping excavations free of water:				
152		Keeping excavations free of water.		Item		
	LI	**Earth filling obtained from the excavations and/or prescribed stock piles on site compacted to 93% Mod AASHTO density:**				
153		Backfilling to trenches, holes, etc.	m3	118		
	LI	**Earth filling supplied by the contractor compacted to 95% Mod AASHTO density:**				
154		Under floors, steps, pavings, etc.	m3	155		
	LI	**Coarse river sand filling supplied by the contractor:**				
155		Under floors etc. (Provisional).	m3	6		
	LI	**Compaction of surfaces:**				
156		Compaction of ground surface under floors etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material where necessary and compacting to 95% Mod AASHTO density.	m2	220		
	LI	**25MPa/20mm concrete:**				
157		Strip footings.	m3	80		
158		Surface beds.	m3	25		
		Carried to Collection			R	
		Bill No. 18 External Work				

159		Bases.	m3	1		
160		Stub Columns.	m3	0.3		
		Test blocks:				
161		Making and testing set of three 150x150x150mm concrete strength test cubes (Provisional).	No	2		
	LI	**Finishing top surfaces of concrete smooth with a wood float:**				
162		Apron slabs, paving, etc to slight falls.	m2	246		
		Rough Formwork to Sides:				
163		Stub columns propped up not exceeding 3,5m high	m2	4		
164		Edges, risers, ends and reveals not exceeding 300mm high or wide.	m	520		
	LI	**Mild steel reinforcement to structural concrete work:**				
165		10mm Diameter bars.	kg	89		
166		8mm Diameter bars.	kg	10		
	LI	**High tensile steel reinforcement to structural concrete work:**				
167		16mm Diameter bars.	kg	2,190		
168		8mm Diameter bars.	kg	10		
	LI	**Fabric reinforcement:**				
169		REF. 193 fabric reinforcement in concrete surface beds, slabs, etc.	m2	246		
	LI	**Brickwork of NFX bricks (14 MPa nominal compressive strength) in Class I mortar:**				
170		One brick walls.	m2	495		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Brickwork reinforcement:**				
171		150mm Wide reinforcement built in horizontally.	m	1,568		
		Galvanised hoop iron cramps, ties, etc:				
172		30 x 1,6mm Tie secured around tank and 4 times built into concrete (Total for one tank = 12 meters).	No	56		
173		30 x 1,6mm Tie secured around tank and 4 times built into concrete (Total for one tank = 16 meters).	No	2		
174		3,4mm Wire tie secured around 10000 litre tank (elsewhere measured)	m	7		
		Facebricks Heritage Travertine pointed with square ruled recessed horizontal and vertical joints:				
175		Extra over brickwork for face brickwork externally.	m2	311		
	LI	**One layer of 250 micron 'USB GREEN' waterproof sheeting sealed at laps with 'Gunplas Pressure Sensitive Tape':**				
176		Under surface beds.	m2	246		
		Ground Reservoir Water Tank				
		The prefabricated metal reservoir will serve for both fire and domestic water storage. A freeboard of 300mm must be allowed above top water level to accommodate level control devices. The minimum wall thickness of the upper 50% of the reservoir not to be less than 0.8mm and lower 50% not less than 2.0mm. The height of reservoir is not to be less than 6.0m. No limitation is placed on the diameter. Provision for connecting pipework to be made for 150ø scour pipe, 50ø Inlet, 150ø Domestic outlet, 200ø Fire outlet and 100ø overflow.				
		Carried to Collection			R	
		Bill No. 18 External Work				

177		388m3 'SBS Tanks' or similar approved circular ZincAlume AZ150 or better metal tank with approved liner suitable for potable water, delivered, assembled and tested on site. The price must include for access ladder inside and outside with safety cage and rails, weather and waterproof roof, lockable access hatch, insect proof ventilators with water level indicator. A manufacturer's guarantee of minimum 25 years is required against corrosion and weathering of tank and lining.	No	1			
		The following pipework must fitted through the wall of the tank, terminating as flanges according to SANS 1123 Table 1000/3 on the outside for the fitting of valves and other specials.					
178		150mm diameter scour pipe 4m long.	No	1			
179		'Vortex' inhibitor on the 200mm outlet of the tank.	No	1			
180		200mm diameter outlet pipe near bottom of tank (fire fighting outlet) 1,5m long.	No	1			
181		200mm diameter outlet pipe at 260m3 capacity level (domestic outlet) 1,5m long.	No	1			
182		50mm dia inlet pipe for fixing of float control valve, flanged inside and outside 1,5m long.	No	2			
		Carried to Collection				R	
		Bill No. 18 External Work					

	LI	**Rainwater tanks:**				
183		5000 Litre polyethylene rotomoulded vertical water storage tank complete with lid, fitted with and including 15mm brass bibtap (Type 108LK15) with suitable adaptor and setting in position on concrete tankstand (elsewhere measured) and tying down with 4mm diameter galvanised wire wrapped twice around centre of tank and secured to each corner of tank stand with a double strand of 4mm diameter galvanised wire embedded into concrete. (Note: tanks to be filled with water before Practical Completion).	No	54		
184		10000 Litre polyethylene rotomoulded vertical water storage tank complete with lid, fitted with and including 15mm brass bibtap (Type 108LK15) with suitable adaptor and setting in position on concrete tankstand (elsewhere measured) and tying down with 4mm diameter galvanised wire wrapped twice around centre of tank and secured to each corner of tank stand with a double strand of 4mm diameter galvanised wire embedded into concrete. (Note: tanks to be filled with water before Practical Completion).	No	2		
185		10000 Litre polyethylene rotomoulded vertical water storage tank complete with lid including setting up in position on elevated tank stand (elsewhere measured) approximately 6000mm above ground level, securely tying down with galvanised wire (elsewhere measured) (Note - tank to be filled with water before Practical Completion) complete	No	1		
186		Outlet union for 32mm steel pipe including hole through tank	No	2		
187		'JoJo Tanks' or similar approved 1st Flush Diverter harvesting accessory installed complete.	No	54		
		Carried to Collection			R	
		Bill No. 18 External Work				

188		'JoJo Tanks' or similar approved leaf eater harvesting accessory installed complete.	No	54		
189		Hole through top of tank lid for 100mm diameter pipe.	No	54		
		SA Pine Grade V5:				
190		50 x 228mm Treated with and including carbolinieum and bolted to IPE 160 beams (elsewhere measured) with and including M6 round head bolts at 4 intersections	m	38		
		Steelwork:				
		All steelwork to be Grade S355JR				
		Workshop drawings must be submitted to the Engineer for approval **before** commencement of any manufacturing of steelwork.				
		No welding on site will be permitted.				
		Descriptions:				
		Descriptions of bolts shall be deemed to include nuts and washers.				
		Descriptions of L- shaped and U-shaped anchor bolts shall be deemed to include bending, threading, nuts and washers and embedding in concrete.				
		Descriptions of expansion anchors and bolts and chemical anchors and bolts shall be deemed to include nuts, washers and mortices in brickwork or concrete.				
		Hot dip galvanised (Class A) steel components to tank stand:				
		Carried to Collection			R	
		Bill No. 18 External Work				

		Welded columns in single lengths with flat section base and connection plates bolted to concrete and steel:			
191		60 x 60 x 5mm x 4,57kg/m Angle section columns	t	0.08	
192		70 x 70 x 6mm x 6,38kg/m Angle section columns	t	0.14	
		Welded beams in single lengths with flat section bearer plates bolted to steel columns:			
193		50 x 50 x 5mm x 3,77kg/m Angle section beams	t	0.14	
194		60 x 60 x 6mm x 5,42kg/m Angle section beam	t	0.09	
195		160 x 83 x 5mm x 15,8kg/m I-section beams	t	0.28	
		Purlins, girts and bracing bolted to steel:			
196		60 x 60 x 5mm x 4,56kg/m Angle section railing	t	0.06	
197		60 x 60 x 6mm x 5,42kg/m Angle section cross bracing	t	0.34	
		Bolts to columns, beams, etc.:			
198		High tensile bolts (Grade 8.8)	t	0.10	
199		M18 Grade 4.8 Holding down bolt 320mm long screwed one end with lock nut and flat washer complete	No	16	
		Sundries:			
200		290 x 290 x 10mm Thick base plate welded to bottom of steel stanchion including 4 x 18mm diameter holes for bolts (elsewhere measured)	No	4	
		Carried to Collection			R
		Bill No. 18 External Work			

		30MPa Non-shrink grout:				
201		Bedding approximately 30mm thick under 290 x 290mm base plate including splayed edges all round (base plate elsewhere measured)	No	4		
		Welded cat ladder 718 x 640mm wide and 9,64m high to water tank:				
202		70 x 70 x 6mm x 6,38kg/m Angle section stringer	t	0.11		
203		8 x 50mm Flat section vertical welded on	kg	27		
204		8 x 50mm Flat section hoop welded on	kg	45		
205		8 x 60mm Flat section horisontal welded on	kg	182		
206		20mm Diameter rung 640mm long with ends welded to stringers	No	33		
		Galvanised mild steel pipes:				
207		32mm Pipe including holderbats at 2m centres	m	3		
208		50mm Ditto	m	12		
209		50mm Pipe laid in and including trenches not exceeding 1m deep	m	1		
		Extra over galvanised mild steel pipes for steel fittings:				
210		32mm Float control valve, complete with float	No	1		
211		32mm Bend	No	2		
212		50mm One way valve	No	1		
213		50 x 32mm Reducer	No	2		
214		50mm Steel to HDPE adapter	No	2		
215		50mm Bend	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

216		50mm Stopcock	No	1		
		Closed cell foam lagging:				
217		Outerwrap on 50mm diameter steel pipes	m	12		
		Refurbish existing 120m3 Pressed Steel Tank:				
		Surface preparation for interior and exterior mild steel:				
		Inspect shop primer and where necessary, remove any loose and flaking paint. Feather edges.				
		Wash surfaces with Aquasolv to remove all grease and contaminants. Rinse thoroughly with fresh water and allow drying.				
		Remove rust completely back to bright metal by sanding and scraping, or by using Rust Remover following instructions on the container.				
		Where rust cannot be removed completely and Rusist is to be applied: All loose rust must be removed by scraping, chipping, etc. Where it is not possible or practical to remove rust completely, such as in hidden areas and deep recesses, Rusist Rust Converter may be applied.				
		Surfaces must be clean, sound and dry before painting.				
218		Flush Out and disinfect existing 120m3 pressed steel tank.		Item		
219		Cleaning of inside of tank surface including roof.	m2	135		
220		Prepare and apply two coats enamel to existing steel tank stand structure.	m2	110		
		Carried to Collection			R	
		Bill No. 18 External Work				

221		Sealing of joints between panels with approved sealant (butyl strip or similar).	m	122		
222		Install new level indicator mechanism.	No	1		
		Testing:				
223		Allow for testing all drains, and water supples to the satisfaction of the Architect and Engineer. All defective work is to be taken out and replaced at the Contractor's expense.		Item		
		CONCRETE STORMWATER, CHANNELS AND APRONS				
		Precast concrete finished smooth on exposed surfaces including bedding, jointing and pointing:				
224		240 x 150mm high x 150mm internal diameter Precast Half-Round Channel (30Mpa) with 30mm Mortar infill between channel and brickwork on 75mm thick 3:1 (sand/cement) bedding projecting 100mm beyond channel including all necessary excavations, backfilling, compaction, carting away, etc.	m	660		
225		Extra over for angles, intersections, ends, dressing into sides of catchpits, etc.	No	178		
		Insitu concrete channels:				
226		900 x 175mm 25Mpa open wood-floated dished concrete stormwater channel 75mm deep at centre with outer exposed edges finished off with 10mm radius nosing tool, on 150mm G6 subbase material compacted to 95% Mod A.A.S.H.T.O. density, including all necessary excavations, formwork, compaction, grading, carting away, etc.	m	902		
227		Extra over for angles, intersections, ends, dressing into sides of catchpits, etc	No	107		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Insitu concrete apron:				
228		900mm wide 25Mpa wood-floated concrete apron 100mm thick with 30mm crossfall with outer exposed edge finished off with 6mm radius nosing tool, on 150mm G6 subbase material compacted to 95% Mod A.A.S.H.T.O. density, including all necessary excavations, formwork, compaction, grading, carting away, etc.	m	10		
		Expansion joints with 'Jointex' light weight, cross linked, closed cell, expanded Polyethylene joint former with a hinged temporary blocking piece between vertical concrete or brick surfaces:				
229		10mm Joints not exceeding 300mm high.	m	912		
		'Sikaflex-Pro 2HP' sealing compound:				
230		10 x 10mm In vertical expansion joints between concrete and brick surfaces.	m	912		
	LI	**One layer of 250 micron 'USB GREEN' waterproof sheeting sealed at laps with 'Gunplas Pressure Sensitive Tape':**				
231		Under surface beds.	m2	1,139		
	LI	**Reinforced concrete pipes with interlocking joints, Class 50D stormwater pipe as described:**				
		Carried to Collection			R	
		Bill No. 18 External Work				

		Note: Joints of pipes to be twice wrapped with grade U24 filter fabric 200mm wide and with 200mm overlap.				
232		300mm Stormwater pipe as laid in ground, or broken backfill exceeding 1000mm and not exceeding 2000mm deep including all excavations in earth, bedding cradle and blanket fill of selected granular material, main fill compacting in layers not exceeding 150mm thick and carting off surplus displaced material.	m	118		
233		375mm Stormwater pipe as laid in ground, or broken backfill exceeding 1000mm and not exceeding 2000mm deep including all excavations in earth, bedding cradle and blanket fill of selected granular material, main fill compacting in layers not exceeding 150mm thick and carting off surplus displaced material.	m	9		
		uPVC Class 51 piping with rubber ring joints and fittings complying with SABS 966:				
234		160mm Pipe and laying in ground not exceeding 1m deep including excavating trench 150mm sand bed under and around for half depth of pipe supplied by the contractor and compacted to 93% Mod AASHTO density, G5 material for half depth of pipe and 300mm above pipe compacted to 93% Mod AASHTO density and backfilling to ground level with a material arising from the excavations compacted in multiple layers not exceeding 150mm thick to 95% Mod AASHTO density.	m	11		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Catchpits, manholes, junction boxes, kerb inlets, etc.:**					
235		Excavate for and build Stormwater Manhole size 1,000 x 1,000mm x exceeding 1m not exceeding 2m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 617 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 150mm thick reinforced (Ref 888 Mesh) concrete (30MPa) cover slab on top, rebated for and fitted with and including 'Fiberite' Type FR90 Class A15 composite manhole frame & cover (SANS 50124), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, CI Step irons, etc.	No	6			
236		Excavate for and build Stormwater Manhole size 1,000 x 1,000mm x exceeding 2m not exceeding 3m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 617 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 150mm thick reinforced (Ref 888 Mesh) concrete (30MPa) cover slab on top, rebated for and fitted with and including 'Fiberite' Type FR90 Class A15 composite manhole frame & cover (SANS 50124), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, CI Step irons, etc.	No	2			
		Carried to Collection				R	
		Bill No. 18 External Work					

237		Excavate for and build Stormwater Grid Inlet size 440 x 440mm x not exceeding 1m deep internally to invert level formed of hard burnt half brick sides in 1:3 cement mortar on and including 100mm thick reinforced (Ref 311 Mesh) concrete (25MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 125mm thick reinforced concrete (30MPa) cover slab on top, rebated for and fitted with and including 150 x 150mm cast iron square dished grating in accordance with 'Saint Gobain' Product No. 2992 (SANS 1115), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc.	No	48			
238		Excavate for and build Stormwater Grid Inlet size 600 x 600mm x not exceeding 1m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 311 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 200mm thick reinforced concrete (30MPa) cover slab on top, rebated for and fitted with and including 380 x 380mm cast iron square dished grating in accordance with 'Saint Gobain' Product No. 2980 (SANS 1115), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc.	No	10			
		Carried to Collection			R		
		Bill No. 18 External Work					

239		Excavate for and build Stormwater Grid Inlet size 600 x 1,100mm x exceeding 1m not exceeding 2m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 311 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 200mm thick reinforced concrete (30MPa) cover slab on top, rebated for and fitted with and including 380 x 380mm cast iron square dished grating in accordance with 'Saint Gobain' Product No. 2980 (SANS 1115), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc	No	10			
240		Excavate for and build Stormwater Grid Inlet size 600 x 1,100mm x exceeding 1m not exceeding 2m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 311 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 200mm thick reinforced concrete (30MPa) cover slab on top, rebated for and fitted with and including 450 x 450mm cast iron square dished grating in accordance with 'Saint Gobain' (SANS 1115), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc	No	32			
		Carried to Collection			R		
		Bill No. 18 External Work					

241		Excavate for and build Stormwater Grid Inlet size 600 x 1,100mm x exceeding 2m not exceeding 3m deep internally to invert level formed of hard burnt one brick sides in 1:3 cement mortar on and including 150mm thick reinforced (Ref 311 Mesh) concrete (30MPa) bottom projecting 150mm beyond sides on 50mm thick blinding and mass concrete (15MPa) benching, rendered internally in 1:3 cement plaster with 200mm thick reinforced concrete (30MPa) cover slab on top, rebated for and fitted with and including 380 x 380mm cast iron square dished grating in accordance with 'Saint Gobain' Product No. 2980 (SANS 1115), bedded in 1:3 cement mortar and sealed in grease including all necessary vitrified clay channels and fittings, excavations, formwork, holes through sides for pipes, etc	No	4		
		Headwalls:				
242		Construct headwall structure for 375mm Diameter Concrete pipes as per Engineers detail attached (0002A).	No	2		
243		Construct headwall structure for 450mm Diameter Concrete pipes as per Engineers detail attached (0002A).	No	2		
		Gabions and Reno Matresses:				
244		Form Gabion Dam using No. 3 x size 3,000 x 1,000 x 300mm deep mattresses, No. 1 x 3,000 x 1,000 x 500mm deep mattress and No. 2 x size 4,000 x 1,000 x 500mm deep mattresses using 50mm galvanized diamond mesh stitched closed and lined with u14 Bidum and filled with 100mm stones including necessary excavating, carting away etc.	No	7		
		Sundries:				
245		Extra-over 300mm Concrete pipes for cutting ends of pipe on site.	No	7		
		Carried to Collection			R	
		Bill No. 18 External Work				

246		Extra-over 375mm Concrete pipes for cutting ends of pipe on site.	No	3		
247		Extra-over 450mm Concrete pipes for cutting ends of pipe on site.	No	3		
		ROADWORKS, WALKWAYS AND PAVING				
	LI	**Excavations in earth:**				
248		Remove topsoil and vegetation to a depth of 100mm and deposit on site in spoilheaps where directed by the Engineer.	m2	211		
	LI	**Open face excavation not exceeding 2m deep:**				
249		Over site to reduce levels and depositing excavated material in prescribed stock piles on site.	m3	858		
	LI	**Excavation in earth not exceeding 2m deep:**				
250		Edge Beams.	m3	19		
		Extra over bulk excavation in earth for excavation in:				
251		Soft rock.	m3	101		
252		Hard rock.	m3	50		
	LI	**Extra over all excavations for carting away:**				
253		Surplus material from stock piles on site to a dumping site to be located by the contractor.	m3	877		
		Keeping excavations free of water:				
254		Keeping excavations free of water.		Item		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Earth filling supplied by the contractor under pavings etc:**				
255		Over site of SUBBASE (G5) material compacted to 98% Mod A.A.S.H.T.O. density.	m3	381		
256		Over site of SELECTED (G6) material compacted to 95% Mod A.A.S.H.T.O. density.	m3	238		
257		Over site of SELECTED (G7) material compacted to 93% Mod A.A.S.H.T.O. density.	m3	229		
	LI	**Compaction of surfaces.**				
258		Compaction of ground surface under roads etc including scarifying for a depth of 150mm, breaking down oversize material, adding suitable material from excavated material where necessary and compacting to 93% Mod AASHTO density.	m2	3,243		
		Prescribed density tests on filling:				
259		Allow for compaction tests by an approved laboratory to determine density of filling material.	No	36		
		Approved brand of anti-termite soil poison applied by a Registered Pest Control Company and guaranteed against termite infestation for ten years:				
260		Treat filling under concrete beds.	m2	3,132		
		Precast concrete finished smooth on exposed surfaces including bedding, jointing and pointing:				
261		Kerb (SABS 1200 MK) Fig 3, size 150 x 300mm high with 300 x 300 x 300mm unreinforced concrete haunching at back of each joint including excavation, backfilling, etc.	m	438		
		Carried to Collection			R	
		Bill No. 18 External Work				

262		Ditto, but circular on plan not exceeding 4m radius formed with short lengths of straight kerb including excavation, backfilling, etc.	m	66		
263		Kerb (SABS 1200 MK) Fig 14, size 300 x 125mm high extreme laid on levelling screed against Fig 3 kerb including excavation, backfilling, etc.	m	264		
264		Ditto, but circular on plan not exceeding 4m radius formed with short lengths of straight kerb including excavation, backfilling, etc.	m	24		
		Precast concrete finished smooth on exposed surfaces including bedding on brickwork, jointing and pointing on all exposed surfaces:				
265		Pier cappings, size 380 x 380 x 100mm thick overall, weathered on top to 50mm thick along 4 edges, with drip groove in bottom along 4 edges including opening in centre for 80 x 80mm SHS.	No	107		
	LI	**25MPa/20mm concrete:**				
266		Slab edge beam.	m3	19		
267		Paving surface beds cast in panels.	m3	146		
	LI	**Finishing top surfaces of concrete smooth with a wood float:**				
268		Paving, etc to slight falls.	m2	734		
		Finishing top surfaces of concrete to an evenly ribbed non-slip surface:				
269		Paving, etc to slight falls.	m2	507		
		Grooves, channels, mortices, sinkings, nosings etc. in concrete:				
270		6mm Radius nosings to edge of slab.	m	382		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Rough Formwork to Sides:				
271		Edges, risers, ends and reveals not exceeding 300mm high or wide.	m	571		
		Expansion joints with 'Jointex' light weight, cross linked, closed cell, expanded Polyethylene joint former with a hinged temporary blocking piece between vertical concrete or brick surfaces:				
272		10mm Joints not exceeding 300mm high.	m	347		
		'Sikaflex-Pro 2HP' sealing compound:				
273		10 x 10mm In vertical expansion joints between concrete and brick surfaces.	m	347		
		Vertical construction joints through concrete including thick cement slurry bond breaker to one face and finishing of concrete corners with nosing tool to 6mm radius:				
274		Surface beds not exceeding 300mm thick.	m	277		
	LI	**Fabric reinforcement:**				
275		REF. 245 fabric reinforcement in concrete surface beds, slabs, etc.	m2	507		
		Mild steel dowel bars:				
276		25mm Diameter dowel bar 600mm long cast 300mm deep into concrete at expansion joint with other end greased and wrapped in two layers DPM as bond breaker, including hole through formwork (NB: Dowels to be perpendicular to joint surface).	No	253		
	LI	**Mild steel reinforcement to structural concrete work:**				
277		Bars of varying diameters.	kg	535		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**High tensile steel reinforcement to structural concrete work:**				
278		Bars of varying diameters.	kg	2,676		
	LI	**Brickwork of NFP bricks (14 MPa nominal compressive strength) in Class II mortar:**				
279		Mass brickwork in piers.	m3	8		
	LI	**Brickwork reinforcement:**				
280		75mm Wide reinforcement built in horizontally.	m	385		
		Facebricks Heritage Travertine pointed with square ruled recessed horizontal and vertical joints:				
281		Extra over brickwork for face brickwork externally.	m2	109		
		Paving of 60mm thick concrete bevelled pavers (colour: Sunset) on and including 20mm thick sand bed with dry filler sand swept and vibrated into joints all laid on subgrade (elsewhere measured) conforming to SABS 1200D degree of accuracy I:				
282		Paving to parking areas etc to falls.	m2	1,762		
283		Extra over ordinary paving for 200mm wide block- on-flat header course edging on 100mm thick mortar bed.	m	600		
284		Clean sand is to be swept into joints between concrete pavers.	m2	1,762		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Paving of 60mm (30MPa) thick Interlocking Pavers in herringbone pattern (colour as per Architect) on and including 20mm thick sand bed with dry filler sand swept and vibrated into joints all laid on subgrade (elsewhere measured) conforming to SABS 1200 MJ degree of accuracy I:				
285		Paving to parking areas etc to falls.	m2	636		
286		Locking up of pavers with roller and replace damaged blocks.	m2	636		
287		Clean sand is to be swept into joints between concrete pavers.	m2	636		
288		Cutting of edges against kerbing and edge restraints.	m	492		
289		Construct 30MPa concrete edge restraints 300x300mm, including shuttering and excavations.	m	10		
		0.8mm Nominal thickness Colomet corrugated profile roof sheeting (R-value 0.36) in Sandstone Beige colour as per architect to one side and standard grey backing coat to underside, etc., including fixing to steel purlins at approximately 1300mm centres and including all galv. roof screws, washers & washer caps (to match roof colour), etc strictly in accordance with manufacturer's specification. NOTE: Washer caps to match roof colour.				
290		Roof covering with pitch not exceeding 50 degrees.	m2	678		
		0,8mm Nominal thickness ditto, but flashings:				
291		Ridge 460mm girth with minimum 230mm laps, fixed to roof sheeting (measured net).	m	178		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Wrought softwood:				
292		38 x 38mm Cleat 114mm long, brass screwed to roof truss tie.	No	89		
293		38 x 152mm Runner fascia support (Provisional).	m	357		
		PVC:				
294		225mm PVC Fascia board twice drilled (in vertical direction) @ 600mm centres and brass screwed with plastic pvc caps to 38 x 152mm runner (elsewhere measured) and in turn fixed to 38 x 38mm x approx. 114mm long auxiliary vertically 'cleats' (elsewhere measured) including PVC H-profile jointing strips, screws, holes etc at ALL juntions.	m	357		
		Hot dipped galvanised steel columns welded in single lengths with base plates, connection plates andcleats bolted to concrete base and steel beams including holing steel for bolts, etc erected complete.				
295		80 x 80 x 3,5mm SHS columns.	t	2.05		
		Hot dipped galvanised steel rafters/beams welded in single lengths with connection plates bolted to steelcolumns including holing steel for bolts, etc erected complete:				
296		80 x 80 x 3,5mm SHS rafters.	t	2.82		
297		80 x 80 x 3,5mm SHS beams.	t	4.28		
298		Gusset plates, end plates, connection plates, etc	t	1.50		
		Hot dipped galvanised purlins, bracings, etc. bolted in single lengths with connection plates and cleats bolted to steel rafters including holing steel for bolts, etc erected complete:				
299		80 x 40 x 3mm RHS purlins.	t	3.57		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Bolts to columns, rafters, purlins, etc				
300		Grade 4,8 High tensile bolts.	kg	99		
301		150mm long grade 4,8 M12 Chemical Anchors 100mm into concrete.	No	427		
		Clean down with spirits of salts solution and apply two coats silicone-based brick dressing on:				
302		Facings (Externally).	m2	109		
	LI	**Prepare and apply one coat wood primer, one undercoat and two coats superior quality smooth gloss enamel on:**				
303		General surfaces of timbers at eaves.	m2	136		
	LI	**Clean down thoroughly with galvanised iron cleaner, wash down with water, prime with one coat galvanised metal primer and finish with two coats superior universal non drip enamel on:**				
304		Structural galvanised steel including touching up on site.	m2	486		
		RETAINING WALLS				
	LI	**Earth filling obtained from the excavations and / or prescribed stock piles on site compacted to 95% Mod. AASHTO density:**				
305		Backfilling to trenches, holes, etc.	m3	26		
		Earth filling supplied by the contractor under pavings etc.				
306		Over site of SUBBASE (G5) material compacted to 95% Mod A.A.S.H.T.O. density.	m3	150		
307		Over site of SELECTED (G6) material compacted to 95% Mod A.A.S.H.T.O. density.	m3	272		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Precast concrete , etc**				
308		'Terra- force M10' precast retaining block wall or equal approved, set back 61mm Per Course (measured on flat) in accordance with manufacturers instructions including all neccessary filling of modules etc. excavations elsewhere).	m2	177		
	LI	**Soilcrete (1:5 Cement/G5 Natural Gravel) Blinding Layer in:**				
309		Footings to walls	m3	15		
		'Sikaflex-Pro 2HP' sealing compound:				
310		10 x 10mm In vertical expansion joints between concrete and brick surfaces.	m	24		
		'RockGrid PC100x100':				
311		Protruding 2,5m into compacted backfill.	m	104		
		Drainage:				
312		19mm crushed stone in drain soakaway.	m3	7		
313		'Kaytech Flownet 500' or equal approved HDPE 4mm thick drainage core laid vertically against wall with tightly butted joints and entirely covered with Kaytech bidim A4 grade nonwoven continuous filament needle-punched polyester geotextile and linked to perforated 110mm Geopipe with HPDE or uPVC couplings.	m2	139		
314		'Bidum A4' or similar approved geotextile fabric wrapped around stone in subsoil drain.	m2	120		
315		110mm Diameter Hdpe perforated piping laid in drain soakaway.	m	80		
		Carried to Collection			R	
		Bill No. 18 External Work				

316		One layer of 375 micron embossed dampcourse waterproof sheeting below drain soakaway.	m2	16		
		SEWERAGE TREATMENT WORKS STRUCTURES				
	LI	**Excavation in earth not exceeding 2m deep:**				
317		Trenches.	m3	2		
318		Reduced levels under floors.	m3	128		
		Sundries				
319		Extra over sides of excavations for working space exceeding 500mm deep and not 1.5m deep for erection and removal of formwork to upstand beams and strip footings, the face of the excavation (as measured) being 500mm from the face of the structure.	m2	76		
		Extra over trench and hole excavations in earth for excavation in:				
320		Soft rock.	m3	26		
321		Hard rock.	m3	13		
	LI	**Extra over all excavations for carting away:**				
322		Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor.	m3	122		
		Risk of collapse of excavations:				
323		Sides of trench and hole excavations not exceeding 1,5m deep.	m2	95		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Earth filling obtained from the excavations and/or prescribed stock piles on site compacted to 95% Mod AASHTO density:**				
324		Backfilling to trenches, holes, etc.	m3	8		
	LI	**Earth filling supplied by the contractor compacted to 95% Mod AASHTO density:**				
325		Under floors, steps, pavings, etc.	m3	21		
	LI	**Compaction of surfaces:**				
326		Compaction of ground surface under floors 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	137		
		Keeping excavations free of water:				
327		Keeping excavations free of water.		Item		
	LI	**15MPa/13mm concrete:**				
328		Blinding.	m3	7		
	LI	**30MPa/20mm reinforced concrete:**				
329		Strip footings.	m3	2		
330		Bases.	m3	4		
331		Surface beds cast in panels on blinding.	m3	25		
332		Upstand beams/walls.	m3	14		
333		Slabs, including beams and inverted beams.	m3	0.1		
	LI	**Finishing top surfaces of concrete smooth with a wood float:**				
334		Surface beds to falls.	m2	130		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Rough Formwork to Sides and Soffits:				
335		Slabs propped up not exceeding 3,5m high.	m2	1		
		Smooth Formwork (degree of accuracy I) to Sides:				
336		Upstand Beam/Wall.	m2	141		
337		Edges, risers, ends and reveals not exceeding 300mm high or wide.	m	97		
		Extra on permanent formwork for boxing or blocking in or boxing out to form:				
338		40mm Diameter opening through 85mm thick slab.	No	3		
339		50mm Diameter opening through 200mm thick wall.	No	6		
	LI	**Mild steel reinforcement to structural concrete work:**				
340		10mm Diameter bars.	kg	28		
	LI	**High tensile steel reinforcement to structural concrete work:**				
341		12mm Diameter bars.	kg	3,263		
342		10mm Diameter bars.	kg	950		
		Sluice gates & screens:				
343		20 x 20 x 3mm Aluminium U-profile 450mm long cast into concrete.	No	6		
344		450 x 425 x 12mm galvanised steel plate as sluice gate with R10 lifting handle (350mm girth twice bent and welded to plate), including 6mm chain welded on and secured to concrete 1m long.	No	2		
		Carried to Collection			R	
		Bill No. 18 External Work				

345		800 x 600mm (60 degree incline) bar screen made up of 10mm x 50mm GMS @ 25mm centres, ie. 15mm gaps.	No	1		
	LI	**3:1 Cement plaster screeds steel trowelled on concrete:**				
346		Average 80mm thick on floors to falls and currents.	m2	15		
		Drainage:				
347		Imported crusher dust or courses river sand.	m3	0.5		
348		19mm crushed stone in drain soakaway.	m3	0.4		
349		'Bidum A4' or similar approved geotextile fabric wrapped around stone in subsoil drain.	m2	11		
350		110mm Diameter Hdpe perforated piping laid in drain soakaway.	m	18		
		HIGH LEVEL SECURITY FENCING (CLASS A)				
		PLEASE NOTE: The bulk of this Fencing material is available for collection at CDC storage in Port Elizabeth approximately 375km from site. The Contractor would then only allow labour and concrete materials for those items indicated below as well as transport to site.				
	LI	**Clearing of site:**				
351		Allow for clearing site for the width of 1,000 mm where fencing runs are to be erected including removing trees, shrubs etc. not exceeding 200mm girth, grubbing up roots and roughly levelling.	m	1,182		
	LI	**Excavation in earth not exceeding 2m deep:**				
352		Trenches.	m3	142		
		Carried to Collection			R	
		Bill No. 18 External Work				

353		Bases.	m3	34		
		Extra over trench and hole excavations in earth for excavation in:				
354		Soft rock.	m3	35		
355		Hard rock.	m3	18		
	LI	**Extra over all excavations for carting away:**				
356		Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor.	m3	34		
		Risk of collapse of excavations:				
357		Sides of trench and hole excavations not exceeding 1,5m deep.	m2	1,755		
	LI	**Earth filling obtained from the excavations and / or prescribed stock piles on site compacted to 95% Mod. AASHTO density:**				
358		Backfilling to trenches, holes, etc.	m3	142		
		Keeping excavations free of water:				
359		Keeping excavations free from mud and all water including subterranean sources.		Item		
	LI	**20MPa/20mm concrete:**				
360		Bases.	m3	34		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Mesh Galvanised then Fusion Bond powder coated Posts (Posts supplied by Client):**				
361		Taper locking post 85mm wide tapering to 45mm with a depth of 85mm, 3,000mm long incl. Locking Recess Mechanism to secure panel, posts sealed with a UV stabilized polymer cap. Posts spaced at 3,390mm intervals embedded in concrete bases (measured elsewhere) - LABOUR & TRANSPORT ONLY.	No	350		
	LI	**Mesh Galvanised then Fusion Bond powder coated Fencing (Fencing supplied by Client):**				
362		Fencing Panels 3,305 x 2,400mm high formed of 3.5mm coated wire, wire aperture size (centers) @ 76.2mm x 12.7mm. Panel reinforced with 4 x 50mm deep 'V' formation horizontal recessed bands, (rigidity). 2 x 75mm 70deg flanges along sides (internal fixtures - anti vandal). Allow for flush post and panel finish, 48 line wire secure connection, Locking recess mechanism and 1 x 90deg flange along top and 1 x 30deg flange toe (arrow-straight edges, intergrated angle). Include mechanically galvanised single bolt comb clamps, double bolt comb clamps and tech-bolts. Panels fixed to Taper Locking Post (measured elsewhere) LABOUR AND TRANSPORT ONLY.	No	358		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Gates:				
363		Single leaf Security fence swing gate, size 1,200 x 2,400mm high including spikes, formed of 3mm dia Galvanised wire with aperture size (centers) 76.2mm x 12.7mm. Mesh Galvanised, then Marine Fusion Bond coated (acid modified). All connections and joints shall be welded to form rigid frames or assembled with corner fittings. Hinges shall not twist or turn under the action of the gate and shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry. Include union padlock No 3122.	No	2		
364		Double leaf Security fence swing gate, size 4,000 x 2,400mm high including spikes, formed of 3mm dia Galvanised wire with aperture size (centers) 76.2mm x 12.7mm. Mesh Galvanised, then Marine Fusion Bond coated (acid modified). All connections and joints shall be welded to form rigid frames or assembled with corner fittings. Hinges shall not twist or turn under the action of the gate and shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry. Include union padlock No 3122.	No	6		
		Sundries:				
365		100mm high toughened steel Shark tooth Spike 1,650mm long, Galvanised, then Marine Fusion Bond coated (acid modified), fixed to panel edge, internally at 150mm intervals using Anti-vandal bolts (LABOUR AND TRANSPORT ONLY).	No	717		
366		600mm Anti-Burrow mesh extension secured to the lower edge integrated angle (LABOUR AND TRANSPORT ONLY).	m	1,039		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Alterations:				
367		Take out and remove old existing stock fencing not exceeding 2m high, including concrete bases, including handing over all removed material to school if required.	m	1,089		
		MEDIUM LEVEL SECURITY FENCING (CLASS B)				
		PLEASE NOTE: All fencing material to be supplied by Contractor on items falling under Medium Level Security Fencing:				
	LI	**Clearing of site:**				
368		Allow for clearing site for the width of 1,000 mm where fencing runs are to be erected including removing trees, shrubs etc. not exceeding 200mm girth, grubbing up roots and roughly levelling.	m	555		
	LI	**Excavation in earth not exceeding 2m deep:**				
369		Bases.	m3	16		
		Extra over trench and hole excavations in earth for excavation in:				
370		Soft rock.	m3	3		
371		Hard rock.	m3	2		
	LI	**Extra over all excavations for carting away:**				
372		Surplus material from excavations and/or stock piles on site to a dumping site to be located by the contractor.	m3	16		
		Risk of collapse of excavations:				
373		Sides of trench and hole excavations not exceeding 1,5m deep.	m2	158		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Keeping excavations free of water:				
374		Keeping excavations free from mud and all water including subterranean sources.		Item		
	LI	**20MPa/20mm concrete:**				
375		Bases.	m3	16		
	LI	**Mesh Galvanised then Fusion Bond powder coated Posts (Posts supplied by Client):**				
376		Taper locking post 85mm wide tapering to 45mm with a depth of 85mm, 2,400mm long incl. Locking Recess Mechanism to secure panel, posts sealed with a UV stabilized polymer cap. Posts spaced at 3,390mm intervals embedded in concrete bases (measured elsewhere).	No	165		
	LI	**Mesh Galvanised then Fusion Bond powder coated Fencing (Fencing supplied by Client):**				
377		Fencing Panels 3,305 x 1,800mm high formed of 3.5mm coated wire, wire aperture size (centers) @ 76.2mm x 12.7mm. Panel reinforced with 4 x 50mm deep 'V' formation horizontal recessed bands, (rigidity). 2 x 75mm 70deg flanges along sides (internal fixtures - anti vandal). Allow for flush post and panel finish, 48 line wire secure connection, Locking recess mechanism and 1 x 90deg flange along top and 1 x 30deg flange toe (arrow-straight edges, intergrated angle). Include mechanically galvanised single bolt comb clamps, double bolt comb clamps and tech-bolts. Panels fixed to Taper Locking Post (measured elsewhere).	No	168		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Gates (to be supplied by Contractor):				
378		Single leaf Security fence swing gate, size 1,200 x 1,800mm high including spikes, formed of 3mm dia Galvanised wire with aperture size (centers) 76.2mm x 12.7mm. Mesh Galvanised, then Marine Fusion Bond coated (acid modified). All connections and joints shall be welded to form rigid frames or assembled with corner fittings. Hinges shall not twist or turn under the action of the gate and shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry. Include union padlock No 3122.	No	2		
379		Double leaf Security fence swing gate, size 4,000 x 1,800mm high including spikes, formed of 3mm dia Galvanised wire with aperture size (centers) 76.2mm x 12.7mm. Mesh Galvanised, then Marine Fusion Bond coated (acid modified). All connections and joints shall be welded to form rigid frames or assembled with corner fittings. Hinges shall not twist or turn under the action of the gate and shall be so arranged that a closed gate cannot be lifted off the hinges to obtain entry. Include union padlock No 3122.	No	2		
		TEMPORARY BARRIERS, SCREENS, ETC				
		Temporary barriers, screens, etc including removal				
	LI	**Clearing of site:**				
380		Allow for clearing site for the width of 1000mm where fencing runs are to be erected including removing trees, shrubs etc. not exceeding 200mm girth, grubbing up roots and roughly levelling.	m	396		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Corner Posts:**				
381		150mm Diameter creosote treated gumpole corner post 2,400mm long holed as necessary for wire or straining eye bolts and embedded 600mm deep in ground in and including 400 x 400 x 600mm deep cement concrete (20 MPa/19 mm stone) base including all excavations in earth, backfilling and ramming etc. secured in position with two 150mm diameter diagonal posts @ 45 degrees concreted into ground and secured to main vertical post with 10 inch nails (top ends junctions splayed 45 degrees).	No	11		
		Droppers:				
382		2,400mm Steel droppers hammered 600mm into ground @ 3,000mm centres.	No	132		
	LI	**Fencing & Hoarding:**				
383		Fencing formed of 100 x 100 x 2.5mm diameter galvanised weldmesh 1,800 m high with vertical wires facing outwards secured with "Howgring" clips or 1.6mm galvanised binding wire at 300 mm centres to top and bottom straining wires and 700 mm centres to intermediate straining wire (straining wires elsewhere measured).	m	396		
384		Three strands of 1,6mm galvanised high tensile horizontal wires secured to steel droppers (elsewhere measured) with 2,4mm galvanised wire.	m	396		
385		1,800mm high Green shade cloth secured to one side of Fence.	m	396		
		Carried to Collection			R	
		Bill No. 18 External Work				

	LI	**Gates:**				
386		Security fence single gate, size 1,000mm wide x 1,600mm high, formed of 50mm diameter nominal bore x 3,25mm wall thickness hot dip galvanised mild steel pipe framing all round with mitred and welded angles and cross braces mullion and transome, scribed and welded into angles and at cross intersections, with two 50mm diameter nominal bore x 3,25mm wall thickness security posts each 600mm long with one end welded to top rail of gate and closure plate to other end, the gate covered with 50 x 50 x 3.15mm weld mesh with four straining wires as before described and with four 2,37mm four point core diameter single "kampeon" wires with crimped droppers to security posts as before described; leaf fitted with three 24mm diameter x 300mm long eyebolt hinges and stops including all holes, etc., welded or bolted to adjoining galvanised gatepost with and including 500mm long approved chain spot welded to gate and union padlock No 3122.	No	1		
		Sundries:				
387		12mm Diameter galvanised mild steel straining eye bolt with hook, threaded portion and two nuts and washers, including hole through post.	No	62		
		Alterations:				
388		Take out and remove old existing stock fencing not exceeding 2m high, including concrete bases, including handing over all removed material to school if required.	m	967		
		LANDSCAPING				
	LI	**Grassing and Topsoiling:**				
		Carried to Collection			R	
		Bill No. 18 External Work				

		NOTE : Planting of grass may only commence once the garden soil filling has be approved by the Representative/Agent, after which no traffic will be allowed over these areas. Fresh grass roots, of the variety described, free of disease, shall be planted at not exceeding 150 mm centres, in rows which shall not exceed 150 mm apart, without leaving furrows and with the minimum disturbance of surrounding soil. Immediately an area is completed it must be well watered and for 3 months thereafter, watered, weeded and cut to ensure a quick and even development. Initial top dressing with approved, sifted garden soil after planting of grass must be supplemented as necessary to achieve a level finished surface. Descriptions for turfing are deemed to include for all surface preparation, maintenance, top-dressing, etc.				
389		Average 150 mm thick selected garden soil obtained from spoil heaps in areas of planting.	m2	1,000		
390		Fertilize top 150 mm depth of garden soil with an 8,3% 'P-super phosphate' mixture at a rate of 0,075 kg/m² and a 3:2:1 (30) fertilizer at a rate of 0,075 kg/m2, before commencing of planting.	m2	1,000		
		Carried to Collection			R	
		Bill No. 18 External Work				

		Lawn:					
391		Lay Kikuyu roll on lawn on top soil irrigated 12 hours prior to laying, fertilizing with 2.3.4 fertilizer (elsewhere measured). Lay first grass sod in straight line, with subsequent rows placed parrallel and tight against each other. All lateral joints to be staggered. In absence of adequate rainfall, watering shall be performed daily during first week of installation and in sufficient quantities to maintain a moist soil depth of 100mm (sods should not be allowed to dry underneath during this period). Second and subsequent weeks, water sods to a depth of 100mm and avoid continuous water saturation. Mow lawn leaf 2 -3 weeks after installation when grass blade leaves have reached a length of 60- 75mm. Mow lawn to height of 50mm for first four mowings. All by specialist subcontractor.	m2	1,000			
		Benches (See Schedule attached - Alternative Timber - 100% recycled plastic):					
392		1.8m king bench (3 seater) (Type B003).	No	10			
393		1.6m sleeper bench without back (Type B007).	No	10			
394		Picnic set (6 seater) (Type B014).	No	10			
395		Hex tree bench (Type B022).	No	6			
	LI	**Trees & Plants (See Schedule attached):**					
		The tenderer is to allow in his price for watering all newly planted trees twice a week for the first three months.					
396		Podocarpus (yellowwood tree) 3 to 4m in size.	No	2			
397		Celtis africana (white stinkwood).	No	2			
		Carried to Collection			R		
		Bill No. 18 External Work					

398		Olea europa (wild olive).	No	4		
399		Acacia Xanthophloea (fever tree).	No	4		
400		Philodendron xanadu.	No	8		
401		Agapanthus.	No	8		
402		Carissa Haematocarpa.	No	20		
403		Shefflera Arboricola.	No	5		
404		Buxus Faulkner (for small hedge around bed).	No	20		
405		Dieties (yellow).	No	5		
406		Agave Germiniflora.	No	5		
407		Clivia - orange.	No	5		
		SLEEVES (PROVISIONAL)				
		"Cable Flex" Black electrical pipes for electrical installation:				
408		160mm Pipe laid in and including trenches not exceeding 1m deep, including one strand of galvanised 8-gauge draw wire in each pipe, including all excavations in earth, bedding cradle and blanket fill of selected granular material, main fill compacting in layers not exceeding 150mm thick and carting off surplus displaced material.	m	24		
		Extra on UPVC piping for:				
409		160mm Diameter long radius bend.	No	4		
		Carried to Collection			R	
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Bill No. 18
External Work

Item No		Quantity	Rate	Amount
	BUDGETARY ALLOWANCES			
	SPECIALIZED MECHANICAL INSTALLATION OF SEWERAGE TREATMENT PACKAGE PLANT TOGETHER WITH COMPLETE FIRE AND WATER PUMP INSTALLATIONS			
1	Allow the sum of R7,550,000.00 (Seven Million Five Hundred and Fifty Thousand Rand) for the Supply and installation of the Sewerage Package Plant including the complete Water and Fire pump System with water purification and disinfection complete including the commissioning of all these systems.	Item		7,550,000 00
2	Profit on above item.	Item		
3	Attendance on ditto.	Item		
	PROVIDE EXPERIENTIAL WORK OPPORTUNITIES AND TRAINING			
4	Allow the sum of R1,176,000.00 (One Million One Hundred and Seventy Six Thousand Rand) for the placement of 1 (One) Graduate and 2 (Two) Students to be employed by the Main Contractor for in-service training for duration of Contract.	Item		1,176,000 00
5	Allow for all associated costs for the employment, payment and on -site training of two students and one graduate by the main contractor.	Item		
	COMMUNITY LIASON OFFICER			
6	Allow the sum of R294,000.00 (Two Hundred and Ninety Four Thousand Rand) for the placement of a Community Liaison Officer to be employed by the Main Contractor for duration of Contract.	Item		294,000 00
7	Allow for all associated costs for the employment and payment of a community liason officer by the main contractor.	Item		
	Carried to Collection		R	

Bill No. 19
Budgetary Allowances

	FURNITURE			
8	Allow the sum of R640,000.00 (Six Hundred and Fourty Thousand Rand) for the loose furniture and equipment to be supplied and placed by term contractors procured by the Department of Education.	Item		640,000.00
	Carried to Collection		R	

Bill No. 19
Budgetary Allowances