PART C2: BILL OF QUANTITIES

C2.1 Bill of Quantities

Item No	Payment Clause	Description	UNIT	QTY	RATE	Amount Rc (Vat Excl.)
A	SABS 1200A	**PRELIMINARY AND GENERAL**				
A.1	8.3	**FIXED-CHARGE ITEMS**				
A.1.1	8.3.1	Contractual requirements	Sum	1		
A.1.2	8.3.2	Establish facilities on the site				
A.1.2.1	8.3.2.1	Facilities for Engineer				
A.1.2.1.1		One contract nameboard	Sum	1		
A.1.2.2	8.3.2.2	Facilities for contractor				
A.1.2.2.1		Offices and storage sheds	Sum	1		
A.1.2.2.2		Workshops	Sum	1		
A.1.2.2.3		Laboratories	Sum	1		
A.1.2.2.4		Living accommodation	Sum	1		
A.1.2.2.5		Ablution and latrine facilities	Sum	1		
A.1.2.2.6		Tools and equipment	Sum	1		
A.1.2.2.7		Water supplies, electric power and communications	Sum	1		
A.1.2.2.8	8.3.3	Other fixed-charge obligations (Specify)	Sum	1		
A.1.2.3	8.3.4	Remove Contractor's site establishment on completion of contract	Sum	1		
A.2	8.4	**TIME-RELATED ITEMS**				
A.2.1	8.4.1	Contractual requirements	Sum	1		

A.2.2	8.4.2	Operation and maintenance of facilities on site for duration of construction				
A.2.2.1	8.4.2.2	Facilities for Contractor				
A.2.2.1.1		Offices and storage sheds	Sum	1		
A.2.2.1.2		Workshops	Sum	1		
A.2.2.1.3		Laboratories	Sum	1		
A.2.2.1.4		Living accommodation	Sum	1		
A.2.2.1.5		Ablution and latrine facilities	Sum	1		
A.2.2.1.6		Tools and equipment	Sum	1		
A.2.2.1.7		Water supplies, electric power and communications	Sum	1		
A.2.2.3	8.4.3	Supervision for duration of construction	Sum	1		
A.4		**OCCUPATIONAL HEALTH AND SAFETY MEASURES**				
A.4.1		Compilation and maintenance of a Health and Safety Plan, including Risk Assessments, Safe Work Procedures and Method Statements.	Sum	1		
A.4.2		Compilation and maintenance of the Health and Safety File.	Sum	1		
A.4.3		General safety obligations	Sum	1		
TOTAL CARRIED FORWARD TO SUMMARY						

Item No	Payment Clause	Short Description	Unit	Quantity	Rate	Amount Rc (Vat Excl.)
		SECTION B: 1.0 Mℓ RESERVOIR				
B1	SANS 1200 C	**Site clearance**				
B1.1	8.2.1	Clear and grub site	m²	610		
B2	1200 D	**Excavation**				
B2.1	8.3.2	Excavate in all materials including stockpiling, backfilling, compacting, forming embankment or disposal to waste as ordered in writing by the Engineer to:				
B2.1.1	8.3.2 (a)	Reservoir and structures for stockpiling, backfilling, compacting and forming embankment etc.	m³	79		
B2.1.2	8.3.2(b)	Reservoir and structures for disposal to waste etc.	m³	342		
B2.1.3	8.3.2(b)	Reservoir restricted excavation to 600mm outside outer face wall and to underside of blinding layer and dispose to waste.	m³	79		
B2.1.4	8.3.2(c)	Extra-over Items B2.1.1 to B2.1.3 for excavation in rock	m³	26		
B2.1.5	8.3.3(a)	Restricted for wall footings, scour/outlet. (Rate to include provision for working space)	m³	55		
B2.1.6	8.2.1.2	Removal of unsuitable material	m³	50		
B2.1.7	8.2.1.3	Replace unsuitable material with strength concrete Grade 15MPa/20mm where ordered by engineer	m³	50		Rate
	1200 G	**Concrete formwork and reinforcement to reservoirs**				
B3	8.1.1.6	**Formwork**				
B3.1	8.2.1	Rough to:				
B3.1.1	8.2.5	Narrow widths (300mm) to wall footing edge, external, circular, and control chamber footings	m	66		
B3.2	8.2.2	Smooth to:				

B3.2.1		Vertical to internal and external wall, circular	m^2	445
B3.2.2		Vertical to columns	m^2	50
B3.2.3		Horizontal to roof soffit	m^2	314
B3.2.4	8.2.5	Narrow widths (150mm) vertical to upstand for roof cover and frame	m	25
B3.2.5	8.2.5	Narrow widths (175mm) vertical to roof slab edge, circular	m	63
B3.2.6	8.2.2	Sloping to top of columns	m^2	2
B3.3	8.2.6	Form openings:		
B3.3.1		1000 x 1000mm for access manhole in roof	No	2
B4	8.1.2	**Reinforcement**		
B4.1		Mild steel bars of all diameters	t	1.5
B4.2		High-tensile steel bars of all diameters	t	32
B4.3		High-tensile steel welded mesh (Ref 617)	m^2	50
B5	8.1.3	**Concrete**		
B5.1	8.4.2	No fines blinding layer 100 mm thick Grade 15 MPa/20 mm	m^2	350
B5.2	8.4.3	Strength concrete Grade 10 MPa/20 mm to mass concrete where ordered in writing by the Engineer	m^3	5
B5.3	8.4.3	Strength concrete Grade 35 MPa/20 mm:		
B5.3.1		Floor, including forming scour channel	m^3	43
B5.3.2		Wall and wall footings	m^3	86
B5.3.3		Columns	m^3	4
B5.3.4		Roof	m^3	63
B5.3.5		Scour/outlet encasement under reservoir	m^3	9
B5.4	8.4.4	Unformed Surface finishes:		
B5.4.1		Wood float finish to blinding layer under floor	m^2	350
B5.4.2		Power float finish to reservoir roof and	m^2	630

		floors					
B5.4.3		Wood float finish to outside wall footing	m²	34			
B5.4.4		Steel float finish to top of wall	m²	157			
B5.5	8.2.3	Joints:					
B5.5.1	8.2.3.1	Bond breaker, 250 micron DPC, on top of blinding layer	m²	350			
B5.5.2	8.2.3.2	Floor construction joint between successive floor casts as detailed on drawing HT22.2223/W/JHF 006:					
B5.5.3		Joint Type WJ to walls as detailed complete	m	126			
B5.5.4		Floor/footing Type ECJ joint complete	m	175			
B5.5.5		Floor Type CJ joint complete	m	55			
B5.5.6		DPC Type H joint between wall and roof	m	63			
B5.6	8.2.5	Underfloor drainage:					
B5.6.1		Drainage trenches with 100 mm pipe complete with crossings, joints and chambers	m	80			
B5.6.2		Peripheral drainage trench with 150 mm slotted PVC-U drainage pipes complete with connecting chambers and building into control chamber. See Drg HT22.2223/W/JHF 006:	m	70			
B6	8.2.6	**Iron and steelwork**					
B6.1		Supply and erect/install complete with all fastenings:					
B6.1.1		External ladder stainless steel as detailed on Drg HT22.2223/W/JHF 006	No	1			
B6.1.2		Internal ladder stainless steel as detailed on Drg HT22.2223/W/JHF 006	No	2			
B6.2		Supply and cast into position stainless steel air vents, as detailed on Drg HT22.2223/W/JHF 006:	No	4			

B6.3		600 x 900 mm cover and frame Type 9D including locking bar as detailed on HT22.2223/W/JHF 006	No	2		
B7		**Miscellaneous**				
B7.1	8.2.8.1	Cleaning and sterilise reservoir and pipework	Sum	-	-	
B7.2	8.2.8.2	Test reservoir for watertightness	Sum	-	-	
B7.3	8.2.2.2	Supply and lay precast concrete copings to perimeter of reservoir roof as detailed on Drg HT22.2223/W/JHF 006	m	63		
B7.4		75mm thick 19 mm concrete stone to roof of reservoir	m^3	24		
B7.5		Supply and build in 40 mm dia PVC-U sleeve into reservoir wall for instrumentation cable	No	1		
B8	SANS 1200 G	**Control chamber to new reservoir**				
B8.1		Excavate in all materials including stockpiling, backfilling, compacting, forming embankment or disposal to waste as ordered in writing by the Engineer, to:				
B8.1.1	8.3.3(a)	Restricted for control chamber (rate to include working space)	m^3	35		
B8.1.2	8.3.2 (c)	Extra-over Item B8.1.1 for excavation of rock	m^3	2		
		Concrete formwork and reinforcement				
B8.2	8.1.1.6	**Formwork**				
B8.2.1	8.2.1	Rough to:				
B8.2.1.1	8.2.5	Narrow width up to 300 mm to floor, external	m	15		
B8.2.2	8.2.2	Smooth to:				
B8.2.2.1		Vertical to walls internal & external	m^2	50		
B8.2.2.2		Horizontal to roof soffit	m^2	9		

B8.2.2.3	SANS 1200 G 8.2.5	Narrow widths (150 mm) vertical to upstand for roof cover and frame	m	3			
B8.2.2.4	8.2.5	Narrow widths (150 mm) vertical to roof slab edge, circular	m	12			
B8.3	8.1.2	**Reinforcement**					
B8.3.1		Mild steel bars of all diameter	t	0.5			
B8.3.2		High-tensile steel bars of all diameter	t	1.3			
B8.3.3		High-tensile steel welded mesh (Ref 617)	m^2	20			
B8.4	8.1.3	**Concrete**					
B8.4.1	8.4.2	No fines blinding layer 75 mm thick Grade 15 MPa/20 mm	m^2	9			
B8.4.2	8.4.3	Strength concrete Grade 35 MPa/20 mm to mass concrete where ordered in writing by the Engineer (Provisional)	m^3	0.5			
B8.4.3	8.4.3	Strength concrete Grade 35 MPa/20 mm:					
B8.4.3.1		Floor	m^3	3			
B8.4.3.2		Wall	m^3	6			
B8.4.3.3		Roof	m^3	2			
B8.4.4	8.4.4	Unformed surface finishes:					
B8.4.4.1		Wood float finish to blinding layer under floor	m^2	9			
B8.4.4.2		Steel float finish to top of wall	m^2	7			
B8.4.5		Joints:					
B8.4.5.1	8.2.3.1	Bond breaker, 250 micron DPC, on top of blinding layer	m^2	9			
B8.5	SANS 1200G 8.2.6	150 x 150 mm voids formed in wall	No	4			

B8.6		Supply and build in 150 x 150 mm air bricks	No	8			
B9	8.2.4.1	**Supply Inlet/outlet pipework, specials, etc. and cast in concrete**					
B9.1		Supply, cast in concrete and test PVC-U specials and pipes					
		DN 160 bends (Class 9)					
B9.1.1		45°	No	1			
B9.1.2		90°	No	1			
		DN 200 bends (Class 9)					
B9.1.3		45°	No	1			
B9.1.4		90°	No	2			
B9.1.5		DN 160 x 90° elbow (Class 9)	No	1			
B9.2	8.2.4.1	PVC-U Class 9 pipes in short lengths under floor and walls					
B9.2.1		160 mm dia ± 2,0 m long	No	2			
B9.2.2		200 mm dia ± 2,0 m long	No	2			
B9.2.3		250 mm dia ± 2,0 m long	No	1			
B9.3	8.2.4.1	PVC-U Class 9 pipes in short lengths between reservoir and control room:					
B9.3.1		160 mm dia ± 2,5 m long	No	2			
B9.3.2		200 mm dia ± 2,5 m long	No	2			
B9.3.3		200 mm dia ± 2,2 m long	No	1			
B9.3.4		250 mm dia ± 2,5 m long	No	1			
B9.4	8.2.4.1	**Supply and build into 250 mm wall/encase in concrete 304L S.S. Puddle pipes flanged both ends**					
B9.4.1		DN 150 Puddle pipe, flanged one end only, approx. 450mm long, puddle 125mm from plain end	No	1			
B9.4.2		DN 200 Puddle pipe, flanged one end only, approx. 450mm long, puddle 125mm from plain end	No	1			
B9.4.3		DN 150 Puddle pipe, flanged both ends, approx. 650mm long, puddle 300mm from end	No	1			

B9.4.4		DN 200 Puddle pipe, flanged both ends, approx. 650mm long, puddle 300mm from end	No	1			
B9.5	8.2.4.1	**Supply and build into 250 mm wall/encase in concrete PVC-U repair couplings**					
B9.5.1		250 mm dia PVC-U double lyng socket	No	1			
B9.5.2		200 mm dia PVC-U double lyng socket	No	3			
B9.5.3		160 mm dia PVC-U double lyng socket	No	4			
B9.6	8.2.4.2	**Pipes, valves etc. not cast in concrete**					
B9.6.1		160 mm dia PVC-U Class 9 ± 3,5 m long	No	1			
B9.6.2		200 mm dia PVC-U Class 9 ± 3,5 m long	No	1			
B9.6.3		250 mm dia PVC-U Class 9 ± 1,0 m long	No	1			
B9.7	8.2.4.2	Supply, install and test the following in control chamber:					
B9.7.1		C.I. short collar repair coupling :					
B9.7.1.1		DN150	No	1			
B9.7.1.2		DN200	No	1			
B9.7.2		304L S.S 90° bend :					
B9.7.2.1		150 mm dia (flanged both ends)	No	1			
B9.8	8.2.4.2	PVC-U pipes: C.I. Flanged adaptor Class 12:					
B9.8.1		150 mm dia	No	4			
B9.8.2		200 mm dia	No	3			
B9.9	8.2.4.2	304L S.S pipes:					
B9.9.1		DN100 Universal flange adaptor	No	1			
B9.9.2		DN200 Universal flange adaptor	No	1			
B9.10	8.2.4.2	C.I. R.S.V gate valve left-hand closing Class 12:					
B9.10.1		150 mm dia flanged	No	2			

B9.10.2		200 mm dia	No	1			
B9.10.3		150 mm dia hydraulically operated control valve complete with remote float control and connection pipe work	No	1			
B9.11	8.2.4.2	Flanged water meter					
B9.11.1		100 mm dia watermeter	No	1			
B9.11.2		150 mm dia watermeter	No	1			
B9.12	8.2.4.2	**Supply and install 304L S.S. pipes**					
B9.12.1		DN 150 pipe flanged both ends, approx. 650mm long	No	1			
B9.12.2		DN 100 pipe flanged one ends, approx. 305mm long	No	1			
B9.12.3		DN 100 pipe flanged both ends, approx. 700mm long	No	1			
B9.12.4		DN 200 x 150 flanged reducer	No	2			
B9.12.5		DN 200 x 100 flanged reducer	No	2			
B9.12.6		DN 200 pipe flanged both ends, approx. 1700mm long	No	1			
B13	8.2.7	**Roof drainage**					
B13.1	8.2.7.1	Roof drainage outlets including gutters and down pipes	No	4			
B13.2	8.2.7.2	Concrete discharge channels to finished ground level.	m	20			
B14	SANS 1200 L 8.2.11	**Anchor/thrust blocks and pedestals:**					
B14.1		Concrete Grade 15 MPa/19 mm	m^3	2			
B14.2		Rough formwork	m^2	5			
B15		**Precast manholes**					
B15.1	8.2.14	Construct precast manholes on pipes to 350 mm dia for depths:					
B15.1.1		1.0 - 1.5	No	2			
B15.1.2		1.5 - 2.0	No	2			

B16	SANS 1200 DB	Stormwater cut-off drain				
B16.1	8.3.2 (e)	Excavate open drains in all materials for; 1m wide x 0.5m deep V-shape insitu stormwater cut-off drain.	m^3	8		
B16.2	8.3.2 (f)	Extra over to Item B16.1 above to excavate open drains in hard rock for; 1m wide x 0.5m deep V-shape insitu stormwater cut-off drain.	m^3	1		
TOTAL CARRIED FORWARD TO SUMMARY						

Item No	Payment Clause	Short Description	Unit	Quantity	Rate	Amount Rc (Vat Excl.)
	SANS 1200 C	**SECTION C: INTERCONNECTING AND RETICULATION PIPEWORK**				
C1	8.2.1 PSC 8.2.1	Clear and grub vegetation and trees including tree stumps up to 1m wide strip in road reserve (Max. tree girth 1m)	m	100		
C2	1200 DB 8.3.2	Excavate in all materials for trenches, backfill, compact and dispose of surplus or unsuitable material for pipes up to 355 mm dia:				
		Over and Up to				
C2.1		0,5 m 1,5 m	m	90		
C2.2		1,5 m 2,5 m	m	10		
C3	8.3.2 (c)	Extra-over Items C2 for:				
C3.1		Excavate, and dispose of on site, unsuitable material from trench bottom	m^3	5		
C3.2	8.3.2	Extra-over Items C2.1 and C2.2 for excavation in rock	m^3	5		
C4		**Excavation ancillaries**				
C4.1	8.3.3.1	Backfill from other necessary excavations	m^3	5		
C4.2		Hand excavation (provisional)	m^3	5		
C5	1200 LB	**Bedding**				
		Provision of bedding available from:				
	8.2.1	Trench excavation:				
C5.1		Selected granular material	m^3	1.5		
C5.2		Selected fill material	m^3	1		
	8.2.2.3	Commercial sources:				
C5.3		Selected granular material	m^3	24		
C5.4		Selected fill material	m^3	15		

C6	1200 DB 8.3.5	**Existing services**				
C6.1		Services that intersect trenches:				
C6.1.1		Cables	No	5		
C6.1.2		Pipes up to 375 mm dia	No	5		
C7	SANS 1200 L 8.2.1	Supply, lay, joint and bed of flexible pipe bedding complete with couplings, test and disinfect pipeline:				
C7.1		110 mm dia PVC-U Class 6 (pipeline)	m	40		Rate
C7.2		110 mm dia PVC-U Class 9 (pipeline)	m	40		Rate
C7.3		160 mm dia PVC-U Class 6 (pipeline)	m	60		Rate
C7.4		160 mm dia PVC-U Class 9 (inlet & pumpline)	m	60		
C7.5		200 mm dia PVC-U Class 6 (overflow & scour pipe)	m	20		
C7.6		200 mm dia PVC-U Class 9 (outlet pipe)	m	20		
C7.7		250 mm dia PVC-U Class 9 (outlet)	m	5		Rate
C8	1200 L 8.2.2	Extra-over Items C7 for supply, lay, joint, bed, specials and fittings, including cutting pipes to length where required to:				
C8.1		DN 110 bends (Class 16)				
C8.1.1		11.25°	No	2		
C8.1.2		22.5°	No	2		
C8.1.3		45°	No	2		
C8.1.4		90°	No	2		
C8.2		DN 160 bends (Class 16)				
C8.2.1		11.25°	No	1		
C8.2.2		22.5°	No	2		
C8.2.3		45°	No	1		
C8.2.4		90°	No	1		
C8.3		DN 200 bends (Class 16)				

C8.3.1		11.25°	No	1			
C8.3.2		22.5°	No	2			
C8.3.3		45°	No	2			
C8.3.4		90°	No	1			
C8.4		DN 110 T-pieces (Class 16) 110mm dia Duroflo Cast Iron Equal T-piece(FBE coated)	No	1			
C8.5		DN 160 T-pieces (Class 16) 160mm dia Duroflo Cast Iron Equal T-piece(FBE coated)	No	3			
C8.6		DN 200 T-pieces (Class 16) 200mm dia Duroflo Cast Iron Equal T-piece(FBE coated)	No	1			
C8.7		DN 160-110 Reducer (Class 16) 160mm to 110mm dia Duroflo Cast Iron Reducer(FBE coated)	No	1			
C8.8		DN 200-160 Reducer (Class 16) 200mm to 160mm dia Duroflo Cast Iron Reducer(FBE coated)	No	1			
C8.9		Adaptors:					
C8.9.1		160 mm dia PVC-U flange adaptor	No	1			
C8.9.2		160 mm dia PVC-U/150 mm dia AC adaptor	No	1			
C8.9.3		200 mm PVC-u flange adaptor	No	1			
C8.10		Valves:					
C8.10.1		DN160 R.S.V left-hand closing Class 12 (AVK or similar approved)	No	3			
C8.10.2		DN200 R.S.V left-hand closing Class 12 (AVK or similar approved)	No	1			
C9	8.2.11	**Anchor/thrust blocks**					
C9.1		Concrete Grade 15 Mpa	m^3	10			
C10	8.2.16	Extra-over Items C7 and C8 for cutting into and connecting to existing pipes	No	4			
C11	8.2.17	Marker posts	No	8			
C12	1200 A	**Miscellaneous**					

C12.1	8.13	Extra-over to supply and connect new flanged (SANS 1123 Table 10) DN100 level control valve (Bermad or similar approved) to reservoir.	No	1		
C12.2	8.13	Extra-over to supply and connect new flanged (SANS 1123 Table 10) DN150 level control valve (Bermad or similar approved) to reservoir.	No	1		
C12.3	8.13	Extra-over to supply and connect new flanged (SANS 1123 Table 10) DN150 level shut-off valve (Equilibrium or similar approved) to reservoir.	No	1		
TOTAL CARRIED FORWARD TO SUMMARY						

SUMMARY

SECTION	DESCRIPTION	AMOUNT (VAT EXCL.)
A	PRELIMINARY AND GENERAL	R
B	1,0 Mℓ RESERVOIR	R
C	INTERCONNECTING PIPEWORK	R
	SUB-TOTAL (Vat Excl.) A	**R**
	CONTINGENCIES (10%)	**R**
	SUB-TOTAL (Vat Excl.) B	**R**
	VAT (15%)	**R**
	TOTAL (Vat Incl.)	**R**

Failure to adhere to the beforementioned will result in your tender being declared non-responsive.

DECLARATION

I, THE UNDERSIGNED (NAME) .....

CERTIFICATE THAT THE INFORMATION FURNISHED ABOVE IS CORRECT. I ACCEPT THAT THE MUNICIPALITY MAY ACT AGAINST ME SHOULD THIS DECLARATION PROVE TO BE FALSE.

AUTHORISED SIGNATURE: .....

NAME: .....

CAPACITY: .....

DATE: .....