

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.1	SANS 1200A	<b>PRELIMINARY AND GENERAL</b>				
		<u>FIXED - CHARGE ITEMS</u>				
1.1.1	8.3.1	Contractual Requirements	Sum	1		
	8.3.2	Establishment of Facilities on Site:				
	SANS 1200AB	<u>Facilities for Engineer</u>				
1.1.2	PSAB 8.2.2	a) Furnished office (3 No)	Sum	1		
1.1.3	PSAB 8.2.2	b) Meeting room	Sum	1		
1.1.4	PSAB 8.2.4	c) Nameboard (1No.)	Sum	1		
1.1.5	PSAB 8.2.7	d) Covered Parking Bays (4 No.)	Sum	1		
1.1.6	PSAB 8.2.8	e) All other specified facilities (incl WiFi internet connection and photocopier)	Sum	1		
	SANS 1200A	<u>Facilities for Contractor</u>				
1.1.7		a) Office and storage sheds	Sum	1		
1.1.8		b) Workshops	Sum	1		
1.1.9		c) Laboratories	Sum	1		
1.1.10		d) Living accommodation	Sum	1		
1.1.11		e) Ablution and latrine facilities	Sum	1		
1.1.12		f) Tools and equipment	Sum	1		
1.1.13		g) Water supplied, electric power and communications.	Sum	1		
1.1.14		h) Dealing with water (Sub-clause 5.5)	Sum	1		
1.1.15		i) Access (Sub-clause 5.8)	Sum	1		
1.1.16		j) Plant	Sum	1		
1.1.17	8.3.3	General Responsibilities and other fixed charge obligations (including making allowance for payments taking up to 60 days from date of invoice and the consequences thereof)	Sum	1		
1.1.18	8.3.4	Removal of Engineer's and Contractor's site establishment on completion of works	Sum	1		
	PSA 8.10	<u>Fixed charges associated with complying with Occupational Health and Safety Requirements:</u>				
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
1.1.19		a) Preparation of risk assessments, safe work procedures, the project OH&S File, the H&S Plan, medicals for all workers, the provision of PPE and protective clothing, and all other fixed charge OH&S matters that fulfill OHS Act 85 of 1993 and construction regulation 2014 requirements	Sum	1		
1.1.20		b) Completing and checking the Project H&S File and handing over to the Client on completion of the works and exit medicals for all workers	Sum	1		
1.1.21		c) Provision of HIV/Aids Awareness plan and all necessary fixed charge items to achieve compliance with SANS 1921 Part 6 HIV/Aids Awareness	Sum	1		
1.1.22	PSA 8.11	Fixed charges associated with complying with the Environmental Management Plan	Sum	1		
1.2	8.4	<u>TIME-RELATED ITEMS</u>				
1.2.1	PSA 8.4	Contractual Requirements	Sum	1		
	8.4.2	<u>Operate and maintain Facilities on Site for the duration of the construction:</u>  <u>Facilities for Engineer</u>				
1.2.2	PSAB 8.2.2	a) Furnished office (3 No)	Sum	1		
1.2.3	PSAB 8.2.2	b) Meeting room	Sum	1		
1.2.4	PSAB 8.2.4	c) Nameboard (1 No.)	Sum	1		
1.2.5	PSAB 8.2.5	d) Survey assistants	Sum	1		
1.2.6	PSAB 8.2.6	e) Survey equipment	Sum	1		
1.2.7	PSAB 8.2.7	f) Covered parking bays (4 No.)	Sum	1		
1.2.8	PSAB 8.2.3	g) Air time and data for cell phones for 3 site staff (3 x R500pm pre-paid slips)	Month	24		
1.2.9	PSAB 8.2.8	h) All other specified facilities (incl WiFi internet connection and photocopier)	Sum	1		
	SANS 1200A 8.4.2.2	<u>Facilities for Contractor</u>				
1.2.10		a) Office and storage sheds	Sum	1		
1.2.11		b) Workshops	Sum	1		
1.2.12		c) Laboratories	Sum	1		
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 1 PRELIMINARY AND GENERAL

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
1.2.13		d) Living accommodation	Sum	1		
1.2.14		e) Ablution and latrine facilities	Sum	1		
1.2.15		f) Tools and equipment	Sum	1		
1.2.16		g) Water supplied, electric power and communications.	Sum	1		
1.2.17		h) Dealing with water (Sub-clause 5.5)	Sum	1		
1.2.18		i) Access (Sub-clause 5.8)	Sum	1		
1.2.19		j) Plant	Sum	1		
1.2.20	8.4.3	Supervision for duration of construction	Sum	1		
1.2.21	8.4.4	Company and head office overhead costs for the duration of the contract	Sum	1		
1.2.22	8.4.5	General Responsibilities and other time-related obligations (including making allowance for payments taking up to 60 days from date of invoice and the consequences thereof)	Sum	1		
	PSA 8.10	<u>Time-related charges associated with complying with Health and Safety Requirements:</u>				
1.2.23		a) Updating and amending the risk assessments, safe work procedures, the project OH&S File, the OH&S Plan, medicals for all workers, the provision of PPE and protective clothing and all other OH&S obligations that fulfill OHS Act 85 of 1993 and the latest Construction Regulations	Sum	1		
1.2.24		b) Compliance with SANS 1921 Part 6 HIV/Aids Awareness plan during the contract	Sum	1		
1.2.25	PSA 8.11	Time-related charges associated with complying with the Environmental Management Plan	Sum	1		
1.2.26		Liaison and co-operation with other contractors as specified in C3.1: Project Specifications	Sum	1		
<b>TOTAL FOR SECTION 1 CARRIED FORWARD TO SUMMARY</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
2.1	SANS 1200A PSA 8.5	<b>PRELIMINARY AND GENERAL SUMS STATED PROVISIONALLY BY THE ENGINEER</b>  <u>VEHICLE FOR ENGINEER</u>				
2.1.1		Rental bakkies for Engineer's Site Staff	PC Sum	1	480 000.00	480 000.00
2.1.2		Overheads, Charges and Profit on item 2.1.1 above	%	480 000.00		
		<u>TOPOGRAPHICAL SURVEY</u>				
2.1.3		Ad-hoc survey as requested by the Engineer.	Prov Sum	1	75 000.00	75 000.00
2.1.4		Overheads, Charges and profit on item 2.1.3	%	75 000.00		
		<u>COMMUNITY LIASON OFFICER</u>				
2.1.5		Employment of CLO for the duration of the contract (R5000 pm plus R300 pm cellphone allowance)	%	1.00	12800000.00%	128 000.00
2.1.6		Overheads, Charges and Profit on item [2.1.5] above	%	0.00		
2.1.7		Employment of PSC for duration of Contract (8 No. at R500 pm each)	Prov. Sum	1	96 000.00	96 000.00
2.1.8		Overheads, Charges and Profit on item 2.1.7 above	%	96 000.00		
	PSA 8.5	<u>TRAINING</u>				
2.1.9		Allowance for training of local unskilled labour	Prov Sum	1	100 000.00	100 000.00
2.1.10		Overheads, Charges and profit on item 2.1.9 above	%	100 000.00		
	PSA 8.5	<u>SIGNAGE</u>				
2.1.11		Signage as directed by the Engineer	Prov Sum	1	10 000.00	10 000.00
2.1.12		Charges on profit on item 2.1.11 above	%	10 000.00		
	PSA 8.5	<u>COMPENSATION PAYMENTS</u>				
2.1.13		Payments to local residents as compensation as directed by the Engineer	Prov Sum	1	300 000.00	300 000.00
2.1.14		Overheads, Charges and Profit on item 2.1.13 above	%	300 000.00		
	PSA 8.5	<u>INDEPENDANT INSPECTORATE</u>				
2.1.15		Payments to Independant Inspectorate for pipe fittings and concrete durability as directed by the Engineer	Prov Sum	1	300 000.00	300 000.00
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 2 PROVISIONAL SUMS & DAYWORKS

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
2.1.16		Overheads, Charges and Profit on item 2.1.15 above	%	300 000.00		
	PSA 8.5	<u>TESTS ORDERED BY THE ENGINEER</u>				
2.1.17		Allowance for concrete durability tests and other control tests ordered by the Engineer	Prov Sum	1	40 000.00	40 000.00
2.1.18		Overheads, Charges and Profit on item 2.1.17 above	%	40 000.00		
<b>2.2</b>	<b>SANS 1200A</b>	<b>DAYWORKS</b>				
	PSA 8.7	<u>LABOUR</u>				
2.2.1		a) Team leader / charge hand	hr	500		
2.2.2		b) Artisan	hr	500		
2.2.3		c) Skilled	hr	1000		
2.2.4		d) Semi-skilled	hr	2000		
2.2.5		e) Unskilled	hr	6000		
	PSA 8.7	<u>PLANT</u>				
2.2.6		For plant used in execution of Dayworks as agreed with Engineer	Prov. Sum	1	300 000.00	300 000.00
2.2.7		Overheads, Charges and Profit on item 2.2.6 above	%	300 000.00		
	PSA 8.7	<u>MATERIALS</u>				
2.2.8		For materials used in execution of Dayworks as agreed with the Engineer	PC Sum	1	500 000.00	500 000.00
2.2.9		Overheads, Charges and Profit on item 2.2.8 above	%	500 000.00		
<b>TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY</b>						

CONTRACT: ORTDM SCMU 21-22/23  
 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 3 SITE CLEARANCE, FENCING AND BULK EARTHWORKS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1	SANS 1200 C	<b>This Schedule covers: Site clearance, modifications to fencing, temporary drainage of saturated areas, bulk excavation of platforms to temporary stockpile or spoil to rockfill terraces in vicinity, NOTE: Restricted excavation measured with individual structures. Later backfilling and landscaping measured under Internal Roads and Finishing.</b> <b>SITE CLEARANCE</b>				
	PSA8.13	<u>Remove existing perimeter fencing</u>				
3.1.1		Remove redundant old wire mesh perimeter fencing complete with concrete poles and dispose of	m	521		
3.1.2		Carefully dismantle and store on site existing new perimeter 'C-Thru' type fencing only where necessary at entrance gate area, clariflocculator area and to created two new tempoary access gates	m	46		
		<u>Remove lighting masts in way of bulk earthworks</u>				
3.1.3		Electrician to disconnect power supply to 2 No. site lighting masts at ORTDM DB, expose and remove power cable and make safe system	PC Sum	1	50 000.00	50 000.00
3.1.4		Contractor's mark-up on item 3.1.3 above	%	50 000.00		
3.1.5		Remove lighting mast and store on site	No.	2		
		<u>Clear and grub</u>				
3.1.6	PSC 8.1	Clear and grub all working areas	ha	6		
	PSA8.13	<u>Intercepting seepage from Staff Quarters septic tank (see DRG /xxx)</u>				
3.1.7		Excavate drainage sump in saturated conditions between existing clariflocculator wall and previous excavation cut bank (excavation in backfill material only) down to solid rock (5.0m below top of perimeter wall (rate to include cost of operating dewatering pump during excavation)	m³	15		
<b>CARRIED FORWARD</b>						

CONTRACT: ORTDM SCMU 21-22/23  
 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 3 SITE CLEARANCE, FENCING AND BULK EARTHWORKS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
3.1.8		Supply and install 750mm dia precast concrete manhole rings (250mm high, installed with unsealed permiable joints) as soon as bedrock reached and, concurrently, backfilling and compacting Southern side with selected permiable (broken rock) material from local excavations and Northern side with imported impermeable (clayey) material from nearest decomposed dolerite area to form a drainage pump sump and drainage barrier wall.	No	25		
3.1.9		Extra-over item 3.1.8 for importing impermeable material	m <sup>3</sup>	10		
3.1.10		Obatin quotes to supply and install an electrically-driven, float-switch controlled submersible dewatering pump (< 3kW) and drainage hose to nearest clariflocculator sludge drainage chamber (ncluding electrical connection to ORTDM's Chemical Dosing Building).	PC Sum	1	80 000.00	80 000.00
3.1.11		Contractor's mark-up on item 3.1.10 above	%	80 000.00		
<b>3.2</b>	<b>SANS 1200 D</b>	<b>EARTHWORKS</b>				
		<u>STRIP TOPSOIL</u>				
3.2.1	8.3.1.2	Strip topsoil to 150mm depth, stockpile and maintain for duration of Contract from the following areas of Site:	m <sup>2</sup>	45000		
	PSD 8.3.2	<u>CREATE BULK EARTHWORKS PLATFORMS</u>				
		<u>Excavate bulk earthworks platforms for clariflocculators and Filter Building to line and levels shown on the drawings and dispose of to temporary stockpile (soft material suitable for later backfil) or to form spoil terrace at designated spoil site &lt; 1km (all other material):</u>				
		<u>NOTE: No Overhaul; all is considered Freehaul</u>				
3.2.2		Using 30t excavator with rock bucket	m <sup>3</sup>	1305		
3.2.3		Using 30t excavator-mounted hydraulic breaker in hard unweathered sandstone	m <sup>3</sup>	13700		
		<u>PROTECTION OF EXISTING SERVICES</u>				
3.2.4		2 No. 11kV buried power cable between clarifloccultors	Sum	1		
		<u>REPLACE TOPSOIL</u>				
<b>CARRIED FORWARD</b>						

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 SECTION: 3 SITE CLEARANCE, FENCING AND BULK EARTHWORKS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
3.2.5	8.3.10	Excavate from stockpile and spread in 150mm layer to all cut and fill 1:3 slopes of platforms and trim ready to plant grass	m <sup>2</sup>	3000		
		<u>GRASSING</u>				
3.2.6		Supply, deliver and lay Pennisetum clandestinum (Kikuyu) sods to topsoiled cut and fill embankments	<u>m<sup>2</sup></u>	3000		
3.2.7		Maintain (water and weed and cut) grass) until at least 80% coverage is achieved	m <sup>2</sup>	3000		
3.3		<b>PERIMETER FENCE</b>				
		<u>2.6m high High "Clear Vu" Perimeter Fence</u> <u>NOTE: Fencing panels Free Issue</u>				
3.3.1	PSA8.13	Collect fencing panels from storage on Site and onstruct "Clear Vu" fencing complete including excavation, mass concrete footings and ground beam,	m	11		
3.3.2		Supply and construct additional access double leaf gates to match new fencing	No.	2		
<b>TOTAL FOR SECTION 3 CARRIED FORWARD TO SUMMARY</b>						



CONTRACT: ORTDM SCMU 21-22/23  
 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 4 CLARIFLOCCULATORS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
4.1	SANS 1200 D	<b>EXCAVATION</b>				
		<u>RESTRICTED EXCAVATION</u>				
	PSD 8.3.3	Restricted excavation from Bulk Earthworks platform level				
		<u>Excavate in material classified as 'soft / intermediate' material that can be removed with 30t excavator fitted with a 3-tyne rock bucket:</u>				
4.1.1		Cut to temporary stockpile on Site (for future backfill)	m <sup>3</sup>	10		
4.1.2		Cut to spoil	m <sup>3</sup>	10		
		<u>Excavate to spoil in material classified as 'hard rock' (incl 150mm overbreak allowance) using:</u>				
4.1.3		- Excavator-mounted hydraulic breaker	m <sup>3</sup>	6850		
4.1.4		- Rock splitting (expanding grout where agreed with Engineer) (provisional)	m <sup>3</sup>	50		
		<u>Working space</u>				
4.1.5	PSD 8.3.5	Extra excavation in all materials to provide working space around clariflocculators (to bottom of perimeter footing)	m <sup>2</sup>	1200		
		<u>Backfilling</u>				
4.1.6	PSD 8.33	Collect from temporary stockpile or from other borrow areas within 1km and backfill around structures (as directed by Engineer) placing in 150mm layers, conditioning to OMC and compacting to 93% Mod AASHTO density.	m <sup>3</sup>	4200		
	8.3.4	<b>PREPARATION OF FOUNDATIONS</b>				
		<u>Replacement of overbreak or unsuitable materials under foundation</u>				
4.1.7		Supply G2 crusher run, add 6% cement stabilizing, place and compact in maximum 150mm layers under floor compacted to 100% mod AASHTO density and trim to line and level ready to receive no-fines blinding layer	m <sup>3</sup>	200		
4.1.8		Backfill overbreak(where directed by the Engineer) with 15 MPa/19 mass concrete	m <sup>3</sup>	60		
4.2	SANS 1200 DB	<b>EARTHWORKS (PIPE TRENCHES)</b>				
4.2.1		<u>SUBSOIL DRAINAGE</u>				
4.2.1.1		Supply and place 13mm stone	m <sup>3</sup>	60		
<b>CARRIED FORWARD</b>						

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 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 4 CLARIFLOCCULATORS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
4.2.1.2		<b>BROUGHT FORWARD</b> Geotextile fabric wrapped around drain (Bidim A4 or similar approved)	m <sup>2</sup>	1100		
<b>4.3</b>	<b>SANS 1200 L</b>	<b>MEDIUM PRESSURE PIPELINES</b>				
4.3.1	8.2.1	Supply and place 100mm HDPE flexible slotted double-wall drain pipe ("Drainex" or similar approved)	m	750		
	8.2.2	<u>Supply and install 110mm uPVC junctions / tees / bends to suit HDPE slotted drain pipes</u>				
4.3.2		- Equal Tees	No	40		
4.3.3		- Equal cross junctions	No	32		
4.3.4		- 90 degree elbows	No	20		
4.3.5		Supply, fix in place and cast-in pressure release valves ("Gereg" or similar approved)	No.	16		
<b>4.4</b>	<b>SANS 1200 G</b>	<b>CONCRETE (STRUCTURAL)</b>				
4.4.1	PSG8.1.1	<u>FORMWORK</u>				
		<b><u>Rough Formwork:</u></b>				
	8.2.1	<u>Curved, vertical to:</u>				
4.4.1.1		Perimeter wall footing 13050mm radius	m <sup>2</sup>	120		
4.4.1.2		Centre hopper outer face 1720 mm radius	m <sup>2</sup>	80		
4.4.1.3		Centre hopper upper perimeter 2475 mm radius	m <sup>2</sup>	65		
		<b><u>Smooth Formwork:</u></b>				
	8.2.2	<u>Curved, vertical to:</u>				
4.4.1.4		12800 mm radius (tank wall external)	m <sup>2</sup>	1290		
4.4.1.5		12500 mm radius (tank wall internal)	m <sup>2</sup>	1260		
4.4.1.6		12100 mm radius (Launder external)	m <sup>2</sup>	150		
4.4.1.7		11950 mm radius (Launder internal)	m <sup>2</sup>	165		
4.4.1.8		3665 mm radius (centre wall, external)	m <sup>2</sup>	280		
4.4.1.9		3465 mm radius (centre wall, internal)	m <sup>2</sup>	270		
4.4.1.10		300mm dia (columns)	m <sup>2</sup>	80		
	8.2.2	<u>Plane, vertical to:</u>				
4.4.1.11		Rotating bridge platform beams	m <sup>2</sup>	140		
<b>CARRIED FORWARD</b>						

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 SECTION: 4 CLARIFLOCCULATORS

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
4.4.1.12		Desludge chamber walls (internal)	m <sup>2</sup>	115		
4.4.1.13		Desludge chamber walls (external)	m <sup>2</sup>	200		
4.4.1.14		Outlet chamber walls (external)	m <sup>2</sup>	50		
4.4.1.15		Outlet chamber walls (internal)	m <sup>2</sup>	40		
	8.2.2	<u>Curved, sloping to:</u>				
4.4.1.16		Stilling basin internal wall	m <sup>2</sup>	95		
		<u>Plane horizontal to:</u>				
4.4.1.17		Laundry channel soffit	m <sup>2</sup>	140		
	8.2.2	<u>Curved, horizontal to:</u>				
4.4.1.18		Central well wall soffits	m <sup>2</sup>	15		
	8.2.2	<u>Plane, horizontal to:</u>				
4.4.1.19		Rotating bridge platform beam soffits	m <sup>2</sup>	25		
4.4.1.20		Rotating bridge platform slab soffits	m <sup>2</sup>	30		
	8.2.5	<u>Narrow widths (over 50 mm up to 300 mm wide)</u>				
		<u>Smooth, Vertical, circular to:</u>				
4.4.1.21		11900 mm radius (tank footing internal)	m	230		
4.4.1.22		12050 mm radius (tank footing internal)	m	230		
4.4.1.23		1660 mm radius (bridge pivot centre slab)	m	35		
4.4.1.24		Outer wall kicker	m	510		
4.4.1.25		Bases of Chambers	m	30		
4.4.1.26		100 mm x 100 mm splay to laundry channel	m	235		
4.4.2	PSG 8.1.2	<u>REINFORCEMENT</u>				
4.4.2.1	8.3.1	Mild Steel bars of all sizes	t	15		
4.4.2.2	8.3.1	High-Tensile Steel bars of all sizes	t	220		
4.4.2.3	8.3.2	High-Tensile Welded Mesh type:Ref No 395 on chamber floors	m <sup>2</sup>	12		
4.4.3	PSG 8.1.3	<u>CONCRETE</u>				
	8.4.2	<u>Blinding layer in Grade 15 MPa/19 mm concrete of thickness 50 mm minimum</u>				
4.4.3.1		Desludge chamber	m <sup>2</sup>	17		
4.4.3.2		Outlet Chamber	m <sup>2</sup>	7		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
		<u>No-fines concrete grade NF 19 mm to:</u>				
4.4.3.3	PSG8.10	Underside of floor slab and perimeter wall footing, 75 mm nominal thickness (incl dry coarse plaster skim coat over surface)	m <sup>2</sup>	1900		
4.4.3.4		Encasing underdrain pipes under 75mm layer	m <sup>3</sup>	70		
	8.4.3	<u>Strength Concrete Grade 15 MPa/19 mm mass concrete to:</u>				
4.4.3.5		Encasing of inlet pipes under structure	m <sup>3</sup>	25		
4.4.3.6		Encasing of sludge outlet pipes under structure	m <sup>3</sup>	25		
	PSG 8.1.3 & 8.4.3	<u>Strength Concrete Grade 35MPa/19 mm watertight to:</u>				
4.4.3.7		Desludge chamber floor slab	m <sup>3</sup>	4		
4.4.3.8		Conical main floor slab	m <sup>3</sup>	335		
4.4.3.9		Perimeter wall footing	m <sup>3</sup>	135		
4.4.3.10		Beams, Bridge pivot centre slab and plinth	m <sup>3</sup>	25		
4.4.3.11		Sludge hopper walls & floor	m <sup>3</sup>	85		
4.4.3.12		Launder slab	m <sup>3</sup>	30		
4.4.3.13		Vertical Circular Central Wall	m <sup>3</sup>	60		
4.4.3.14		Vertical Circular Main Tank Wall	m <sup>3</sup>	380		
4.4.3.15		Launder walls	m <sup>3</sup>	20		
4.4.3.16		Desludge chamber wall	m <sup>3</sup>	35		
4.4.3.17		Outlet Chamber Walls	m <sup>3</sup>	20		
4.4.3.18		Columns to central well	m <sup>3</sup>	6		
		<u>Extra-over items 4.4.3.8, 4.4.3.12, 4.4.3.14 and 4.4.3.15 for concrete:</u>				
4.4.3.19		XYPEX Admix C-500 NF in : 35MPa/19 mm watertight concrete (5kg/m <sup>3</sup> ) complete including product supplier technical guidance, quality control and product mixing log sheets	kg	3825		
	8.4.4 d)	<u>Floor screeds strength Grade 35 MPa/19mm concrete</u>				
4.4.3.20		Average 35 mm thick to desludge chamber floor slabs	m <sup>2</sup>	12		
4.4.3.21		Average 35 mm thick to outlet chamber slabs	m <sup>2</sup>	5		
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 4 CLARIFLOCCULATORS

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
4.4.4	SANS 1200G	<u>UNFORMED SURFACE FINISHES</u>				
	PSG 8.4.4	<u>Wood-floated finish to:</u>				
4.4.4.1		Sloping Main Floor slab (before screed) to Degree of Accuracy I	m <sup>2</sup>	1450		
4.4.4.2		Stilling basin slabs	m <sup>2</sup>	35		
4.4.4.3		Top surface of footing outside structure	m <sup>2</sup>	65		
4.4.4.4		Top surface beams	m <sup>2</sup>	25		
	PSG 8.4.4	<u>Steel-floated finish to:</u>				
4.4.4.5		Launder slab	m <sup>2</sup>	95		
4.4.4.6		Launder wall	m <sup>2</sup>	35		
4.4.4.7		Central stilling-well wall	m <sup>2</sup>	15		
4.4.4.8		Main tank wall (to Degree Accuracy III)	m <sup>2</sup>	55		
4.4.4.9		Central platform slab	m <sup>2</sup>	30		
4.4.4.10	PSG 8.4.4	Extra-over item 4.4.4.8 for diamond milling of surface to produce a flat, smooth, horizontal, hard-wearing, durable, discontinuity-free, defect-free surface including making good blow-holes, cracks and similar defects with epoxy repair mortar	m <sup>2</sup>	80		
4.4.5	PSG8.5	<u>WATER-RETAINING JOINTS</u>				
4.4.5.1	PSG 8.5.1	FC - sloping floor radial contraction joints but with 20x20mm chamfer sealed with polyurathane sealant instead of polyolefin bandage	m	550		
4.4.5.2		Circular contraction joint between central sludge hopper and sloping floor slabs as per Detail A on drg /DET_210-03	m	210		
4.4.5.3		Circular expansion joint between outer wall footing and sloping floor slabs as per detail on drg /DET_210-05	m	550		
4.4.5.4		WH1 - Horiz wall CJ (kicker)	m	700		
4.4.5.5		WH3- horiz wall CJ	m	510		
4.4.5.6		WVCJ - Vert wall CJ	m	240		
4.4.6		<u>MISCELLANEOUS</u>				
	PSG 8.17	<u>Bondbreaker</u>				
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
4.4.6.1		<b>BROUGHT FORWARD</b> Supply and fix in place 250 µm gunplas green bond breaker between no-fines concrete layer and floor slabs <u>Watertightness test</u>	m <sup>2</sup>	1620		
4.4.6.2	PSG 8.15	Water tightness test for each tank	No.	3		
<b>4.5</b>	<b>SANS 1200 L</b>	<b>MEDIUM PRESSURE PIPELINES</b>				
4.5.1		<u>PIPEWORK</u> All pipework special flanges to be drilled to SANS 1123 Table 1000/3.				
	8.2.5 PSL8.2.1	<u>Supply and install / cast-in pipes, valves and specials (short pipe runs) as itemised on per drawing J31067/DET 210-01 &amp; 02:</u> <u>Raw Water Inlet (600mm Diameter)</u>				
4.5.1.1		Item 1: DN600 schedule10 304L Stainless Steel straight pipe, 4780mm long, flange ended one side and plain-ended the other.	No.	3		
4.5.1.2		Item 2: Schedule10 304L Stainless Steel medium-radius (5-mitre) 95° bend, flanged on one side and plain ended on the other	No.	3		
4.5.1.3		Item 3: DN600 VJ long-collar stepped coupling (FBE coated mild steel) to connect DN600 plain ended stainless steel pipe to DN600 uPVC pipe	No.	3		
4.5.1.4		Item 4: 1No. 12m length of DN600 PN6 SN5000 GRP cut to approx 10.7m <u>Clear Water Outlet</u>	No.	3		
4.5.1.5		Item 6: DN600 Schedule10 304L SS Puddle Pipe 600mm long, plain-ended, puddle-flange 125mm from one end, complete with 10x10mm 'Kuniseal C-31DS' bead on puddle flange root (both sides) <u>Sludge Outlet</u>	No	3		
4.5.1.6		Item 7: DN200 x 6m + 6m = 12m length of uPVC Class 12 pipe (one end trimmed to angle of sludge hopper wall).	No.	3		
4.5.1.7		Item 8: DN200 VJ long-collar stepped coupling (FBE coated mild steel) to connect DN200 plain ended stainless steel pipe to DN200 uPVC pipe	No.	3		
4.5.1.8		Item 9: DN200 Schedule 10 304L SS 11° bend (1-mitre) , flanged one end (800mm c/f), plain other end (200 mm c/f)	No.	3		
<b>CARRIED FORWARD</b>						

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**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
4.5.1.9		Item 10: 315mm dia uPVC Class 6 straight pipe 600mm long, cast-in	No.	3		
4.5.2		<u>SLEEVES FOR ELEC CABLE</u>				
4.5.2.1		63mm HDPE PE100 PN6 pipe sleeve, 22m long (one continuous length free of joints), complete with polypropylene 'ski-rope' draw rope, to be cast-in next to raw water inlet pipe, open ends to extend to above top-of-tank and protected from dirt ingress.	No	3		
<b>4.6</b>	<b>SANS 1200 H</b>	<b>STRUCTURAL STEELWORK (SUNDRY ITEMS)</b>				
	PSH 8.3	<u>SUNDRY ITEMS</u>				
4.6.1		GMS side-mounted ball and stanchion handrail painted yellow as per specification	m	16		
4.6.2	8.3.3	Supply and fix in place Hot Dip Galvanised ladder in desludge chamber as per detail on Drawing No. J31067/DET_210-04	No.	3		
4.6.3	8.3.4	H38 38mm Fibreglass Grating with frame on desludge chamber as per detail on Drawing No. J31067/DET_210-04, incl all supports	m <sup>2</sup>	10		
4.6.4	8.3.4	H38 38mm Fibreglass Grating with frame on outlet chamber	m <sup>2</sup>	6		
4.6.5		Grade LDX 2101 Stainless Steel pipe supports attached to columns as per detail on Drawing No. J31067/DET_210-04	No.	3		
4.6.6		GMS Grab bar as per Drawing No. J31067/DET_210-04	No.	3		
<b>TOTAL FOR SECTION 4 CARRIED FORWARD TO SUMMARY</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.1	SANS 1200 D	<b>EXCAVATION</b>				
		<u>RESTRICTED EXCAVATION</u>				
	PSD 8.3.3	Restricted excavation from bulk excavation profile				
		<u>Excavate in material classified as 'soft / intermediate' material that can be removed with 30t excavator fitted with a 3-tyne rock bucket:</u>				
5.1.1		Cut to stockpile on Site: soft material suitable for later backfill	m <sup>3</sup>	50		
5.1.2		Cut to spoil	m <sup>3</sup>	10		
		<u>Excavate to spoil in material classified as 'hard rock' using:</u>				
5.1.3		- Excavator-mounted hydraulic breaker where blasting not allowed (provisional)	m <sup>3</sup>	820		
5.1.4		- Rock splitting (expanding grout) where too hard for breaker and blasting not allowed (provisional)	m <sup>3</sup>	10		
		<u>Working Space</u>				
5.1.5	PSD 8.3.5	Extra excavation in all materials to provide working space around clariflocculators (to bottom of perimeter footing)	m <sup>2</sup>	350		
		<u>Backfilling</u>				
5.1.6		Collect from temporary stockpile and backfill around structures (as directed by Engineer) placing in 150mm layers, conditioning to OMC and compacting to 93% Mod AASHTO density.	m <sup>3</sup>	300		
	8.3.4	<u>PREPARATION OF FOUNDATIONS</u>				
	8.3.4	<u>Replacement of overbreak or unsuitable materials under foundation</u>				
		1st 150mm will be measured for payment				
5.1.7		Supply G2 crusher run, add 6% cement stabilizing, place and compact in maximum 150mm layers under floor compacted to 100% mod AASHTO density and trim to line and level ready to receive no-fines blinding layer	m <sup>3</sup>	100		
5.1.8		Backfill overbreak (provisional) with 15 MPa/19 mass concrete where directed by the Engineer	m <sup>3</sup>	12		
5.1.9		<u>SUBSOIL DRAINAGE</u>				
5.1.10		Supply and place 13mm stone	m <sup>3</sup>	30		
<b>CARRIED FORWARD</b>						



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**SECTION:** 5 RAPID GRAVITY SAND FILTERS

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.1.11		Geotextile fabric wrapped around drain (Bidim A4 or similar approved)	m <sup>2</sup>	560		
5.1.12	SANS 1200 L 8.2.1	Supply and place 100mm HDPE flexible slotted double-wall drain pipe ("Drainex" or similar approved)	m	330		
	8.2.2	<u>Supply and install 110mm uPVC junctions / tees / bends to suit HDPE slotted drain pipes</u>				
5.1.13		- Equal Tees	No	3		
5.1.14		- Equal cross junctions	No	24		
5.1.15		- 90 degree elbows	No	4.5		
5.1.16		Supply and place 19 mm crushed stone to perimeter drain	m <sup>3</sup>	25		
<b>5.2</b>	<b>SANS 1200 G</b>	<b>CONCRETE (STRUCTURAL)</b>				
5.2.1	PSG8.1.1	<u>FORMWORK</u>				
	8.2.1	<b><u>Rough Formwork</u></b>				
	8.2.1	<u>Plain Vertical Narrow Widths</u>				
5.2.1.1	8.2.5	Up to 450mm high on Foundation Slab	m	150		
		<b><u>Smooth Formwork</u></b>				
	8.2.5	<u>Plain Vertical Narrow Widths</u>				
5.2.1.2		Sides of downturn beam on upper filter gallery floor up to 500mm high	m	220		
5.2.1.3		Sides of ring beam at roof level up to 350mm high	m	210		
5.2.1.4		To sides of suspended slabs, stairs and walkways	m	130		
	8.2.2	<u>Plain Vertical to:</u>				
5.2.1.5		To square columns 300 x 300 mm	m <sup>2</sup>	90		
5.2.1.6		Outer walls	m <sup>2</sup>	2100		
5.2.1.7		All Internal Walls (Except filter bed walls and central overflow channel walls)	m <sup>2</sup>	420		
5.2.1.8		Filter Bed and Central Overflow Channel Walls with Formwork Accuracy Degree I	m <sup>2</sup>	1850		
5.2.1.9		Spent Backwash Channel	m <sup>2</sup>	280		
5.2.1.10		Settled Water Inlet Channel Walls	m <sup>2</sup>	65		
<b>CARRIED FORWARD</b>						

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BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.2.1.11		Internal & external stairs	m <sup>2</sup>	30		
5.2.1.12		Internal Walls: Backwash Pipe channel	m <sup>2</sup>	30		
	8.2.2	<u>Plain Horizontal to:</u>				
5.2.1.13		Filter bed floor soffit	m <sup>2</sup>	490		
5.2.1.14		Lower gallery floor slab	m <sup>2</sup>	200		
5.2.1.15		Upper gallery floor slab & stair landing	m <sup>2</sup>	165		
5.2.1.16		Inlet Channel and external walkways	m <sup>2</sup>	70		
5.2.1.17		Filtered water/clear backwash water duct soffit (20mm Fibre Cement board permanent shutter)	m <sup>2</sup>	80		
5.2.1.18		Lower Filter Gallery Pipework Channel	m <sup>2</sup>	55		
5.2.1.19		Walkways	m <sup>2</sup>	125		
	8.2.2	<u>Plane Sloping to:</u>				
5.2.1.20		Soffit of stairs (internal & external)	m <sup>2</sup>	40		
5.2.1.21		Soffit of centre channel on filter bed backwash inlet	m <sup>2</sup>	50		
	8.2.6	<u>Form Voids in:</u>				
5.2.1.22		1150x300mm high opening for clear water sight-box outlet weir, including forming weir chamfer	No	6		
	8.2.6	<u>Box-out openings:</u>				
5.2.1.23		150x150mm box-out in 250 walls for 75mm pipework channel drain pipe; including grouting-in 75mm drain pipe once installed	No	8		
5.2.1.24		800x800mm box-out for incoming DN600 settled water pipes	No	4		
5.2.2	PSG8.1.2	<u>REINFORCEMENT</u>				
5.2.2.1	8.3.1	Mild Steel bars	t	19		
5.2.2.2	8.3.1	High-Tensile Steel bars	t	245		
5.2.3	PSG8.1.3	<u>CONCRETE</u>				
	8.4.2	<u>Blinding layer in 15 MPa/19 mm No-fines concrete</u>				
5.2.3.1	PSG 8.10	75 mm minimum thickness, incl dry coarse plaster skim coat to surface	m <sup>2</sup>	1600		
	PSG 8.1.3 & 8.4.3	<u>Strength concrete: 35 MPa/19mm watertight concrete</u>				
<b>CARRIED FORWARD</b>						

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BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.2.3.2		Floor slabs at foundation level	m <sup>3</sup>	400		
5.2.3.3		Elevated floor slab:Lower Gallery	m <sup>3</sup>	33		
5.2.3.4		Elevated floor slab:Upper Gallery	m <sup>3</sup>	45		
5.2.3.5		Elevated floor slab:Filter beds	m <sup>3</sup>	160		
5.2.3.6		Inlet and Backwash channel floor slabs	m <sup>3</sup>	40		
5.2.3.7		Elevated walkways	m <sup>3</sup>	55		
5.2.3.8		External walls	m <sup>3</sup>	575		
5.2.3.9		Chlorine contact sump internal walls	m <sup>3</sup>	75		
5.2.3.10		Internal support walls	m <sup>3</sup>	15		
5.2.3.11		Sand filter Division Walls	m <sup>3</sup>	75		
5.2.3.12		Pipe Channel walls	m <sup>3</sup>	45		
5.2.3.13		Settled water inlet channel	m <sup>3</sup>	30		
5.2.3.14		Wash water outlet channel walls	m <sup>3</sup>	95		
5.2.3.15		Inlet and Backwash Channel walls	m <sup>3</sup>	95		
5.2.3.16		Columns	m <sup>3</sup>	7		
5.2.3.17		Thrust Blocks and pipe supports	m <sup>3</sup>	5		
5.2.3.18		Stairs	m <sup>3</sup>	45		
		<u>Extra-over items 5.2.3.2 to 5.2.3.15 for concrete:</u>				
5.2.3.19		XYPEX Admix C-500 NF in : 35MPa/19 mm watertight concrete (5kg/m <sup>3</sup> ) complete including product supplier technical guidance, quality control and product mixing log sheets  <u>Strength concrete: 15 MPa/19mm for mass concrete fill</u>	kg	7665		
5.2.3.20	8.4.4 d)	Allow for all costs in placing 50mm thick grano screed to sloping floor and channels	m <sup>2</sup>	15		
5.2.3.21	8.4.3	Mass concrete (Provisional)	m <sup>3</sup>	8		
5.2.3.22	8.44 b)	Screed with steel float finish	m <sup>3</sup>	8		
5.2.4		<u>UNFORMED SURFACE FINISHES</u>				
	PSG 8.4.4	<u>Steel-floated finish</u>				
5.2.4.1		Internal & external Stairs (incl reading lines on treads)	m	30		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.2.4.2		External walkways	m <sup>2</sup>	110		
5.2.4.3		Floor of chlorine contact channel and Backwash Sump	m	1600		
5.2.4.4		Sand filter floor	m <sup>2</sup>	750		
5.2.4.5		Floor Slab:Upper Gallery	m <sup>2</sup>	200		
5.2.4.6		Floor Slab: Lower Gallery	m <sup>2</sup>	210		
5.2.4.7		Filter bed Inlet Channel, floor and top of walls	m <sup>2</sup>	70		
5.2.4.8		Settled water duct, floor and top of walls	m <sup>2</sup>	60		
5.2.4.9		Backwash Channel , floor and top of walls	m <sup>2</sup>	90		
5.2.4.10		Washwater Channel, floor and top of walls	m <sup>2</sup>	60		
5.2.4.11		Pipe Channel, floor and top of walls	m <sup>2</sup>	30		
5.2.5	PSG 8.5	<u>WATER-RETAINING JOINTS</u> Refer Std drg / STR 200 for joint code and detail				
5.2.5.1	PSG 8.5.1	FCJ - floor CJ	m	55		
5.2.5.2		SFCJ- Suspended Floor CJ	m	55		
5.2.5.3		WH1 - Horiz wall CJ (kicker)	m	450		
5.2.5.4		WH3- horiz wall CJ	m	419		
5.2.5.5		WVCJ - Vert wall CJ	m	160		
5.2.5.6		Extra-over construction joints (only where ordered by the Engineer over and above standard joint detail): Add 'Sikadur Combiflex' SG system (200mm x 2mm polyolefin bandage with epoxy adhesive) applied by approved specialist installer	m	100		
5.2.6		<u>MISCELLANEOUS</u> <u>Bond-breaker under floor slab</u>				
5.2.6.1	PSG 8.17	Supply and fix in place 250 µm gunplas green bond breaker between no-fines concrete layer and floor slabs	m <sup>2</sup>	800		
5.2.6.2	8.2.6	<u>Supply and cast pipes into concrete:</u> 75 mm uPVC sleeves in 200mm wide central filter channel wall (see Drawing No. J31067/DET/220-08)	No.	400		
5.2.6.3	PSG 8.15	<u>Water-tightness testing</u> Water tightness test for each filter bed	No.	6		
<b>CARRIED FORWARD</b>						

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BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.2.6.4		<b>BROUGHT FORWARD</b> Water tightness test for clear water sump	No.	1		
<b>5.3</b>	<b>SANS 1200 HA</b>	<b>STRUCTURAL STEELWORK</b>				
	PSHA 8.3	<u>Fabricate, deliver and install:</u>				
5.3.1	8.3.3	304L Stainless Steel access ladder with cage (Internal) 5m high. Refer to Drawing No. J31067/DET_210-04 for typical detail	No.	3		
5.3.2	8.3.1	1450 x 1450 opening size 304L stainless steel hinged access cover and frame c/w 600 x 600mm hinged secondary access cover in 1450x1450 cover generally as per detail for GMS cover and frame on Drawing No. J31067/STD_570	No.	3		
5.3.3	8.3.2	Supply and install side mounted handrailing, including inclined to sides of stairways as per typical detail on Drawing No. J31067/STD_540 and painted to specification	m	300		
5.3.4	8.3.4	Supply and install RS40 banded GMS grating to settled water inlet channel (800mm span)	m <sup>2</sup>	31		
5.3.5	8.3.4	Supply and surface-mount with ss anchor bolts GMS 75x50x6mm angle support frame	m	77		
5.3.6	8.3.1	Supply and install air-tight cast-iron 600x450mm type 8A double-seal manhole cover and frame complete with 2 x 50x50x5 angle ss 304L to hold-down cover, chemical anchor bolts and Sika-flex Pro-3 sealant all as per drg J31067/DET/220-08	No	6		
5.3.7		Supply and install 3300mm Grade 43 MS GMS Parallel-flanged I-beam 203 x 133mm x 25kg/m into concrete above backwash pump sumps complete with GMS anchor bolts and end-stops each side and manual crawl trolley rated for at least 1.5t	No	2		
5.3.8		Supply and install 5500mm Grade 43 MS GMS Parallel-flanged I-beam 203 x 133mm x 25kg/m for external loading (see drg DET 220-04) complete with M20 GMS anchor bolts into concrete and end-stops each side and manual crawl trolley rated for at least 1.5t	No	1		
5.3.9		Supply and install manual chain-block hoist (to hook onto crawl trolley), rated to at least 1.5t. Lifting range for chain: min 5m	No.	1		
5.3.10		Arrange for load-test certification of all 3 lifting beams by specialist	PC Sum	1	25 000.00	25 000.00
5.3.11		Contractor's mark-up on item 5.3.10	%	25 000.00		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.4	SANS 1200 L	<b>BROUGHT FORWARD</b> <b>MEDIUM PRESSURE PIPELINES</b>				
5.4.1	8.2.5	<u>PIPEWORK</u> <u>Supply and install / cast-in pipes, valves and specials (short pipe runs) as per Drawing Nos. J31067/DET 220-01 to 12</u>  <b><u>Epoxy coated and lined MS (min 6mm wall thickness)</u></b>  <b><i>Interconnection between old and new Filter buildings (Drg 220-10)</i></b>				
5.4.1.1		A1: DN600 90degree PN10 flanged elbow	No	2		
5.4.1.2		A2: DN600 PN10 double-flanged double-eccentric butterfly valve with handwheel PN10	No	1		
5.4.1.3		A3: DN600 PN10 flanged dismantling joint	No	1		
5.4.1.4		A4: 2555mm long DN600 PN10 flanged straight pipe	No	1		
5.4.1.5		A5: 4560mm long DN600 straight puddle pipe, PN10 flanged one end and DN800 bellmouth on other end with puddle flange 740mm from bellmouth end	No	1		
		<b><i>Incoming settled water from Clariflocculators (Drg 220-11)</i></b>				
5.4.1.6		B6: DN900 PN10 flanged pipe manifold 6960mm long with 3 off DN500 gusseted flanged tees (inlet side), 2 off DN600 gusseted tee risers (outlet side) and 1 off DN350 gusseted tee riser (overflow)	No	1		
5.4.1.7		B7: DN600 PN10 flanged 90 degree elbow (c/f 1750mm one side; c/f ~900mm other side)	No	2		
5.4.1.8		B8: DN600 9700mm long straight pipe, PN10 flanged one end, other end plain	No	2		
5.4.1.9		B9: DN350 PN10 flanged butterfly valve with quarter-turn handle	No	1		
5.4.1.10		B10 to B14 - Designed, fabricated and installed by Specialist Supplier	PC Sum	1	350 000.00	350 000.00
5.4.1.11		Contractors markup for above	%	350 000.00		
		<b><u>304L Stainless Steel, Schedule 10</u></b>  <b><i>Filter backwash pipework (Drg 220-12)</i></b>				
5.4.1.12		C17: DN500 PN10 flanged 90° smooth-radius or segmented elbow, 510mm C/F	No	2		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.4.1.13		C18: DN500 PN10 flanged straight pipe 5930mm f/f	No	2		
5.4.1.14		C19: DN500 PN10 flanged gussetted equal tee, 1320mm f/f and 1590mm c/f	No	3		
5.4.1.15		C20: DN500 PN10 straight pipe 6080mm f/f	No	2		
5.4.1.16		C21: DN500 gussetted equal PN10 flanged tee with 2 x DN500 x DN400 reducers, 1880mm f/f and 1810mm c/f, with puddle flange on branch 770mm c/f complete with vertical gussetted DN150 tee (400mm c/f); cast in complete with with 10x10mm 'Kuniseal C-31DS' bead on puddle flange root (both sides)	No	3		
5.4.1.17		C24a: DN400 gussetted equal tee 2680mm f/f, plain ended branch 510mm c/f, extending 900mm c/Plain end and puddle flange 600mm c/Puddle flange; with gussetted DN150 tee branch 1090mm C/F, extending vertically 400mm c/f.	No	6		
5.4.1.18		C24b: DN150 flanged extension to 24a, 1600mm f/f	No	6		
5.4.1.19		C25: DN400 puddle pipe, PN10 flanged one end, plain ended the other, 360mm F/Plain end and 250mm F/Puddle flange	No	6		
		<b>Pipe Channel drainage (Drg 220-12)</b>				
5.4.1.20		C29: DN450 puddle-pipe, PN10 flanged one end, puddle flange 125mm from plain end, cast in complete with with 10x10mm 'Kuniseal C-31DS' bead on puddle flange root (both sides) and with PN10 ss blank flange	No	1		
		<b>Filter Underfloor Access portals (Drg 220-12)</b>				
5.4.1.21		E30a: DN300 puddle pipe, 600mm long, PN10 flanged one end, puddle flange 100mm from plain end, cast in complete with 10x10mm 'Kuniseal C-31DS' bead on puddle flange root (both sides)	No	18		
5.4.1.22		E30b DN10 blank flange	No	12		
		<b>Settled Water Inlet pipework (Drg 220-04 &amp;12)</b>				
5.4.1.23		F31: DN300 puddle pipe, 600mm long, PN10 flanged one end, puddle flange 100mm from plain end, cast in complete with 10x10mm 'Kuniseal C-31DS' bead on puddle flange root (both sides)	No	6		
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.4.1.24		<b>BROUGHT FORWARD</b> F32: DN300 90 degree bend, PN10 flanged one end (300mm c/f), plain other end (3200mm c/f), temporarily bolted to F31. 20mm hole drilled in crown of bend.	No	6		
5.4.1.25		<b>GRP Specials</b> <i>Clear Water Sump Scour Outlet</i> G28: DN150 (floor scour pipes) , 1200mm c/f PN10 flanged end, 225mm c/f DN250 bellmouth end, complete with temporary blank flange <u>Mild Steel</u>	No	1		
5.4.1.26		C14: DN400 mild steel temporary spool piece, 220mm f/f, flanged PN10. (in place of valves to be supplied and installed by Mech & Elec.) <u>Other Fittings</u>	No.	16		
5.4.1.27		C13: DN400 FBE coated PN10 flanged Dismantling Joint <u>Filter Pipework Channel drainage</u>	No.	16		
5.4.1.28		Supply and install / cast-in 75mm solvent-weld jointed uPVC Class 12 drainage pipe system as shown on drgs DET/220-06 complete with stainless steel strapping and anchor bolts at 600mm c/c securing UPVC pipe firmly to concrete wall and uPVC tees, bends and flange adaptor at outlet and Sikadur-31 CF adhesive epoxy seal applied to concrete / pipe interface after pipe cast-in.	Sum	1		
<b>5.5</b>	<b>SPEC QB</b>	<b>BUILDING WORK (PARTICULAR SPECIFICATION QB)</b>				
5.5.1	8.2.4.1	<u>BRICKWORK</u>				
		<u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>				
5.5.1.1		110 brick walls in beamfilling	m <sup>2</sup>	25		
5.5.1.2		270 brick walls	m <sup>2</sup>	350		
5.5.1.3		270 brick walls in beamfilling	m <sup>2</sup>	60		
		<u>"Montana Travertine FBS" face bricks pointed with recessed horizontal and vertical joints</u>				
		<u>Extra over items 5.5.1.1 to 5.5.1.3 for:</u>				
5.5.1.4		Face brickwork	m <sup>2</sup>	340		
<b>CARRIED FORWARD</b>						



ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.5.1.5	8.2.4.2	Horizontal corbelled bands one courses high and 30mm projection, pointed on faces and soffits	m	140		
5.5.1.6	8.2.4.2	Brick-on-edge window cill slightly projecting	m	60		
5.5.2		<u>BRICKWORK SUNDRIES</u>				
		<u>Joint forming material in movement joints</u>				
5.5.2.1		10mm Expanded polystyrene (density 33kg per m3) with one tear off strip, built in vertically through brick walls	m <sup>2</sup>	16		
	8.2.4.5	<u>Brickwork reinforcement</u>				
5.5.2.2		75mm Wide reinforcement built in horizontally	m	500		
5.5.2.3		150mm Wide reinforcement built in horizontally	m	1600		
	8.2.3.1	<u>Prestressed fabricated lintels</u>				
5.5.2.4		110 x 75mm Lintels in lengths not exceeding 3m	m	35		
5.5.2.5		Extra for building brickwork to oversailing face with each course projecting 30mm	m <sup>2</sup>	12		
5.5.3	8.2.4.2	<u>NUTEC-CEMENT WINDOW SILLS</u>				
		<u>Natural grey sills in single lengths bedded in class I mortar, including metal fixing lugs etc.</u>				
5.5.3.1		150 x 12mm Wide sills set flat and slightly projecting, unpainted	m	75		
5.5.4		<u>WATERPROOFING</u>				
	8.2.4.3	<u>DAMP-PROOFING OF BRICK WALLS</u>				
		<u>One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp proof course</u>				
5.5.4.1		In walls	m <sup>2</sup>	700		
		<u>JOINT SEALANTS, ETC.</u>				
		<u>"Fosroc Thioflex 600" two part grey polysulphide sealing compound, including backing cord, bond breaker, primer, etc.</u>				
5.5.4.2		15 x 10mm In vertical expansion joints, including raking out expansion joint filler as necessary	m	400		
5.5.5	8.2.5.5	<u>ROOF COVERINGS</u>				
		PROFILED METAL SHEETING AND ACCESSORIES				
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
		<u>0,5mm "Klip-Lok" Z275 spelter galvanised high yield steel ribbed sheeting with "Chromadek" finish on outside and white on inside, in single lengths fixed to 50 x 75mm purlins at 1,1m maximum centres.</u>				
5.5.5.1	8.2.5.5	Roof covering with pitch not exceeding 25 degrees	m <sup>2</sup>	330		
5.5.5.2	8.2.5.6	Chromadek fascia board	m	50		
		<b>ROOF INSULATION</b>				
		<u>"Lambdaboard" high density 35kg/m<sup>3</sup> insulation or other equal or approved insulation</u>				
5.5.5.3		40mm thick insulation attached to underside of purlins as per manufacturer's specification	m <sup>2</sup>	240		
5.5.6		<b>CARPENTRY AND JOINERY</b>				
		<b>ROOFS</b>				
		<u>Sawn softwood</u>				
5.5.6.1	8.2.5.1	Design, supply and instal roof trusses complete with purlins and fixings for BOTH Filter Buildings	Sum	1		
		EAVES , VERGES , ETC.				
		<u>"Everite" pressed nutec-cement</u>				
5.5.6.2	8.2.5.6	12 x 225mm barge boards including galvanised steel H-profile jointing strips	m	50		
	8.2.5.3	<b>ALUMINIUM DOORS &amp; DOOR FRAMES</b>				
		<u>Powder coated white aluminium doors &amp; frames fixed to brickwork or concrete as per Finishing Schedule</u>				
5.5.6.3		Frame for door to fit in clear opening space 900 x 2 280mm high	No.	7		
5.5.6.4		Solid-panel outward-opening exterior single door dimensions to fit into above frame; c/w ss door handle and lock as per schedule	No	7		
	8.2.5.3	<b>ALUMINIUM LOUVRES</b>				
		<u>Powder coated white aluminium louvres including sub-frames and silicone sealant all round fixed to 270mm brickwork or concrete as per Finishing Schedule</u>				
5.5.6.5		To fit in clear opening space ~600mm high x ~1050mm wide (7 brick courses high, 4.5 brick lengths wide)	No.	12		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.5.7	8.2.6.2	ALUMINIUM WINDOWS  <u>Powder coated white aluminium windows, glazed with 6mm laminated clear float glass, including sub-frames, glazing beads, ironmongery and silicone sealant all round, fixed to brickwork or concrete as per Finishing Schedule</u>				
5.5.7.1		Framed three-panel window to fit clear opening ~1190mm high (14 brick courses) x ~2800mm wide (12 brick lengths wide) with 1/4 width sliding panel each side, 1/2 width fixed centre panel (W06 on drgs)	No.	18		
5.5.8	8.2.7.1	<u>PLASTERING</u>  <u>Internal plaster</u>				
5.5.8.1		On walls	m <sup>2</sup>	340		
5.5.8.2		On narrow widths	m <sup>2</sup>	20		
		<u>External plaster</u>				
5.5.8.3		On walls	m <sup>2</sup>	200		
5.5.8.4		On narrow widths	m <sup>2</sup>	30		
		<u>Floor edging under external doors</u>				
5.5.8.5	8.2.6.1	3 x 50mm flat section brass anchored to floor	m	7		
5.5.9	8.2.8	<u>PLUMBING AND DRAINAGE</u>				
	8.2.8.1	RAINWATER DISPOSAL  <u>Aluminium seamless guttering</u>				
5.5.9.1		75 x 100mm Eaves gutters	m	70		
5.5.9.2		75x75 rainwater downpipes	m	30		
		<u>Extra over item 5.5.9.1 for:</u>				
5.5.9.3		Stopped end	No.	2		
		<u>Extra over item 5.5.9.2 for:</u>				
5.5.9.4		Shoe	No.	2		
5.5.9.5		Bend	No.	12		
5.5.9.6		Eaves or plinth offset 600mm projection	No.	2		
5.5.10	8.2.9.1	<u>PAINTWORK</u>  <u>On floated plaster</u>				
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.5.10.1		<p>One coat masonry filler rubbed and sanded smooth to an approved finish, one coat oil-based bonding liquid, one undercoat and two coats Plascon Double Velvet (or equal approved) paint</p> <p>- On internal walls</p> <p><u>On concrete</u></p>	m <sup>2</sup>	350		
5.5.10.2		<p>One coat 'Coprox' or similar approved water-proofing slurry (incl curing and light sanding-down), one coat alkali resistant primer and two coats Plascon Double Velvet (or equal approved) paint</p> <p>- On internal concrete walls, columns, beams &amp; upper gallery floor slab soffit</p> <p><u>On concrete clear water Sight Boxes and weir (under water)</u></p>	m <sup>2</sup>	600		
5.5.10.3		<p>One coat epoxy primer on degreased and thoroughly cleaned and dried surfaces then round-off internal corners with epoxy putty to 10mm radius, then two coats brilliant white solvent-free ultra-high gloss finish epoxy paint</p> <p>- Inside clear water Sight Boxes</p> <p><u>On fibre-cement</u></p>	m <sup>2</sup>	70		
5.5.10.4		<p>One coat oil-based bonding liquid, one coat universal primer and two coats "Plascon" velvagio polyurethane enamel paint</p> <p>- Barge boards</p> <p><u>On hardwood doors</u></p>	m <sup>2</sup>	50		
5.5.10.5		<p>Three coats Woodoc 50 exterior matt sealer</p> <p>- On doors</p> <p><u>On Floors and internal stairs</u></p> <p>Floor coatings by Specialist SubContractor:</p> <p>Prepare surfaces and apply Stonkote 723 onto Stonprime 639 primed surfaces.</p> <p>Roller Coat: High build 0.5mm roller application at 4 to 5m<sup>2</sup>/litre/coat, 2 coats required.</p>	m <sup>2</sup>	22		
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
5.5.10.6		Preparation of steel-floated concrete floor (ready to receive epoxy screed) by patching defects and holes with approved epoxy repair mortar then grinding to flat, smooth, defect-free hard durable surface then cleaning to remove all dust and contaminants	m <sup>2</sup>	560		
5.5.10.7		All floors and internal stairs	m <sup>2</sup>	560		
5.5.10.8		skirtings (100mm high)	m	172		
<b>TOTAL FOR SECTION 5 CARRIED FORWARD TO SUMMARY</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
6.1	SANS 1200 D	<b>EARTHWORKS</b>				
		<u>RESTRICTED EXCAVATION</u>				
	PSD 8.3.3	Restricted excavation from NGL less 150mm topsoil stripped				
		<u>Excavate in all materials that can be removed with 30t excavator fitted with a 3-tyne rock bucket:</u>				
6.1.1		Cut to temporary stockpile on Site (for later backfilling): soft soil material (Column bases and strip footings for walls)	m <sup>3</sup>	84		
6.1.2		Cut to spoil	m <sup>3</sup>	99		
		<u>Excavation for workspace</u>				
6.1.3	PSD 8.3.5	Extra excavation in all materials to provide working space around footings	m <sup>2</sup>	90		
		<u>Backfilling</u>				
6.1.4		Collect soft soil from temporary stockpile and backfill (placing in 150mm layers, conditioning to OMC and compacting to 93% Mod AASHTO density).	m <sup>3</sup>	42		
6.2	SANS 1200 G	<b>CONCRETE (STRUCTURAL)</b>				
6.2.1	PSG8.1.1	<u>FORMWORK</u>				
		<b><u>Rough</u></b>				
	8.2.1	<u>Vertical, plane to:</u>				
6.2.2		- Sides of column bases	m <sup>2</sup>	60		
		<b><u>Smooth</u></b>				
	8.2.2	<u>Vertical plain to:</u>				
6.2.3		- Stub columns	m <sup>2</sup>	35		
6.2.4		- Columns with total height up to 6m above floor slab	m <sup>2</sup>	90		
6.2.5		- Sides of upstand beams (outer edges)	m <sup>2</sup>	31		
	8.2.5	<u>Vertical plain (narrow widths) to:</u>				
6.2.6		- Sides of roof slab (200mm high)	m	45		
6.2.7		- External sides of floor beams (500mm high)	m	47		
6.2.8		- Internal sides of floor beams (300mm high)	m	47		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
6.2.9		- sides of stairs and landing and step risers (max 200mm high)	m	20		
	8.2.2	<u>Horizontal plain to:</u>				
6.2.10		- Roof slabs (prop height up to 6m)	m <sup>2</sup>	115		
6.2.11		- Stair landing (prop height 2m)	m <sup>2</sup>	1.6		
		<u>Horizontal narrow widths to floor beam soffits</u>				
6.2.12		- Floor beam soffits up to 350mm wide	m	47		
	8.2.5	<u>Vertical plain (narrow widths) to:</u>				
6.2.13		- Sides of upstand beams (depth up to 400mm)	m	45		
	8.2.2	<u>Plane Sloping to:</u>				
6.2.14		Soffit of stairs	m <sup>2</sup>	2.4		
6.2.15	PSG8.1.2	<u>REINFORCEMENT</u>				
6.2.15.1	8.3.1	Mild steel	t	1.3		
6.2.15.2	8.3.1	High tensile steel- all sizes	t	15		
6.2.16	PSG8.1.3	<u>CONCRETE</u>				
	8.4.3	<u>Strength Concrete</u>				
		<u>15 MPa/19mm concrete</u>				
6.2.16.1	8.4.2	50mm blinding layer under column bases	m <sup>2</sup>	38		
	8.4.3	<u>Strength Concrete Grade 30 MPa/19mm</u>				
6.2.16.2		Bases	m <sup>3</sup>	14		
6.2.16.3		Strip footings (RC)	m <sup>3</sup>	11		
6.2.16.4		Stub Columns - below floor slab	m <sup>3</sup>	4		
6.2.16.5		Columns - above floor slab	m <sup>3</sup>	7		
6.2.16.6		Suspended floor slab & floor beams	m <sup>3</sup>	30.3		
6.2.16.7		Raised plinths for canopy over road	m <sup>3</sup>	2		
6.2.16.8		External tank stand slab	m <sup>3</sup>	4		
6.2.16.9		Roof slab including upstand beams	m <sup>3</sup>	30		
6.2.17	PSG 8.4.4	<u>UNFORMED SURFACE FINISHES</u>				
		<u>Wood-float finish</u>				
6.2.17.1		Bases	m <sup>2</sup>	43		
<b>CARRIED FORWARD</b>						

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 SECTION: 6 CHLORINATION BUILDING

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
		<u>Steel-float finish in narrow surfaces up to 350mm wide:</u>				
6.2.17.2		Upstand beam	m	45		
6.2.17.3		Stairs and landing	m <sup>2</sup>	5		
		<u>Power-floated finish to horizontal surfaces:</u>				
6.2.17.4		floor slabs & roof slabs	m <sup>2</sup>	262		
6.2.18	PSG 8.5	<u>JOINTS</u>				
		<u>Superstructure</u>				
		<u>Brick/ column joints with closed cell expanded polystyrene joint filler incl polysulphide external sealant (drg DET 400-03)</u>				
6.2.18.1		12mm Joints not exceeding 300mm high	m	110		
<b>6.3</b>	<b>SANS 1200 HA</b>	<b>STRUCTURAL STEEL</b>				
6.3.1		<u>STEELWORK</u>				
		<u>Hot dip galvanized steel</u>				
	PSHA 8.3	<u>Welded beams in single lengths with flat section bearer and connection plates, bolted to steel columns</u>				
6.3.1.1	8.3.1	254 x 146mm x 43kg/m I-section beams	t	0.77		
6.3.1.2	8.3.1	203 x 133mm x 25kg/m I-section rafter beams	t	0.77		
6.3.1.3	8.3.1	254 x 254mm x 73kg/m H-section beams	t	2.49		
6.3.1.4	8.3.1	356 x 171 x 67kg/m x total 2 No x 17.1m long fabricated crawl-beams complete with trolley stop-ends each side	t	2.23		
6.3.1.5	8.3.1	70x70x6mm L diagonal and vertical cross-bracing	t	0.3		
		<u>Bolts to columns, beams, etc</u>				
6.3.1.6	8.3.1	M16 U-shaped anchor bolt 500mm girth gr8.8	No.	48		
6.3.2		<u>CERTIFYING CRAWL BEAMS</u>				
6.3.2.1		Certify 5 tonne beam capacity (test by "Water-weights" or similar approved) - Both beams	Sum	1		
<b>6.4</b>	<b>SPEC GIBB012</b>	<b>BUILDING WORK (PARTICULAR SPECIFICATION GIBB012)</b>				
6.4.1	7.1	<u>BRICKWORK</u>				
<b>CARRIED FORWARD</b>						



ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
		<u>Brickwork of NFX bricks (14 MPa nominal compressive strength) in class I mortar</u>				
		<u>Foundation</u>				
6.4.1.1		110 brick linings to concrete	m <sup>2</sup>	4		
6.4.1.2		270 brick walls	m <sup>2</sup>	47		
		<u>Superstructure</u>				
6.4.1.3		230 x 230mm Attached pilaster	m	2		
6.4.1.4		110 brick linings to concrete	m <sup>2</sup>	25		
6.4.1.5		110 brick wall in beamfilling	m <sup>2</sup>	2		
6.4.1.6		270 brick walls	m <sup>2</sup>	197		
		<u>Facebrick</u>				
		Montana Travertine FBS face bricks pointed with recessed horizontal and vertical joints				
		<u>Superstructure</u>				
		<u>Extra over items 6.4.1.3 to 6.4.1.6 for:</u>				
6.4.1.7		Face brickwork	m <sup>2</sup>	40		
6.4.1.8		Horizontal corbelled bands one courses high and 30mm projection, pointed on faces and soffits	m	45		
6.4.1.9		Brick-on-edge window cill slightly projecting	m	2.5		
		<u>BRICKWORK SUNDRIES</u>				
		<u>Brickwork reinforcement</u>				
		<u>Foundation</u>				
6.4.1.10		150mm Wide reinforcement built in horizontally	m	259		
		<u>Superstructure</u>				
6.4.1.11		75mm Wide reinforcement built in horizontally	m	141		
6.4.1.12		150mm Wide reinforcement built in horizontally	m	700		
	8.2.3.1	<u>Prestressed fabricated lintels</u>				
6.4.1.13		110 x 75mm Lintels in lengths not exceeding 3m	m	19		
		<u>Galvanised hoop iron cramps, ties, etc</u>				
6.4.1.14		30 x 1,6mm Roof tie 1,5m long with one end fixed to timber and other end built into brickwork	No.	10		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
6.4.1.15		Truss hanger bracket bolted to wall	No.	10		
6.4.2		<u>NUTEC-CEMENT WINDOW SILLS</u>				
		<u>Natural grey sills in single lengths bedded in class I mortar, including metal fixing lugs etc</u>				
6.4.2.1		150 x 12mm Wide sills set flat and slightly projecting, unpainted	m	4		
6.4.3	7.8	<u>RAINWATER PIPES</u>				
		<u>Supply, lay and bed PVC-U Class 34 pipes (non-perforated) for short pipe runs</u>				
6.4.3.1		160mm dia 1500mm long drainage pipe	No.	2		
6.4.3.2		160mm dia drainage pipe	m	6		
		<u>Extra-over Items 6.4.3.1 and 6.4.3.2 for:</u>				
6.4.3.3		160 mm dia medium radius 90° bend	No.	2		
6.4.4		<u>FLOOR AND WALL WATERPROOFING</u>				
		<u>One layer of 375 micron "Consol Plastics Brikgrip DPC" embossed damp proof course</u>				
6.4.4.1		In walls	m <sup>2</sup>	15		
		<u>One layer of 250 micron "Consol Plastics Gunplas USB Green" waterproof sheeting sealed at laps with "Gunplas Pressure Sensitive Tape"</u>				
6.4.4.2		Under surface beds	m <sup>2</sup>	134		
6.4.5		<u>ROOF WATERPROOFING</u>				
		<u>5mm Torch on bitumastic fully bonded waterproofing ("Durbigum" or similar approved)</u>				
6.4.5.1		On flat roofs not exceeding 2,5 degrees from the horizontal	m <sup>2</sup>	92		
6.4.5.2		On flat roofs in turn-ups	m <sup>2</sup>	15		
6.4.6		<u>PROTECTIVE ROOFING PAINT</u>				
		<u>Two coats Silver bitumastic paint</u>				
6.4.6.1		On waterproofing to roofs	m <sup>2</sup>	108		
		<u>SKYLIGHTS</u>				
		<u>Supply and install complete in concrete roof slab with fixings and water-proofing complete:</u>				
6.4.6.2		300mm 'Solar Tube Skylight' or similar approved	No	6		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
6.4.7		<b>BROUGHT FORWARD</b> <u>PROFILED METAL SHEETING AND ACCESSORIES</u> <u>0,5mm "Klip-Lok" Z275 spelter galvanised high yield steel ribbed sheeting with "Chromadek" finish on outside and white on inside, in single lengths fixed to purlins and 0,6mm galvanised steel accessories with "Chromadek" finish on one side</u>				
6.4.7.1		Roof covering with pitch not exceeding 12 degrees	m <sup>2</sup>	54		
6.4.7.2		Roof covering as vertical cladding	m <sup>2</sup>	44		
6.4.7.3		Raking cutting and waste	m	7		
6.4.7.4		Head wall flashing 462mm girth, bent to fit profile.	m	15		
6.4.7.5		Side wall flashing 462mm girth, twice bent to fit profile.	m	18		
6.4.7.6		Moulded narrow or broad rib polyethelene filler blocks <u>1.0mm Thick galvanised steel accessories to "Klip-lok" roof sheeting</u>	m	31		
6.4.7.7		Gable trim 660mm girth fixed to lipped channel bearers	m	7		
6.4.7.8		External corner 740mm girth fixed vertically to lipped channel bearers	m	4		
6.4.7.9		Head wall counter flashing 185mm girth	m	15		
6.4.7.10		Side wall counter flashing 185mm girth, twice bent to fit profile.	m	18		
6.4.7.11		Drip flashing 231mm girth	m	41		
6.4.8		<u>ROOF AND WALL INSULATION</u> <u>Lambdaboard high density 35kg/m<sup>3</sup> insulation or other equal or approved insulation</u>				
6.4.8.1		40mm Thick insulation attached to underside of purlins as per manufacturer's specification	m <sup>2</sup>	27		
6.4.9		<u>CARPENTRY AND JOINERY</u> <u>WOODEN ROOF TRUSS</u>				
6.4.9.1		Monopitch structural timber truss system with 3000mm span with one end 800mm high, other end with 600mm overhang, incl all fixings and bracing	Sum	1		
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
6.4.9.2		38 x 114mm wall plate	m	30		
6.4.9.3		50 x 76mm Purlins	m	119		
		<u>Everite pressed nutec-cement</u>				
6.4.9.4		12 x 225mm barge boards including galvanised steel H-profile jointing strips	m	17		
		<b>DOORS &amp; DOOR FRAMES</b>				
		<u>Powder coated white aluminium doors &amp; frames fixed to brickwork or concrete as per Finishing Schedule</u>				
6.4.9.5		Frame for door to fit in clear opening space 900 x 2 280mm high	No.	1		
6.4.9.6		Solid-panel outward-opening exterior single door dimensions to fit into above frame; c/w ss door handle and lock as per schedule	No	1		
		<u>Purpose made side-hung wooden doors with wooden frames</u>				
6.4.9.7		50mm thick purpose made hardwood side-hung inward-opening 4-leaf double door to fit opening size 2 160mm wide x 4 590mm high. Lower leaf standard door height c/w powder-coated aluminium door handles, ss barrel lock and floor deadbolts. Upper leaf with deadbolts to ceiling and lower door and cut-out around i beam. All leaves with min 4 aluminium heavy-duty hinges	No.	2		
6.4.10		<b>CEILINGS, PARTITIONS ETC</b>				
		<u>9mm "Rhino" gypsum plasterboard with H-type pressed steel jointing strips</u>				
6.4.10.1		Ceilings including 38 x 38mm sawn softwood bandering at 400mm centres 2 730mm above FFL	m <sup>2</sup>	22		
		<u>Rhino gypsum board cornices</u>				
6.4.10.2		75mm Coved cornices	m	22		
6.4.11		<b>WINDOWS</b>				
		<u>Design, supply and install aluminium windows all in accordance with manufacturers specifications</u>				
		<u>Powder coated white aluminium windows, doors, etc glazed with 6mm laminated clear float glass, including sub-frames, glazing beads, ironmongery and silicone sealant all round, fixed to brickwork</u>				
<b>CARRIED FORWARD</b>						

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		<b>BROUGHT FORWARD</b>				
6.4.11.1		Aluminium framed sash window size 820 x 1200mm high (W01)	No.	4		
6.4.11.2		Aluminium framed fixed-pane window size 1200x 950mm high (W02)	No.	2		
		<u>Floor hardener</u>				
6.4.11.3		ABE Korocron (Neutral colour) shake on applied during floating process	m <sup>2</sup>	124		
6.4.12		<u>INTERNAL PLASTER</u>				
		<u>Cement plaster on brickwork</u>				
6.4.12.1		On walls	m <sup>2</sup>	220		
6.4.12.2		On narrow widths	m <sup>2</sup>	3		
		<u>Cement plaster on concrete</u>				
6.4.12.3		On isolated columns	m <sup>2</sup>	14		
6.4.12.4		On isolated columns in narrow widths	m <sup>2</sup>	1		
6.4.13		<u>EXTERNAL PLASTER</u>				
		<u>Cement plaster on brickwork</u>				
6.4.13.1		On walls	m <sup>2</sup>	146		
6.4.13.2		On walls in narrow widths	m <sup>2</sup>	13		
6.4.14		<u>SPECIALIST PLASTER WALL COVERINGS</u>				
		2mm Thick "Marmoran Permacrete Vertica Trowel-on" PVC resin bonded coating on plaster				
6.4.14.1		On walls	m <sup>2</sup>	81		
6.4.15		<u>PLUMBING AND DRAINAGE</u>				
		<u>RAINWATER DISPOSAL</u>				
		<u>Aluminium seamless guttering</u>				
6.4.15.1		75 x 100mm Eaves gutters	m	10		
6.4.15.2		75x75 rainwater downpipes	m	12		
		<u>Extra over item 6.4.15.1 for:</u>				
6.4.15.3		Stopped end	No.	2		
		<u>Extra over item 6.4.15.2 for:</u>				
6.4.15.4		Shoe	No.	2		
6.4.15.5		Bend	No.	4		
<b>CARRIED FORWARD</b>						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
6.4.15.6		Eaves or plinth offset 600mm projection <u>uPVC cast into concrete columns</u>	No.	2		
6.4.16		75mm Diameter rainwater pipes	m	40		
6.4.17		Extra over for bend	No.	8		
6.4.18		Extra over for shoe <u>Fulbore cast iron outlets</u>	No.	8		
6.4.19		100mm 45 Degree side outlet	No.	8		
6.4.20		<u>FIRE APPLIANCES</u>				
6.4.20.1		4,5kg Carbon dioxide fire extinguisher complete with 520 x 115 x 22mm thick timber backboard plugged to wall and varnished	No.	1		
6.4.21		<u>PAINTWORK</u> <u>One coat alkali resistant primer, one undercoat and two coats Plascon Double Velvet (or equal approved) paint</u>				
6.4.21.1		On internal concrete columns and roof slab and beam sides / soffit <u>One coat masonry filler rubbed and sanded smooth to an approved finish, one oil-based bonding liquid coat, one undercoat and two coats Plascon Double Velvet paint</u>	m <sup>2</sup>	91		
6.4.21.2		On internal plastered walls <u>Three coats Woodoc 50 exterior matt sealer</u>	m <sup>2</sup>	300		
6.4.22		On wooden doors	m <sup>2</sup>	50		
6.4.23		On door frames including narrow widths <u>Floor Coating</u> Floor coatings by Specialist SubContractor: Prepare surfaces and apply Stonkote 723 onto Stonprime 639 primed surfaces. Roller Coat: High build 0.5mm roller application at 4 to 5m <sup>2</sup> /litre/coat, 2 coats required.	m <sup>2</sup>	1		
6.4.24		All Chlorinator Building room floors	m <sup>2</sup>	120		
6.4.25		skirtings (100mm high)	m	62		
<b>TOTAL FOR SECTION 6 CARRIED FORWARD TO SUMMARY</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<p><u><i>This Section covers the following:</i></u></p> <ul style="list-style-type: none"> <li>- <i>Retaining structure around interlinking clear water pipeline between filter buildings. See Dwg DET-220-11</i></li> <li>- <i>Sludge Chamber. See Dwg DET-250-01</i></li> <li>- <i>Backwash Chamber. See Dwg DET-250-01</i></li> <li>- <i>Raise the central well wall on the two more recently-constructed Clariflocculators</i></li> <li>- <i>Modify existing raw water distribution channel for three new outlets to new clariflocculators</i></li> </ul>				
7.1	SANS 1200 D	EARTHWORKS				
7.1.1	PSD8.3.3	RESTRICTED EXCAVATION				
7.1.1.1		Excavation in all materials for foundations and use for backfill or spoil	m <sup>3</sup>	100		
		<u>Extra-over item 7.1.1.1 for</u>				
7.1.2		Intermediate mudstone / siltstone using 30t excavator fitted with Heavy Duty Hydraulic Breaker	m <sup>3</sup>	30		
7.1.3		Hard rock using hydraulic breaker	m <sup>3</sup>	40		
7.1.4		Hard rock using expanding grout	m <sup>3</sup>	10		
		<u>Overhaul</u>				
7.1.5	8.3.6	Overhaul to spoil at designated spoil site (approx 2,4km away)	m <sup>3</sup> .km	200		
	8.3.5	<u>Extra excavation in all materials to provide working space around structures:</u>				
7.1.6		Retaining structure between filter buildings	m <sup>2</sup>	12		
7.1.7		Sludge Chamber	m <sup>2</sup>	9		
7.1.8		Backwash Chamber	m <sup>2</sup>	7		
	8.3.4	<u>Preparation of foundation surface</u>				
	8.3.4(b)	<u>Backfill of overbreak (within 150mm overbreak allowance; beyond 150mm to Contractor's account)</u>				
7.1.9		Supply G2 crusher run, place and compact in 150mm layers under floor compacted to 100% mod AASHTO density and trim to line and level ready to receive no-fines blinding layer	m <sup>3</sup>	20		
<b>CARRIED FORWARD</b>						

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7.1.10		<b>BROUGHT FORWARD</b> Backfill with 15 MPa mass concrete where directed by the Engineer and shape to line and level ready to receive no-fines blinding layer	m <sup>3</sup>	10		
7.2	<b>SANS 1200 G</b>	<b>CONCRETE (STRUCTURAL)</b>				
7.2.1	PSG8.1.1	<u>FORMWORK</u> <b><u>Retaining structure between filter buildings</u></b> Rough, vertical plane to elements				
7.2.1.1		Sides of floor slab	m	20		
	8.2.2	Smooth, vertical plane to elements				
7.2.1.2		Walls (sides of structure)	m <sup>2</sup>	30		
	8.2.6	<u>Box out holes suitable for:</u>				
7.2.1.3		DN600 pipe	No.	2		
	8.2.6	Box out holes/form voids: (PROVISIONAL)				
7.2.1.4	8.2.6.a.1	Small Circular of diameter up to and including 0.35m through walls over 0m and up to and including 0.5m	No	1		
7.2.1.5	8.2.6.a.2	Small Circular of diameter up to and including 0.35m through walls over 0.5m and up to and including 1m	No	1		
7.2.1.6	8.2.6.b	Small other than circular of area up to and including 0.1m <sup>2</sup>	No	1		
	PSG 8.4.7	Setting and casting in of the following diameter pipes and items through concrete work, such as slabs and walls, including formwork, box outs, concrete/grouting work, making good, fixing, securing for accuracy for the listed pipes through walls of the following thickness (supply and delivery of pipe material, cutting, jointing, bending, Measured elsewhere):				
7.2.1.7		DN50 PVC sleeve for cable for actuator valve through concrete walls up to 400mm thick	No	1		
		<b><u>Sludge Chamber</u></b>				
7.2.1.8	8.2.1	Rough vertical plane to external walls below ground:	m <sup>2</sup>	70		
7.2.1.9	8.2.2	Smooth, plane vertical to walls	m <sup>2</sup>	35		
	8.2.6	<u>Box out holes suitable for:</u>				
7.2.1.10		DN300 pipe	No.	4		
<b>CARRIED FORWARD</b>						



ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
		<b><u>Backwash Chamber</u></b>				
7.2.1.11	8.2.1	Rough vertical plane to external walls below ground:	m <sup>2</sup>	25		
7.2.1.12	8.2.2	Smooth, plane vertical to walls	m <sup>2</sup>	10		
7.2.1.13		Smooth horizontal to roof slab	m <sup>2</sup>	10		
	8.2.6	<u>Box out holes suitable for:</u>				
7.2.1.14		DN800 pipe	No.	2		
7.2.1.15		DN600 pipe	No.	1		
7.2.2	PSG8.1.2	<b><u>REINFORCEMENT</u></b>				
		<b><u>All Structures</u></b>				
7.2.2.1	8.3.1	Mild steel bars	t	1		
7.2.2.2	8.3.1 8.1.2.3 a)	High-Tensile Steel bars	t	9		
		<i>High-tensile welded mesh:</i>				
7.2.2.3	8.3.2	Type reference 395 in standard sheets	m <sup>2</sup>	110		Rate Only
7.2.3	PSG8.1.3	<b><u>CONCRETE</u></b>				
		<b><u>Retaining structure between filter buildings:</u></b>				
7.2.3.1	8.4.2	50mm blinding layer in Grade 15 MPa/19 mm Concrete	m <sup>3</sup>	1		
7.2.3.2		Mortar floor screed (1:3 cement:sand) average 35 mm thick	m <sup>2</sup>	10		
	8.4.3	Grade 35 MPa/19 mm in:				
7.2.3.3		Walls	m <sup>3</sup>	4		
7.2.3.4		Floor slab	m <sup>3</sup>	4		
	8.4.4	<u>Unformed Surface Finishes</u>				
	b)	<u>Steel-floated finish to:</u>				
7.2.3.5		Top of walls	m <sup>2</sup>	5		
		<b><u>Sludge Chamber</u></b>				
7.2.3.6	8.4.2	50mm blinding layer in Grade 15 MPa/19 mm Concrete	m <sup>3</sup>	1		
7.2.3.7	8.4.2	Benching in Grade 25 MPa/19 mm Concrete	m <sup>3</sup>	2.5		
	8.4.3	<u>Strength Concrete</u>				
<b>CARRIED FORWARD</b>						

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		<b>BROUGHT FORWARD</b>				
7.2.3.8		Grade 15 MPa/19 mm in: Mass concrete where specified by engineer	m <sup>3</sup>	2		
	8.4.3	Grade 35 MPa/19 mm in:				
7.2.3.9		Walls	m <sup>3</sup>	20		
7.2.3.10		Floor Slab	m <sup>3</sup>	4		
	8.4.4	<u>Unformed Surface Finishes</u>				
	b)	Steel-floated finish to:				
7.2.3.11		Tops of walls and wier	m <sup>2</sup>	10		
7.2.3.12		Floor Slab	m <sup>2</sup>	10		
		<b><u>Backwash Chamber</u></b>				
7.2.3.13	8.4.2	50mm blinding layer in Grade 15 MPa/19 mm Concrete	m <sup>3</sup>	1		
7.2.3.14	8.4.2	Benching in Grade 25 MPa/19 mm Concrete	m <sup>3</sup>	2.5		
	8.4.3	<u>Strength Concrete Grade 35 MPa/19 mm in:</u>				
7.2.3.15		Walls	m <sup>3</sup>	6		
7.2.3.16		Floor Slab	m <sup>3</sup>	3		
7.2.3.17		Roof	m <sup>3</sup>	3		
	8.4.4	<u>Unformed Surface Finishes</u>				
	b)	Steel-floated finish to:				
7.2.3.18		Walls	m <sup>2</sup>	10		
7.2.3.19		Roof	m <sup>2</sup>	5		
7.2.4		<b><u>PRECAST UNITS</u></b>				
		Manufacture and erect precast reinforced concrete access lids as per drawing DET-250-01 inclusive of all lifting holes, plugging material as per detail, formwork, reinforcing (65kg/unit), concrete (grade 25/19), finishing, storage on site, transportation to final position and positioning at required level for lid sizes:				
7.2.4.1		2600x2600x300 slab	No	1		
7.2.5		<b><u>JOINTS</u></b>				
		<u>All Small Concrete Works</u>				
		<i>Construction joints</i>				
<b>CARRIED FORWARD</b>						

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		<b>BROUGHT FORWARD</b>				
7.2.5.1		Plain horizontal wall Construction joint: In Chambers	m	30		
7.2.5.2		Horizontal wall joint with 250mm galvanised water bar (water retaining): <u>With 250mm galvanised waterbar, in 300 mm thick walls</u>	m	30		
7.2.5.3		In Chambers	m	60		
7.2.6		<u>GROUTING</u> <u>All Small Concrete Works</u>				
		Cast in pipe of diameters:				
7.2.6.1		up to and incl DN300	No.	4		
7.2.6.2		greater than DN300	No.	3		
7.2.7	PSA 8.13	<u>MISCELLANEOUS</u>				
		Drilling 600mm diameter hole into existing structures and placing of pipework Refer to Detail A on Dwg DET-200-01				
7.2.7.1		Core drill 3 no. openings through existing 300mm thk wall at Splitter Box, place GRP pipes and seal with Sikaswell hydrophilic joint sealing and pourable non-shrink grout or polyester resin between core-drilled section and pipe  Air Vents (STD-102)	Sum	1		
		<u>All enclosed stand-alone RC Chambers:</u>				
7.2.7.2		Construct precast concrete air vent blocks and cast into chamber roofs complete as shown on detail drawing, including DN110 uPVC pipework, end cap with holes and gauze, formwork and mesh reinforcement:	No.	1		
7.2.7.3		Extra over Item 7.2.7.2 for extended 110 mm diameter Class 6 uPVC pipe droppers inside chambers, including supply and installation of aluminium holderbats & drilling and grouting same into walls	m	10		
		<b>WATER TIGHTNESS TEST</b>				
7.2.7.4		Sludge Chamber	Sum	1		
7.2.7.5		Backwash Chamber	Sum	1		
7.3	SANS 1200 H	<b>STRUCTURAL STEELWORK (SUNDRY ITEMS)</b>				
<b>CARRIED FORWARD</b>						

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		<b>BROUGHT FORWARD</b>				
7.3.1	PSH8.3	Supply, fabrication, corrosion protection, delivery and erection, shop drawings of steelwork complete				
		<b><u>Sludge Chamber:</u></b>				
	8.3.7 c)	Supply and install GMS handrails, and stanchions including all fixings DWG STD 200/201				
7.3.1.1	2)	Stanchions complete	No.	10		
7.3.1.2	1)	Hand and knee rails compete (both rails measured as a single linear distance)	m	24		
7.3.1.3	3)	End closure	No.	2		
7.3.1.4	3)	Bends (All angles) (both rails bends measured as a single Bend)	No	8		
7.3.2		<b><u>Backwash Chamber</u></b>				
		GMS Access manholes				
7.3.2.1	PSH8.3	"Multilocks" (MC10M-T-L) with standard pop shackle and master keyed to suit OR Tambo District Municipality standard key.	No	1		
7.3.2.2		1200 x 1200 GMS hinged covered frame as per standard drawing STD-204 for reservoirs and chambers	No.	1		
7.3.3		<b><u>Splitter Box</u></b>				
		Refer to Dwg DET-200-01 and DET-200-02				
	8.3.1	Supply, fabricate, deliver and install steelwork complete to the finishes/coatings specified in the specification and on the drawings				
7.3.3.1		GMS External access ladder with cage to roof. Refer to dwg DET-200-02	No.	3		
	8.3.9	Open grid flooring				
7.3.3.2		GRP platforms complete (sizes indicated on the drawings, 3 No. 38x38x38mm GRP panel 1000 x 1000mm long, GRP I Beam, base plates, bolts as per drawing DET-200-02	Sum	1		
		Extension Spindle and headstock				
<b>CARRIED FORWARD</b>						

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		<b>BROUGHT FORWARD</b>				
7.3.3.3		Supply and install off-vertical 20mm dia, approx 1.5m long (actual length to suit), 3CR12 extension spindle (c/w universal joints each end), plus 3CR12 standard Gereg or similar wall support bracket, plus non-standard 400mm high Gereg or similar 3CR12 handwheel pedestal; all suitable for actuating DN200 non-rising spindle wedge gate valve	No	3		
7.3.3.4		Install surface-mounted GRP sluice gate (FREE ISSUE MATERIAL) over 600mm dia opening with extension spindle and wall-mounted pedestal (400mm high above top of conc wall) and handwheel.	No.	3		
		Large Pipe supports detailed on drawing STD-203-01/02 Rate to include, design, manufacture, supply, deliver, erect, construct, load test pipe supports inclusive of all steel materials, pipe wrapping material, nuts, bolts, shop fitting drawings Corrosion protection as per spec to suit pipe diameter:				
7.3.4		Pipe supports to DN600 Pipe Retaining structure between filter buildings	No.	1		
7.3.5		Valve supports to DN600 valve Retaining structure between filter buildings	No.	1		
		<b>Raise the central well wall on the two more recently-constructed Clariflocculators (to be done while tank is operational; bridge can be stopped for short periods)</b>				
7.3.6	PSA8-13	Fabricate 5 No. curved moulds 300mm long, 200mm wide, 100mm high with horizontal curvature of 3.5m for casting 145 No. pre-cast concrete capping pieces	Sum	1		
7.3.7		Precast capping units: Supply 25MPa/20 concrete, cast in batches and cure for 21 days under water	No	145		
7.3.8		Once cured, clean existing surface of central well wall and affix precast units with skim-coat of General Purpose epoxy and seal gaps with latex-modified repair mortar	No	145		
		<b>Modify existing raw water distribution channel for three new outlets to new clariflocculators (see Drg /200-01 &amp; -02)</b>				
7.3.9		Create a temporary cofferdam between operational part of Distribution Channel end chamber and the three walls requiring new outlets for the new clariflocculators	Sum	1		
<b>CARRIED FORWARD</b>						

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**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 7 MINOR CONCRETE STRUCTURES

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
7.3.10		Core-drill opening in the three walls requiring new outlets	Sum	1		
7.3.11		Collect 3No GRP isolation sluiceways from storage on Site and install over the new openings (complete new ss anchor bolts drilled and chemically-grouted into wall with brackets and spindles for operation from walkway above).	Sum	1		
7.3.12		Extra-over item 7.3.11 above for fabricating 304ss spindle upper support brackets as per existing sluiceway	No	3		
7.3.13		Fabricate and install 3 No. GMS access platforms for sluiceways as detailed on Drg /200-02, complete with grating and access ladder	Sum	1		
<b>TOTAL FOR SECTION 7 CARRIED FORWARD TO SUMMARY</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
8.1	SANS 1200 DB	<p>This Section covers DN600 GRP raw water pipework from distribution channel to Clariflocculators; DN450 &amp; 600 HDPE settled water pipelines from Clariflocculators to Filter Building Inlet Manifold; DN300 uPVC waste sludge drainage pipelines from Clariflocculators to discharge point and DN200 scour pipeline from Filter Building</p> <p><b>EARTHWORKS (TRENCHES)</b></p>				
8.1.1	PSDB 8.3.2	<p><u>TRENCH EXCAVATION</u></p> <p><u>Drg DET XXX:</u> Bulk earthworks areas that are backfilled to FGL and require restricted excavation for pipe trenches</p>				
8.1.1.1		<p>Excavate trench up to 3.0m deep in areas backfilled under restricted earthworks under 10.1.1.1 incl backfill and compact at OMC to 95% mod AASTO for:</p> <p>Pipes larger than DN 150 up to DN500</p> <p><u>All other pipelines</u></p>	m	100		
	8.3.2(a)	<p>Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material, for pipes over DN160 pipe diameter and up to DN300 pipe diameter for uPVC pipes for depths</p> <p>Over but not exceeding</p>				
8.1.1.2		1.0 m 2.0 m	m	5		
8.1.1.3		2.0 m 3.0 m	m	7		
8.1.1.4		3.0 m 4.0 m	m	-		Rate Only
8.1.1.5		4.0 m 5.0 m	m	-		Rate Only
	8.3.2(a)	<p>Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material, for pipes over DN300 pipe diameter and up to DN600 pipe diameter for uPVC and HDPE pipes for depths</p> <p>Over but not exceeding</p>				
8.1.1.6		1.0 m 2.0 m	m	80		
8.1.1.7		2.0 m 3.0 m	m	110		
8.1.1.8		3.0 m 4.0 m	m	10		
8.1.1.9		4.0 m 5.0 m	m	-		Rate Only
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
	8.3.2(a)	Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material, for pipes over DN600 pipe diameter and up to DN800 pipe diameter for pipes for depths				
		Over but not exceeding				
8.1.1.10		2.0 m 3.0 m	m	31		
8.1.1.11		3.0 m 4.0 m	m	3		
8.1.1.12		4.0 m 5.0 m	m	-		Rate Only
8.1.1.13		5.0 m 6.0 m	m	-		Rate Only
	PSDB 8.3.2 (b)	<u>Extra-over items 8.1.1.10 to 8.1.1.13 for:</u>				
8.1.1.14	4)	Backfill stabilised with 8 % cement where directed by the Engineer (Typically all road crossings)	m <sup>3</sup>	10		
8.1.1.15	7)	Intermediate weathered sandstone using 30t excavator fitted with Heavy Duty Hydraulic Breaker	m <sup>3</sup>	200		
8.1.1.16	7)	Excavation in hard material (unweathered sandstone) using excavator-mounted heavy-duty hydraulic breaker (where approved by the Engineer)	m <sup>3</sup>	150		
8.1.1.17	7)	Excavation across compacted road subbase (estimated to be Intermediate mudstone / siltstone material) using 30t excavator fitted with Heavy Duty Hydraulic Breaker for total trench depths (width of trench to suit) including reinstating after laying sleeves and compacting to 97% ModAASHTO	m <sup>3</sup>	10		
8.1.1.18	7)	Hard rock by use of expanding grout where ordered by the engineer (typically up against pre built structures)	m <sup>3</sup>	0		
8.1.2	8.3.4	<u>PARTICULAR ITEMS</u>				
	8.3.4(a)	<u>Shore trench where necessary in soft material for depths:</u>				
8.1.2.1		2.0 m 3.0 m	m	10		
8.1.2.2		3.0 m 4.0 m	m	30		
8.1.2.3		4.0 m 5.0 m	m	10		
8.1.2.4		5.0 m 6.0 m	m	5		
<b>CARRIED FORWARD</b>						



ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
<b>8.2</b>	<b>SANS 1200L</b>	<b>BROUGHT FORWARD</b>				
		<b>MEDIUM PRESSURE PIPELINES</b>				
8.2.1		<u>uPVC Class 12 spigot &amp; socket pipes</u>				
	PSL 8.2.1 a)	Supply, handle, lay, bed, joint and test the following:				
8.2.1.1		200 mm diameter OD	m	14		
8.2.1.2		315 mm diameter OD	m	190		
<u>8.2.2</u>		<u>GRP PN6 SN5000 'Whiteline' constant OD pipes</u>				
	PSL 8.2.1 a)	Supply, handle, lay, joint, bed and test the following complete with couplings:				
8.2.2.1		DN600	m	47		
	PSL 8.2.1 a)	Extra over items 8.2.2 for construction rocker pipes complete with couplings:				
8.2.2.2		600 mm diameter, approx 1m long	No	11		
8.2.3		<u>HDPE PN6 PE100</u>				
	PSL 8.2.1 a)	Supply, handle, fusion-joint, bed and test HDPE pressure pipe:				
8.2.3.1		450 mm diameter OD	m	140		
	PSL 8.2.1 a)	Extra over items 8.2.3.1 for supplying and fusion-welding stub flanges with GMS backing rings for connection to steel pipes of the following sizes:				
8.2.3.2		450 mm diameter	No	3		
8.2.3.3		500mm diameter	No	3		
		<b>BENDS &amp; ADAPTORS</b>				
8.2.4		<u>uPVC Bends</u>				
	8.2.2	Extra over items 8.2.1.1 to 8.2.1.2 for the supplying, laying and bedding of uPVC specials complete with approved spigot to socket type joint to suit pipe				
8.2.4.1		315 mm, 90 degrees	No	-		Rate Only
8.2.4.2		315 mm, 45 degrees	No	1		
8.2.4.3		315 mm, 22.5 degrees	No	3		
8.2.4.4		315 mm, 11 degrees	No	-		Rate Only
8.2.5		<u>CI socketed flange adaptor for uPVC pipes</u>				
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 8 INTERCONNECTING PIPEWORK

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
8.2.5.1		200 mm PN10 FBE socketed flange adaptor	No	1		
8.2.5.2		315 mm PN10 FBE socketed flange adaptor	No	4		
8.2.6		<u>GRP PN6 SN5000 BENDS</u>				
	8.2.2	Extra over items 8.2.2.1 for the supplying, laying and bedding of GRP pipe specials, complete with sleeve couplings				
8.2.6.1		600 mm, 61 to 90 degrees	No	3		
8.2.6.2		600 mm, 30 to 60 degrees	No	4		
8.2.6.3		600 mm flange adaptor, PN10 - type A, complete with coupling	No	3		
8.2.7		<u>HDPE PN6 PE100 Flanged BENDS</u>				
	8.2.2	Extra over items 8.2.3.1 for the supplying, laying and bedding of HDPE pipe specials, complete with stub flanges and GMS backing rings				
8.2.7.1		450 mm, 61 to 90 degrees	No	1		
8.2.7.2		450 mm, 30 to 60 degrees	No	4		
		<b><u>TEES AND SPECIALS</u></b>				
8.2.8		<u>GRP PN6 SN5000</u>				
		GRP specials built into chambers measured under Schedule 7 - Minor Conc Works				
	8.2.2	Extra-over item 8.2.2.1 pipe laying for supplying and fitting additional couplings at connections to structures or closure pieces:				
8.2.8.1		600mm standard GRP couplings	No	6		
8.2.9	PSL 8.2.11	<u>ANCHOR/ THRUST BLOCKS</u>				
8.2.9.1		15MPa/20 Anchor blocks for tees, bends, end caps, horizontal and vertical bends as shown on drawing WAT 150. Rate to be inclusive of earthworks, formwork, concrete work, burying, backfilling, compacting	m <sup>3</sup>	10		
<b>8.3</b>	<b>SANS 1200LB</b>	<b>PIPE BEDDING</b>				
	8.2.1	<u>Provision of approved 'sibunga' bedding from commercial sources:</u>				
8.3.1	a)	Selected bedding material	m <sup>3</sup>	60		
8.3.2	b)	Selected fill material (blanket)	m <sup>3</sup>	60		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
8.3.3		<b>BROUGHT FORWARD</b> Extra over all pipe lay items for 6% cement stabilised bedding material around pipe (to 300mm above crown) for pipes crossing under roads or where directed by the Engineer	m <sup>3</sup>	10		
8.4	SABS 1200 L	<b>RAPID GRAVITY SAND FILTER BUILDING: INTERLINKING PIPEWORK</b>  Refer to Dwg J31067-DET-220-11				
	PSL 8.2.1 a)	Supply / fabricate, lay, joint, bed, disinfect and test Grade X42 6mm wall thickness epoxy lined and coated steel pipes and specials for the pipe sizes below:  NOTE: All pipe fittings and flange drillings to SANS Table 1123: 1000/3				
8.4.1		Item 1: DN600 90 degree elbow bend, flanged both ends	No	2		
8.4.2		Item 4: DN600 2555mm long straight pipe flanged both ends	No	1		
8.4.3		Item 5: DN600 4560mm straight puddle pipe with bellmouth on one end	No	1		
	PSL 8.2.2	<b>FITTINGS</b>  Supply and install the following fitting complete including all welding, labour, materials, bolts, nuts and correct pipe class rating etc.				
8.4.4		Item 2: DN600 PN10 ductile iron double-flanged double-eccentric isolating butterfly valve	No	1		
8.4.5		Item 3: DN600 Dismantling Joint	No	1		
	PSL 8.2.15  (c)	Special Wrapping of Pipes, Specials, Valves and Fittings  Wrapping of Permanently Exposed and Cast-in Pipes and Fittings				
8.4.6		Item 1: DN600 90 degree elbow bend, flanged both ends	No	2		
8.4.7		Item 4: DN600 2555mm long straight pipe flanged both ends	No	1		
8.4.8		Item 5: DN600 4560mm straight puddle pipe with bellmouth on one end	No	1		
8.5	SABS 1200 L	<b>SLUDGE CHAMBER PIPEWORK</b>  Refer to Dwg J31067-DET-250-01				
<b>CARRIED FORWARD</b>						

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**SECTION:** 8 INTERCONNECTING PIPEWORK

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
8.5.1	PSL 8.2.2	Supply, handle, lay, bed, joint, disinfect and test the following: All flanges are to conform with SABS 1123 Table 1000/3.  Item G1: DN300 GRP SN5000PN6 straight pipe, 800mm long, PN10 flange one end only (trim end inside chamber to suit)	No	4		
8.5.2		Item G2: DN300 cast iron socketed flange adaptor to suit 350mm uPVC pipe	No	4		
8.6	SABS 1200 L	<b>BACKWASH CHAMBER PIPEWORK</b>  Refer to Dwg J31067-DET-250-01  Existing DN800 GRP pipeline from existing filter building to sludge ponds:				
8.6.1		Cut 1500mm long by half pipe depth window on existing GRP pipeline after the backwash chamber has been constructed	Sum	1		
<b>8.7</b>		<b>MISCELLANEOUS</b>				
8.7.1		<u>SCOUR VALVE CHAMBER</u>  Construct complete as per Drawing No J31067/LAY-120-05				
8.7.1.1	PSLE 8.2.14	DN80 scour valve and chamber complete as shown on Detail 02, including DN200 GRP flange connection and socketed flange adaptor to suit DN160 uPVC,	Sum	1		
8.7.2		<u>HEADWALL</u>  Construct complete as per Drawing No J31067/LAY-120-05				
8.7.2.1	PSLE 8.2.14	On 160mm uPVC scour pipeline as shown on Detail 03	No	1		
8.7.3	PSLE 8.2.14	<u>MANHOLES</u>  Construct precast concrete manholes complete per as detailed on Drawing No. LAY-120-03 for depths:  Over and up to				
8.7.3.1		1.0 m to 2.0 m	No	2		
8.7.3.2		2.0 m to 4.0 m	No	1		
<b>TOTAL FOR SECTION 8 CARRIED FORWARD TO SUMMARY</b>						

CONTRACT: ORTDM SCMU 21-22/23  
 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 9 STAFF QUARTERS SEWER

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
<b>9.1</b>	<b>SANS 1200 C</b>	<b>SITE CLEARANCE</b>  Expose existing services				
9.1.1	8.3.8.1 (c)	Excavate in all materials by hand to expose existing services  Clear and grub	m <sup>3</sup>	50		
9.1.2	8.2.1	Clear and grub vegetation 2m width along pipe route incl. dispose of	m <sup>2</sup>	360		
9.1.3	8.2.10	Remove topsoil to a nominal depth of 150mm, stockpile and maintain.  Trenching across existing internal road	m <sup>3</sup>	120		
9.1.4		Remove 1m wide strip of segmented roadstone paving, conserve for re-instatement	m <sup>2</sup>	11		
9.1.5		Re-instate segmented paving	m <sup>2</sup>	11		
<b>9.2</b>	<b>SANS 1200DB</b>	<b>TRENCH EXCAVATION</b>				
9.2.1	PSDB 8.3.2					
	8.3.2. a)	Excavate in all materials for trenches, backfill, compact and dispose of surplus unsuitable material, for pipes up to 160mm uPVC for the following depths below. Rate to include for all temporary works including trimming, shoring and dewatering where necessary:				
9.2.1.1		1,0 m to 1,5 m	m	421		
9.2.1.2		1.5 m to 2.0m	m	20		
9.2.1.3		Extra-over above for where jackhammer required	m <sup>3</sup>	20		
9.2.2	SANS 1200LB	<u>BEDDING (PIPES)</u>				
	PSLB8.2.1	Provision of imported bedding and selected fill from commercial sources:				
9.2.2.1	a)	Selected granular material	m <sup>3</sup>	67		
9.2.2.2	b)	Selected fill material	m <sup>3</sup>	114		
9.2.2.3		Extra-over items 9.2.2.1 and 9.2.2.2] for 6% cement-stabilizing of bedding and selected backfill under roads	m <sup>3</sup>	6		
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
**CONTRACT TITLE:** CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
**SECTION:** 9 STAFF QUARTERS SEWER

**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
9.2.3	SABS 1200LD	<u>PIPES</u>				
	8.2.1	Supply, handle, lay and bed SABS 791 class 34 heavy duty uPVC pipes for sewers complete with socketed rubber ring-coupled joints:				
9.2.3.1		110 mm	m	83		
9.2.3.2		160 mm	m	340		
9.2.4	8.2.3	<u>MANHOLES</u>				
		Precast concrete manholes, 760 mm diameter, as detailed on the Drawing STD-510: complete with benching to suit pipe alignment				
9.2.4.1		Depth not exceeding 1.5 m	No.	14		
		Extra-over item 9.2.4.1 for:				
9.2.4.2		Building MH over existing 110 sewer pipe fro WTW Admin Building	Sum	1		
9.2.4.3		Breaking into existing terminal MH and making-good the incoming Staff Quartres sewer above the existing MH benching	Sum	1		
9.3	<b>SANS 1200 G</b>	<b>CONCRETE (STRUCTURAL)</b>				
		<b>PIPE BRIDGE</b>				
9.3.1	PSG8.1.1	<u>FORMWORK</u>				
		Rough, vertical plane to elements				
9.3.1.1		Sides of floor slab	m	20		
	8.2.2	Smooth, vertical plane to elements				
9.3.1.2		Walls (sides of structure)	m <sup>2</sup>	30		
9.3.2	PSG8.1.2	<u>REINFORCEMENT</u>				
9.3.2.1		Mild steel bars	t	0.1		
9.3.2.2		High-Tensile Steel bars	t	1		
9.3.3	PSG8.1.3	<u>CONCRETE</u>				
9.3.3.1	8.4.2	50mm blinding layer in Grade 15 MPa/19 mm Concrete	m <sup>3</sup>	1		
	8.4.3	Grade 25 MPa/19 mm in:				
9.3.3.2		Footings and columns	m <sup>3</sup>	3		
9.3.3.3		Encased pipe	m <sup>3</sup>	5		
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
	8.4.4	<u>Unformed Surface Finishes</u>				
9.3.3.4	b)	<u>Steel-floated finish to:</u> Top of pipe encasement	m <sup>2</sup>	8		
9.3.4		<b>CONNECTION TO BATHROOMS &amp; KITCHENS</b>				
		Deal with wastewater from Staff Quarters once construction of sewer has advanced close enough to receive flows				
9.3.4.1	PSA8-13	Temporary measures to divert wastewater from staff quarters into new sewer (to bypass septic tank) once the sewer has advanced close enough, then drain saturated areas, pump-out contents of septic tanks (by vacuum tanker) and dispose of at Wastewater Treatment Works, then complete the connections from the staff houses to the new sewer and commission same. Rate to include demolishing all septic tank structures and disposing of the rubble.	Sum	1		
9.3.4.2		Tie-in new 110mm sewer into existing baths and kitchen drains	Sum	1		
9.4	SABS 1200 DK	<b>GABIONS &amp; PITCHING</b>				
		At pipe bridge				
		Surface preparations for bedding				
9.4.1	8.2.1(a)	Cavities filled with approved excavated materials	m <sup>2</sup>	10		
		Mattress Gabions: Nominal 80mm galvanised and PVC coated wire mesh				
9.4.2	8.2.2	1m X 2m gabions box	m <sup>3</sup>	54		
		Facing of gabions				
9.4.3	8.2.3	Extra-over Items 10.2.2 for packing selected stone at exposed face	m <sup>2</sup>	18		
		Supply and lay non- woven geotextile (minimum mass 270g/m <sup>2</sup> )				
9.4.4	8.2.4	Below and on sides of gabion mattress	m <sup>2</sup>	108		
<b>TOTAL FOR SECTION 9 CARRIED FORWARD TO SUMMARY</b>						

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 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 10 SITE WORKS & SERVICES

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
10.1	SANS 1200 D	<b>This Section covers modifications &amp; extensions to internal access roads, backfilling existing structures, landscaping, gabion retaining walls and general finishing and micellaneous items</b>  <b>EARTHWORKS</b>				
10.1.1	PSD8.3.3	<u>RESTRICTED EXCAVATION</u>  BACKFILL AROUND STRUCTURES				
10.1.1.1		Load from temporary stockpiles, backfill around structures in layers not exceeding 300mm including conditioning to OMC and compacting to 93% modAASHTO	m <sup>3</sup>	0		
10.1.2		BACKFILL AND LANDSCAPING AROUND STRUCTURES  Cut-to-fill in soft material or load from temporary stockpiles, place in layers not exceeding 300mm and construct fill platforms around structures to specified finished ground levels, including conditioning to OMC and compacting to 93% modAASHTO and trimming and compacting surfaces to line and level ready to receive final topsoil layer	m <sup>3</sup>	0		
10.1.3	8.3.10	REPLACE TOPSOIL  Excavate from stockpile and spread in even layers to all stripped areas or as directed by the Engineer	m <sup>3</sup>	0		
10.2		<b>ENTRANCE GATE &amp; CHLORINATION BUILDING ACCESS</b>				
10.2.1	SABS 1200 D	<b>EARTHWORKS</b>				
10.2.1.1	8.3.1.2	Strip topsoil (Assumed nominal Depth of 150mm), stockpile in windrows and maintain for duration of Contract. Area measured along slope	m <sup>3</sup>	39		
10.2.2	8.3.10	Excavate topsoil from stockpile and spread in 150mm layer to all cut and fill slopes of platforms as directed by engineer	m <sup>3</sup>	12		
10.2.3	8.3.2(a)	Cut to fill in all soil material including conditioning to OMC and compacting to 98% mod AASHTO and trimming and compacting surfaces to line and level	m <sup>3</sup>	16.3		
10.2.4	8.3.2(b)	Extra over Item 4.3.3 for hard rock excavation	m <sup>3</sup>	2		
<b>CARRIED FORWARD</b>						



ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
10.2.5	8.3.2(a)	Backfill from stockpile for embankments in layers not exceeding 150mm to 98% MOD AASHTO with selected material from stockpiles.	m <sup>3</sup>	27		
10.2.6	<b>SANS 1200DM</b>	<b>ROAD EARTHWORKS</b>				
10.2.6.1	8.3.3 (a)	Rip and Re-compact insitu material 150mm deep to 98% MOD AASHTO as directed by the engineer	m <sup>3</sup>	20.4		
10.2.7	<b>SABS 1200ME</b>	<b>BASE</b>				
10.2.7.1	8.3.3	Construct 150mm layer of G2 base compacted to 100% of Mod AASHTO density material to be imported from commercial source.	m <sup>3</sup>	20.4		
10.2.8	<b>SABS 1200MH</b>	<b>BLOCK PAVING</b>				
10.2.8.1	8.5.3	Supply and Install Concrete segmented paving blocks (Type SA, 80 mm thick), complete with 20mm fine sand bedding	m <sup>2</sup>	136		
10.2.9	8.2.3	Straight Edge Cutting to Fit Kerbs	m	86		
10.2.10	8.2.3	Edge Cutting on a curve to Fit Kerbs	m	10		
10.2.11	<b>SABS 1200MK</b>	<b>KERBING</b>				
		Precast kerbing to SABS 927: Figure 12 kerb including concrete backing and haunching to road edge				
10.2.11.1	8.2.2	b)Radius over 20m and straight section	m	22		
		Precast kerbing to SABS 927: Figure 4 kerb including concrete backing and haunching to road edge				
10.2.11.2	8.2.2	a)Radius <20m	m	10		
10.2.11.3	8.2.2	b)Radius over 20m and straight section	m	61		
		1m Cast insitu transition kerb between Figure 4 and Figure 12 20/19 grade concrete				
10.2.11.4	8.2.2	Radius over 20m and straight section	m	2		
<b>10.3</b>		<b>NEW FILTER BUILDING ACCESS</b>				
<b>10.3.1</b>	<b>SABS 1200 D</b>	<b>EARTHWORKS</b>				
<b>CARRIED FORWARD</b>						

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
10.3.1.1	8.3.1.2	Strip topsoil (Assumed nominal Depth of 150mm), stockpile in windrows and maintain for duration of Contract. Area measured along slope	m <sup>3</sup>	111		
10.3.2	8.3.10	Excavate topsoil from stockpile and spread in 150mm layer to all cut and fill slopes of platforms as directed by engineer	m <sup>3</sup>	33		
10.3.3	8.3.2(a)	Cut to fill in all material including conditioning to OMC and compacting to 98% modAASHTO and trimming and compacting surfaces to line and level	m <sup>3</sup>	13.2		
10.3.4	8.3.2(b)	Cut to spoil in hard rock where heavy duty hydraulic breaker needed.	m <sup>3</sup>	1.5		
10.3.5	8.3.2(a)	Backfill from stockpile for embankments in layers not exceeding 150mm to 98% MOD AASHTO with selected material from stockpiles.	m <sup>3</sup>	390		
<b>10.3.6</b>	<b>SABS 1200 DM</b>	<b>ROAD EARTHWORKS</b>				
10.3.6.1	8.3.3 (a)	Rip and Re-compact insitu material 150mm deep to 98% MOD AASHTO in areas with poor insitu material as directed by the engineer	m <sup>3</sup>	81		
<b>10.3.7</b>	<b>SABS 1200ME</b>	<b>BASE</b>				
10.3.7.1	8.3.3	Construct 150mm layer of G2 base compacted to 100% of Mod AASHTO density material to be imported from commercial source.	m <sup>3</sup>	81		
<b>10.3.8</b>	<b>SABS 1200MH</b>	<b>BLOCK PAVING</b>				
10.3.8.1	8.5.3	Supply and Install Concrete segmented paving blocks (Type SA, 80 mm thick), complete with 20mm fine sand bedding	m <sup>2</sup>	540		
10.3.9	8.2.3	Straight Edge Cutting to Fit Kerbs	m	173		
10.3.10	8.2.3	Edge Cutting on a curve to Fit Kerbs	m	2		
<b>10.3.11</b>	<b>SABS 1200MK</b>	<b>KERBING</b>				
		Precast kerbing to SABS 927: Figure 12 kerb including concrete backing and haunching to road edge				
10.3.11.1	8.2.2	b) Radius over 20m and straight section	m	80		
	SABS 1200MK	Precast kerbing to SABS 927: Figure 4 kerb including concrete backing and haunching to road edge				
<b>CARRIED FORWARD</b>						

CONTRACT: ORTDM SCMU 21-22/23  
 CONTRACT TITLE: CONSTRUCTION OF THORNHILL WTW Ph3 UPGRADING: CIVIL  
 SECTION: 10 SITE WORKS & SERVICES

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		<b>BROUGHT FORWARD</b>				
10.3.11.2	8.2.2	a)Radius <20m	m	2		
10.3.11.3	8.2.2	b)Radius over 20m and straight section	m	8		
	SABS 1200MK	1m Cast insitu transition kerb between Figure 4 and Figure 12 20/19 grade concrete				
10.3.11.4	8.2.2	Radius over 20m and straight section	m	1		
10.4	<b>SABS 1200 DK</b>	<b>GABIONS &amp; PITCHING</b>				
		Surface preparations for bedding of gabions				
10.4.1	8.2.1(a)	Cavities filled with approved excavated materials	m <sup>2</sup>	10		
		Mattress Gabions: Hexagonal nominal 80mm galvanised and PVC coated wire mesh				
10.4.2	8.2.2	1m X 2m gabions box	m <sup>3</sup>	80		
		Facing of gabions				
10.4.3	8.2.3	Extra-over Items 10.2.2 for packing selected stone at exposed face	m <sup>2</sup>	80		
		Supply and lay non- woven geotextile (minimum mass 270g/m2)				
10.4.4	8.2.4	Below and on sides of mattress gabions	m <sup>2</sup>	120		
10.5		<b>MISCELLANEOUS</b>				
		COLLECT FILTER SAND				
10.5.1	PSA8-13	Carefully select filter sand spilled-out from UV-damaged storage bags before general clearing and grubbing for Bulk Excavation and distribute among existing filter beds as directed by the Engineer on Site	m <sup>3</sup>	5		
		STAFF QUARTERS & CHLORINATOR BUILDING WATER SUPPLY				
10.5.2		Obtains quotes for plumber to install a PRV on water supply pipeline to Staff Quarters to reduce pressure from 10Bar to 3 Bar and to extend existing reticulation to new chlorine building	PC Sum	1	30 000.00	30 000.00
10.5.3		Contractor's mark-up on above	%	30 000.00		
		EXISTING FILTERS UPGRADE				
10.5.4		Obtains quotes for Specialist Supplier to upgrade spent backwash outlet valves and actuators to Engineer's detail	PC Sum	1	850 000.00	850 000.00
<b>CARRIED FORWARD</b>						

**CONTRACT:** ORTDM SCMU 21-22/23  
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**BILL OF QUANTITIES**

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
10.5.5		<b>BROUGHT FORWARD</b> Contractor's mark-up on above	%	850 000.00		
<b>TOTAL FOR SECTION 10 CARRIED FORWARD TO SUMMARY</b>						