

NGCOBO EXTENSION 11 - INTERNAL SERVICES
BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
SECTION 1 : GENERAL

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.1	1200A/ PSA/ PSAB 3	FIXED-CHARGE ITEMS				
1.1.1	8.3.1	Contractual Requirements - to include all insurances and guarantees required.	Sum	1		
1.1.2	8.3.2	Establish Facilities on the Site :				
1.1.2.1		i) Facilities for Engineer				
1.1.2.1.1		a) Offices: 1 furnished room with furniture to accommodate 10 people. Locable toilet facility to be provided for the sole use of the Engineer.	Sum	1		
1.1.2.1.2		b) Nameboard (2 No.)	Sum	1		
1.1.2.1.3		c) Survey Equipment	Sum	1		
1.1.2.1.4	c4.1.6.1(vii)	e) Computer Equipment	Sum	1		
1.1.2.2	8.3.2.2	ii) Facilities for Contractor				
1.1.2.2.1		a) Office and storage sheds	Sum	1		
1.1.2.2.2		b) Ablution and latrine facilities	Sum	1		
1.1.2.2.3		c) Tools and equipment	Sum	1		
1.1.2.2.4		d) Water supplies,electric power and communications	Sum	1		
1.1.2.2.5	8.3.3	e) Other fixed-charge obligations	Sum	1		
1.1.2.2.6	PSA8.3.4	f) Remove Engineer's and Contractor's site establish-ment on completion	Sum	1		
1.2	1200A/ PSA8.2.2	TIME-RELATED ITEMS				
1.2.1	8.4.1	Contractual Requirements	Sum	1		
1.2.2	8.4.2	Operate and maintain facili-ties on the site:				
1.2.2.1	8.4.2.1	i) Facilities for Engineer for duration of construction				
1.2.2.1.1		a) Offices: 1 furnished room with furniture to accommodate 10 people. Toilet facility to be provided.	Sum	1		
1.2.2.1.2		b) Nameboard	Sum	1		
		c) Survey Equipment	Sum	1		
		d) Cellphone allowance for the ER at R500 per month	Sum	1		
	c4.1.6.1(vii)	e) Computer Equipment	Sum	1		
1.2.2.2	8.4.2.2	ii) Facilities for Contractor for duration of construction, except where otherwise stated				
1.2.2.2.1		a) Ablution and latrine facilities	Sum	1		
1.2.2.2.2		b) Tools and equipment	Sum	1		
1.2.2.2.3		c) Water supplies, electric power and communications	Sum	1		
CARRIED FORWARD						

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ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
1.2.2.2.4	8.4.3	d) Supervision for duration of the contract.	Sum	1		
1.2.2.2.5	8.4.4	e) Company and head office overhead costs	Sum	1		
1.2.2.2.6	8.4.5	f) Other time related obligations	Sum	1		
1.2.2.3	8.4.6	Community liaison officer (CLO) at R3500 per month	Sum	1		
1.3	8.7 PSA 8.5	DAYWORKS				
1.3.1		i) Labour	PSum	50000	1.00	50 000.00
1.3.1.1		ii) Percentage adjustment to item 1.3.1 for labour	%	50000		
1.3.2		iii) Materials	PSum	50000	1.00	50 000.00
1.3.2.1		iv) Percentage adjustment to item 1.3.2 for materials	%	50000		
1.3.3		v) Plant	PSum	50000	1.00	50 000.00
1.3.3.1		vi) Percentage adjustment to item 1.3.3 for plant	%	50000		
1.3.4	PSA 8.9	Allow provisional sum for additional density testing, where ordered by Engineer	PSum	50000	1.00	50 000.00
1.3.4.1		Overhead charges and profit on 1.3.4	%	50000		
1.4	8.8	TEMPORARY WORKS				
1.4.1	8.8.5	Land Survey Act				
1.4.1.1		Search for and record tri- gonometrical survey beacons, bench marks and plot boundary pegs, and expose on completion of Works	Sum	1		
1.4.1.2		Protect beacons, etc., located under item 1.4.1.1 and reposition or re-establish, as ordered, the same by a Registered Land Surveyor on completion of the Works	Sum	1		
1.5	PSA 5.7/ 8.10	HEALTH AND SAFETY CONSTRUCTION & ENVIRONMENTAL REGULATIONS				
1.5.1		i) All fixed cost and obligations to comply with the OH&S Act	Sum	1		
1.5.2		ii) Time related obligations to comply with the OH&S Act	Sum	1		
1.6.1		i) All fixed costs and obligation to comply with the Environmental Management Plan	Sum	1		
1.6.2		ii) Time related obligations to comply with the Environmental Management Plan	Sum	1		
1.7	PSA 8.9	Allow provisional sum for density testing, where ordered by Engineer	Sum	1	50 000.00	50 000.00
1.7.1	8.5	Overhead charges and profit on 1.7	%	50000		
TOTAL FOR SECTION 1 CARRIED FORWARD TO SUMMARY						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
SECTION 2 : SITE CLEARANCE

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
2.1	PSC 8.2.1	Clear and grub (haul included) of proposed development site	ha	90		
TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 3 : ROADWORKS - INTERNAL ROADS: 5m WIDE & ACCESS ROUTE

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1	1200 C	SITE CLEARANCE				
3.1.1	PSC 8.2.1	Clear and grub road reserve width 16m - 20m	ha	13.5		
3.1.2	PSC 8.2.10	Remove topsoil to a depth of 150mm and spoil or stockpile as designated by the engineer.	m ²	35863		
3.2	1200 DM	EARTHWORKS (ROADS, SUBGRADE and WEARING COURSE)				
3.2.1	8.3.4 PSD 8.1.4 PSD 8.3.6 PSDM 8.3.6	Cut to fill in all materials other than hard rock and compact to 90% Mod.AASHTO maximum density.	m ³	5630		
3.2.2	8.3.4 PSD 8.3.6	Borrow to fill and compact to 90% Mod.AASHTO maximum density.	m ³	2884		
3.2.3	8.3.6 PSD 8.3.6	Extra-over item 3.2.1 & 3.2.2 inclusive for excavating and breaking down hard material.	m ³	987		
3.2.4	8.3.7 PSD 8.3.6 PSDM 8.3.7	Cut to spoil to designated area within boundaries of the site from				
3.2.4.1		i) Soft excavation	m ³	1647		
3.2.4.2		ii) Hard excavation	m ³	232		
3.2.4.3		iii) Boulder excavation Class A	m ³	116		
3.2.4.4		iv) Boulder excavation Class B	m ³	111		
		Treatment of Roadbed				
	8.3.3	Road-bed preparation and compaction of material				
3.2.5		Scarify insitu layer to a depth of 150mm, and compact to 93% Mod. AASHTO maximum density.	m ³	5973		
3.3		SELECTED SUBGRADE				
3.3.1	8.3.5	Construct G7 Gravel Sugrade with material from commercial sources and compact to 95 % Mod.AASHTO maximum density. (Provisional)	m ³	6600		
3.4		GRAVEL SURFACING WEARING COURSE				
3.4.1	8.3.16	Construct 150mm thick gravel wearing course to TRH 20 specification using 'G7' material from commercial sources and compact to 95% Mod.AASHTO maximum density.	m ³	5973		
	SANS 1200DM 8.3.13	SURFACE FINISHES				
3.4.2		Topsoiling 1m wide	m ²	20000		
3.4.3		Levelling and grassing 1m wide strip	m ²	20000		
CARRIED FORWARD						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 3 : ROADWORKS - INTERNAL ROADS: 5m WIDE & ACCESS ROUTE

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.5	1200GA	BROUGHT FORWARD CONCRETE (SMALL WORKS) For causeway crossings over the Cefane and Engcobo rivers				
	8.2	FORMWORK Permanent formwork:				
3.5.1		900 mm dia. corrugated iron void formers	m	100		
3.5.2		900 mm dia corrugated iron bevelled ends to suit 1:2 slopes	No	20		
		Temporary formwork				
3.5.3		Shuttering to ends of road slab	m ²	30		
	8.3	STEEL REINFORCEMENT FOR STRUCTURES To Road Surface and aprons:				
3.5.4		Mild steel bars	t	2		
3.5.4		Welded steel fabric	kg	7000		
	8.4	CONCRETE FOR STRUCTURES				
3.5.5		Class 15/19 Blinding layer and fill around void formers	m ³	500		
		Class 25/19 structural concrete				
3.5.6		Road Slab 200mm thick, smooth floated	m ³	160		
3.5.7		Approach slabs (inlet and outlet) 150mm thick, smooth floated	m ³	100		
3.5.8		200x300x846 mm cast insitu concrete bollards	m ³	5		
3.6	1200DK	GABIONS AND PITCHING				
3.6.1	8.2.1 (a)	Surface preparation for bedding of gabions with approved fill or rock	m ²	1100		
	8.2.2	Gabions				
3.6.2		Galvanised gabion boxes, 1mx1mx1m, Mesh Type 80 with 2,7mm Class A Galvanised wire	m ³	270		
3.6.3		Galvanised gabion mattresses, 6mx2mx0.3m dp, Mesh Type 60 with 2,2mm Class A Galvanised wire	m ³	350		
	8.2.4	Geotextile				
3.6.4		Filter Fabric (AG150 - Minimum Energy Absorption - 4,0 kN/m):	m ²	1100		
TOTAL FOR SECTION 3 CARRIED FORWARD TO SUMMARY						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 4 : ROADWORKS - INTERNAL ROADS: 3m WIDE

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
4.1	1200 C	SITE CLEARANCE				
4.1.1	PSC 8.2.1	Clear and grub road reserve width 10m	ha	13.5		
4.1.2	PSC 8.2.10	Remove topsoil to a depth of 150mm and spoil or stockpile as designated by the engineer.	m ²	40448		
4.2	1200 DM	EARTHWORKS (ROADS, SUBGRADE and WEARING COURSE)				
4.2.1	8.3.4 PSD 8.1.4 PSD 8.3.6 PSDM 8.3.6	Cut to fill in all materials other than hard rock and compact to 90% Mod.AASHTO maximum density.	m ³	9438		
4.2.2	8.3.4 PSD 8.3.6	Borrow to fill and compact to 90% Mod.AASHTO maximum density.	m ³	4045		
4.2.3	8.3.6 PSD 8.3.6	Extra-over item inclusive for excavating and breaking down hard material.	m ³	1888		
4.2.4	8.3.7 PSD 8.3.6 PSDM 8.3.7	Cut to spoil to designated area within boundaries of the site from				
4.2.4.1		i) Soft excavation	m ³	3236		
4.2.4.2		ii) Hard excavation	m ³	404		
4.2.4.3		iii) Boulder excavation Class A	m ³	202		
4.2.4.4		iv) Boulder excavation Class B	m ³	202		
4.3		TREATMENT OF ROAD-BED				
	8.3.3	Road-bed preparation and compaction of material				
4.3.1		Scarify insitu layer to a depth of 150mm, and compact to 93% Mod. AASHTO maximum density.	m ³	6067		
4.4		SELECTED SUBGRADE				
4.4.1	8.3.5	Construct G7 Gravel Sugrade with material from commercial sources and compact to 95 % Mod.AASHTO maximum density. (Provisional)	m ³	6700		
4.5		GRAVEL SURFACING WEARING COURSE				
4.5.1	8.3.16	Construct 150mm thick gravel wearing course to TRH 20 specification using 'G7' material from commercial sources and compact to 95% Mod.AASHTO maximum density.	m ³	6067		
	SANS 1200DM 8.3.13	SURFACE FINISHES				
4.5.2		Topsoiling 1m wide	m ²	20000		
4.5.3		Levelling and grassing 1m wide strip	m ²	20000		
TOTAL FOR SECTION 4 CARRIED FORWARD TO SUMMARY						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 5 : STORMWATER DRAINAGE (Internal)

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.1	1200 DA	EXCAVATION				
		GRAVEL SIDE DRAINS				
5.1.1	8.3.2	Excavate in all materials for gravel side drains for fill in road prism and compact base of drain to 90% Mod.AASHTO maximum density for depths up to 0.7m deep.	m ³	8000		
5.1.2	8.3.2	Excavate in all materials for gravel side drains and spoil for depths up to 0.7m.	m ³	8000		
5.1.3	PSDA 8.3.9	Provide grass berms	no	800		
5.1.4	PSDA 8.3.10	Line channel with grass sods	no	1000		
5.1.5	1200 DK 8.2.5	Supply all materials and labour and construct light stone pitching through POS, Lined V Drains Stormwater Servitudes as per Dwg No J28267/TD001	m ²	2844		
5.2	1200 GA	CONCRETE ROAD CROSSINGS				
5.2.1	PSGA 8.1.4	(a) Construction of Concrete Crossover Drain (20MPa/19mm) complete, including excavation, trimming of sides, compaction and supply, placing compaction and finishing of concrete, as per Dwg No. J28267/TD001	no	11		
5.2.2	PSGA 8.1.4	(b)i) Construction of Concrete Dished drain at Intersection complete, including excavation, trimming of sides, compaction and supply, placing compaction and finishing of concrete, as per Dwg No. J28267/TD001	no	7		
5.2.3	PSGA 8.1.4	(b)ii) Construction of Concrete Link Drain through SW-SERVITUDES or P.O.S complete, including excavation, trimming of sides, compaction and supply, placing compaction and finishing of concrete, as per Dwg No. J28267/TD001	no	29		
5.2.4	PSGA 8.1.5	Extra Over Items 5.2.1, 5.2.2, and 5.2.3 above for additional (20MPa/19mm) concrete, for lengths greater than those indicated on Typical Detail Dwg No. J28267/TD001	m ³	10		
5.3	1200DB	STORMWATER PIPES AND STRUCTURES				
	8.3.2 PSD 8.3.2(b) PSD 8.3.6	Excavate in all materials for trenches backfill and compact, incl. dispose of surplus materials for pipes:				
5.3.1		(a) From 600 mm diameter upto 750 mm diameter for depths over and up to		0		
5.3.1.1		i) 0.0 m 1.5 m	m	377		
5.3.1.2		ii) 1.5 m 2.0 m	m	377		
CARRIED FORWARD						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
SECTION 5 : STORMWATER DRAINAGE (Internal)

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.3.1.3		BROUGHT FORWARD				
5.3.2		iii) 2.0 m 2.5 m	m	188		
5.3.2.1		(b)From 900 mm diameter upto 1050 mm diameter for depths over and up to				
5.3.2.2		i) 0.0 m 1.5 m	m	116		
5.3.2.3		ii) 1.5 m 2.0 m	m	578		
5.3.3	8.3.2	iii) 2.0 m 2.5 m	m	462		
		b) Extra over Items 5.3.1 and 5.3.2 for (prov)		0		
		i) Hard rock excavation	m ³	500		
5.4	1200 LB PSLB 8.1.3	PROVISION OF BEDDING				
5.4.1	8.2.1	From trench (Within 0.5Km)				
5.4.1.1	PSLB 8.1.7	i) Selected bedding material	m ³	806		
5.4.1.2		ii) Selected fill material	m ³	1825		
5.4.2	8.2.2.2	Imported from borrow pit on site or off site.				
5.4.2.1	PSLB 8.1.7	i) Selected bedding material	m ³	65		
5.4.2.2		ii) Selected fill material	m ³	203		
5.4.3	8.2.2.3	Imported from commercial sources				
5.4.3.1	PSLB 8.1.7	i) Selected bedding material	m ³	—		
5.4.3.2		ii) G7 fill material for backfill under roads	m ³	148		
5.4.4	8.2.3	Concrete bedding (Provisional)	m ³	5		
5.5	1200LE	PIPES				
5.6	8.2.1	Supply, handle, lay, bed, as per Dwg No. J28267/TD001 for pipes under roadways, concrete pipes with ogee joints				
5.6.1		i) 600mm DIA Class 75D	m	94		
5.6.2		ii) 750mm DIA Class 75D	m	25		
5.6.3		iii) 900mm DIA Class 75D	m	57		
5.6.4		iv) 1050mm DIA Class 75D	m	42		
5.7	8.2.1	Supply, handle, lay, bed in class C bedding, as per Dwg No. J28267/TD001 for pipes not under roadways, concrete pipes with ogee joints.				
5.7.1		i) 600mm DIA Class 25D	m	507		
5.7.2		ii) 750mm DIA Class 25D	m	346		
5.7.3		iii) 900mm DIA Class 25D	m	767		
5.7.4		iv) 1050mm DIA Class 25D	m	289		
5.8	PSLE 8.2.8	MANHOLES and OUTLET STRUCTURES (Headwalls)				
		a) Construct Manhole/Junction Box as per Dwg.J28267/TD 002 for depths up to 2.0m.				
CARRIED FORWARD						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
 BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
 SECTION 5 : STORMWATER DRAINAGE (Internal)

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
5.8.1		BROUGHT FORWARD i) 1.0 - 1.5m Depth	no	2		
5.8.2		ii) 1.5 - 2.0m Depth	no	5		
5.8.3		b) Construct Side Inlet Manholes Type B as per Dwg. J28267/TD 002 i) 1.0 - 1.5m Depth	no	10		
5.8.4		ii) 1.5 - 2.0m Depth	no	23		
5.8.5		c) Construct complete as per Dwg No. J28267/TD002 (i) Outlet headwalls for pipe sizes up to 750 mm diameter	no	10		
5.8.6		(ii) Outlet headwalls for pipe sizes greater than 750 mm diameter up to 1200	no	7		
5.9	1200 DK	STONE PITCHING				
5.9.1	8.2.5	Supply all materials and labour and construct light stone pitching at inlets and/or outlets where instructed by Engineer	m ²	5000		
TOTAL FOR SECTION 5 CARRIED FORWARD TO SUMMARY						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
SECTION 6 : SEWER RETICULATION (INTERNAL)

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
6.1	1200 DB	SITE CLEARANCE				
6.1.1	8.3.1	Clear and grub 3m strip for erf connections ONLY to approved areas off Site irrespective of haul distance.	m	27629		
6.2		EXCAVATION				
	8.3.2 PSD 8.3.2 (b) PSD 8.3.6	(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material, for pipes from 160mm to 250mm in diameter for depths:				
6.2.1		i) 0,0 m 1,0 m	m	1350		
6.2.2		ii) 1,0 m 2.0 m	m	16000		
6.2.3		iii) 2.0 m 3.0 m	m	850		
	8.3.2	(b) Extra-over items 5.2.1.1 to 5.2.1.4 inclusive for (provisional):				
6.2.4		i) Hard rock excavation	m ³	5000		
6.2.5	8.3.2	(c) Excavate and dispose of unsuitable material from trench bottom (Provisional)	m ³	1500		
6.3		EXCAVATION ANCILLARIES				
	8.3.3.3	Compaction in road reserves				
6.3.1		i) Compaction to a minimum of 98% Mod. AASHTO density in all material	m ³	960		
	8.3.4	Shore trench:				
		Exceeding but not exceeding				
6.3.2		i) 1,5 m 2,0 m	m	5500		
6.3.3		ii) 2.0 m 3.0 m	m	5350		
6.4	1200 LB PSLB 8.1.3	PROVISION OF BEDDING				
	8.2.1	Available from trench within 0,5 km (Subclause 3.4.1)				
6.4.1	PSLB 8.1.7	i) Selected granular material	m ³	3500		
6.4.2		ii) Selected fill material	m ³	1500		
	8.2.2.2	Available from Borrow Pits on or off site				
6.4.3	PSLB 8.1.7	i) Selected granular material	m ³	500		
6.4.4		ii) Selected fill material	m ³	500		
	8.2.2.3	Imported from Commercial sources (Provisional)				
6.4.5	PSLB 8.1.7	i) Selected granular material	m ³	500		
6.4.6	8.2.3	Concrete bedding (Provisional)	m ³	500		
6.5	1200 LD	PIPEWORK				
	PSLD 8.2.1	Supply, lay, joint, bed and test sewer pipes complete with couplings				
6.5.1		(i) 160 mm diameter mainCore uPVC (Class 34)	m	17710		
6.5.2		(ii) 200 mm diameter mainCore uPVC (Class 34)	m	372		
CARRIED FORWARD						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
 BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
 SECTION 6 : SEWER RETICULATION (INTERNAL)

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
6.6	PSLD 8.2.3	BROUGHT FORWARD MANHOLES Precast concrete manholes complete incl. Type 2A cover and frames as detailed on dwg J28267/TD101 over and up to				
6.6.1		i) 1.0 m 1.5 m	No.	150		
6.6.2		ii) 1.5 m 2.0 m	No.	90		
6.6.3		iii) 2.0 m 3.0 m	No.	80		
6.7	PSLD 8.2.1	ERF CONNECTIONS Supply, lay, joint, bed and test sewer erf connction for:				
6.7.1		110 mm diameter uPVC sewer pipe	No	1870		
6.7.2		Extra over Item 6.7.1 for excavating, supplying, bedding and laying 110mm diameter uPVC sewer pipes to house connections longer than 1m	m	3000		
6.7.7	8.2.8	SUNDRIES Construct anchor blocks in 20 MPa concrete.	m ³	50		
6.7.8	PSLD 8.2.11	Connect to existing sewer	m ³	2		
TOTAL FOR SECTION 6 CARRIED FORWARD TO SUMMARY						

NGCOBO EXTENSION 11 - INTERNAL SERVICES
BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES
SECTION 7 : WATER RETICULATION (INTERNAL)

BILL OF QUANTITIES

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
7.1	1200 DB	EXCAVATION				
	8.3.2 PSD 8.3.2 (b) PSD 8.3.6	(a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material, for pipes from 75mm to 250mm in diameter for depths:				
7.1.1		ii) 1,0 m 2.00 m	m	20000		
		(b) Extra-over item 6.2.1 incl. for excavation in: (provisional)				
7.1.2		i) Hard rock excavation	m³	4000		
7.1.3		(c)Excavate and dispose of unsuitable material from trench bottom (Provisional)	m³	3300		
7.2	1200 LB PSLB 8.1.3	PROVISION OF BEDDING				
	8.2.1	Available from trench within 0,5 km (Subclause 3.4.1)				
7.2.1	PSLB 8.1.7	i) Selected granular material	m³	1850		
7.2.2		ii) Selected fill material	m³	4500		
	8.2.2.2	Available from borrow pits on or off site.				
7.2.3	PSLB 8.1.7	i) Selected granular material	m³	500		
7.2.4		ii) Selected fill material	m³	500		
	8.2.2.3	Imported from Commercial sources (Provisional)				
7.2.5	PSLB 8.1.7	i) Selected granular material	m³	500		
7.2.6	8.2.3	Concrete bedding (Provisional)	m³	500		
7.3	1200 L	PIPEWORK				
	PSL 8.2.1	Supply, lay, bed, disinfect and test pipes complete with couplings. uPVC Class 9.				
7.3.1		i) 250mm dia	m	250		
7.3.2		ii) 200mm dia	m	450		
7.3.3		iii) 160mm dia	m	1000		
7.3.4		iv) 110mm dia	m	6500		
7.3.5		v) 75mm dia	m	11500		
7.4		SPECIALS AND FITTINGS				
	8.2.2	Supply, lay, bed and joint specials and fittings, incl. cut pipes to length where required.				
		uPVC FITTINGS BENDS Class9				
7.4.1		i) 200mm dia 45 deg	no	5		
7.4.2		ii) 200mm dia 22,5 deg	no	5		
7.4.3		iii) 200mm dia 11,5 deg	no	5		
7.4.4		iv) 200mm dia 90 deg	no	--		Rate Only
7.4.5		v) 160mm dia 45 deg	no	4		
7.4.6		vi) 160mm dia 22,5 deg	no	12		
7.4.7		vii) 160mm dia 11,5 deg	no	10		
CARRIED FORWARD						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 7 : WATER RETICULATION (INTERNAL)

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
7.4.8		viii) 160mm dia 90 deg	no	--		Rate Only
7.4.9		viv) 110mm dia 45 deg	no	12		
7.4.10		x) 110mm dia 22,5 deg	no	20		
7.4.11		xi) 110mm dia 11,5 deg	no	5		
7.4.12		xii) 110mm dia 90 deg	no	5		
7.4.13		xiii) 75mm dia 45deg	no	10		
7.4.14		xiv) 75mm dia 22.5deg	no	10		
7.4.15		xv) 75mm dia 11.5deg	no	4		
7.4.16		xvi) 75mm dia 90deg	no	8		Rate Only
7.5		CI FITTINGS				
		EQUAL TEES				
7.5.1		i) 200 x 200	no	4		
7.5.2		ii) 160 x 160	no	1		
7.5.3		iii) 110 x 110	no	35		
7.5.4		iv) 75 x 75	no	--		
		REDUCINGS TEES				
7.5.5		i) 200 x 160	no	20		
7.5.6		ii) 160 x 110	no	12		
7.5.7		iii) 110 x 75	no	5		
7.5.8		iv) 200 x 75 (Hydrant)	no	24		
7.5.9		v) 160 x 75 (Hydrant)	no	12		
7.5.10		vi) 200 x 75 (Hydrant)	no	49		
		REDUCERS				
7.5.11		i) 200 x 160	no	4		
7.5.12		ii) 160 x 110	no	4		
7.5.13		iii) 200 x 110	no	3		
		END CAPS				
7.5.14		i) 200	no	--		Rate Only
7.5.15		ii) 160	no	--		Rate Only
7.5.16		iii) 110	no	4		
7.5.17		iv) 75	no	4		
7.6		VALVES				
	8.2.3	Supply, install on concrete support, joint, incl cut pipes where necessary, test : Resilient seal valves, double socketed, anti-clockwise closing, with capped top and non-rising spindle class 10				
7.6.1		i) 200mm dia	no	20		
7.6.2		ii) 160mm dia	no	16		
7.6.3		iii) 110mm dia	no	70		
CARRIED FORWARD						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION 7 : WATER RETICULATION (INTERNAL)

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
7.6.4	8.2.3	BROUGHT FORWARD iv) 75mm dia	no	12		
		Supply, install on concrete support, joint, incl cut pipes where necessary, test : Sluice Type Hydrant Valves				
7.6.5		i) 200mm dia	no	24		
7.6.6		ii) 160mm dia	no	12		
7.6.7		iii) 110mm dia	no	49		
7.7		ANCILLARIES				
	8.2.11	Anchor/Trust blocks and pedestals				
7.7.1		i) Concrete class 20Mpa/19mm	m³	15		
	8.2.13	VALVE CHAMBERS AND MANHOLES:				
7.7.2		i) Valve chamber	no	118		
7.7.3		ii) Hydrant chamber inclusive of 70mm underground type hydrant with 104mm bayonet lug connections and 300mm long flanged CI distance piece complete as per drawing J28267/TD201.	no	85		
7.8	1200 LF	ERF CONNECTIONS (WATER)				
	PSLF 8.2.1	Various erf connections complete as per drawing J28267/TD201. Rate to include for supply of all material, all excavation, connecting to the water main, laying in light sandy material, jointing, backfilling, testing and completing the service connection.				
7.8.1		i) Single erf connections, on same side of the road complete	no	18		
7.8.2		ii) Single erf connections on opposite side of the 3m road complete	no	83		
7.8.3		iii) Single erf connections on opposite side of the 5m road complete	no	22		
7.8.4		iv) Double erf connections, on same side of the road complete	no	70		
7.8.5		v) Double erf connections on opposite side of the 3m road complete	no	332		
7.8.6		vi) Double erf connections on opposite side of the 5m road complete	no	88		
7.8.7	PSLF 8.2.4	Meters complete with couplings, ball valve and stop tap (supply only)	no	1854		
TOTAL FOR SECTION 7 CARRIED FORWARD TO SUMMARY						

BILL 2 : PUMP STATION

SECTION 1 : SEWER PUMP STATIONS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.1	SANS 1200D	As specified in SANS 1200D and in project specification EARTHWORKS EXCAVATION				
1.2	8.3.1.2	Remove topsoil to nominal depth 150mm, stockpile, and maintain	m ²	500		
1.3	8.3.2(a)	Excavate in all materials and place within freehaul distance for levelling site	m ³	400		
1.3.1	8.3.3	RESTRICTED EXCAVATION Excavate in all materials for structures and use material for backfill or embankments or dispose of and level on designated areas as instructed	m ³	600		
1.3.2	8.3.5	Extra excavation in all material to provide working space for outside formwork	m ²	230		
1.3.3	8.3.9	Extra over item 7.1.1 for backfill or fill material against structures compacted to 93% mod AASHTO density as per PSD 5.2.3	m ³	500		
1.3.4		Backfill and compact with stabilized backfill under valve chamber in layers not exceeding 95% Mod AASHTO density.	m ³	100		
1.4		POND LAYERWORKS Treatment of insitu material				
1.4.1		Scarify insitu layer to a depth of 150mm and compact to a minimum of 93% Mod AASHTO density	m ³	40		
1.4.2	1200ME	Selected Layer Construct 150mm G7 gravel selected layer and compact to a minimum of 95% Mod AASHTO density	m ³	40		
1.5	SANS 1200G	CONCRETE (STRUCTURAL) As specified in SANS 1200G and in the project specification				
1.5.1	8.2	FORMWORK Smooth - straight, vertical	m ²	410		
1.5.2	8.2.2	To siffit slabs	m ²	60		
1.5.3	8.7	Box out holes/ form voids	No	6		
1.6	8.3	REINFORCEMENT				
1.6.1	8.3.1	Mild steel bars	t	10		
1.6.2	8.3.1	High tensile steel bars	t	28		
1.6.3	8.3.2	High tensile welded mesh				
1.6.4		Ref 193 welded mesh in standard 6.0m x 2.4m	m ²	420		
1.7	8.4	STRENGTH CONCRETE Class 15/19 mass concrete				
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 1 : SEWER PUMP STATIONS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.7.1	8.4.2	BROUGHT FORWARD In blinding layers nominally 50mm thick	m ³	10		
1.7.2	8.4.3	Class 35/19 reinforced concrete with ordinary portland cement for water retaining structures	m ³	250		
1.8	8.4.4	UNFORMED SURFACE FINISHES				
1.8.1	8.4.4(a)	Broom finish to floor	m ²	508		
1.9		MISCELLANEOUS				
1.9.1		Supply, deliver and install as indicated on the drawing 75mm diameter uPVC cable ducting	Sum	1		
1.9.2		Supply, deliver and cast into pump station roof slab, 900mm x 600mm standard Basaans Type 9E lockable manhole hinged cover and frame	No	8		
1.10		Supply, fabricate and cast into pump station roof slab an HDG Frame and lid as detailed on drawing	No	4		
1.11		Supply, deliver and install 300 x 300 mm S/S Gereg Wall mounted sluice gates with rising spindle with neoprene J-seals and adjustable wedges	No	6		
1.12	1200HA 8.3.1	Supply, deliver and install HDG I- 254x146x31 crawl beam and columns as per the drawings	t	2		
1.13		Proof test crawl beam to 1.0 ton and supply test certificate to the Engineer. Also allow for painting the maximum allowable load on the crawl beam	No	2		
1.14		Supply deliver and install a 1 ton rated yale chain hoist model YALELIFT 360.	No	2		
1.15	1200 LD 8.2.3	Manholes complete with Type 4 cover and frame, for depths over and up to				
1.15.1		1.0m 1.5 m	No.	--		Rate Only
1.15.2		1.5 m 2.0 m	No.	2		
1.2		STILLING CHAMBER				
	SANS 1200D	As specified in SANS 1200D and in project specification				
1.2.1		EARTHWORKS				
		EXCAVATION				
1.2.2	8.3.1.2	Remove topsoil to nominal depth 150mm, stockpile, and maintain	m ²	50		
	8.3.3	RESTRICTED EXCAVATION				
1.2.2.1		Excavate in all materials for structures and use material for backfill or embankments or dispose of and level on designated areas as instructed	m ³	30		
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 1 : SEWER PUMP STATIONS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
1.2.2.2	8.3.5	BROUGHT FORWARD Extra excavation in all material to provide working space for outside formwork	m ²	50		
1.2.2.3	8.3.9	Extra over item 1.2.2.1 for backfill or fill material against structures compacted to 93% mod AASHTO density as per PSD 5.2.3	m ³	100		
	SANS 1200G	CONCRETE (STRUCTURAL) As specified in SANS 1200G and in the project specification				
1.2.3	8.2	FORMWORK				
1.2.3.1	8.2.2	Smooth - straight, vertical	m ²	90		
1.2.3.2	8.2.2	To sffit slabs	m ²	11		
1.2.3.3	8.7	Box out holes/ form voids	No	6		
1.2.4	8.3	REINFORCEMENT				
1.2.4.1	8.3.1	Mild steel bars	t	0.4		
1.2.4.2	8.3.1	High tensile steel bars	t	2		
1.2.4.3	8.3.2	High tensile welded mesh				
1.2.4.4		Ref 193 welded mesh in standard 6.0m x 2.4m	m ²	12		
1.2.5	8.4	STRENGTH CONCRETE Class 15/19 mass concrete				
1.2.5.1	8.4.2	In blinding layers nominally 50mm thick	m ³	12		
1.2.5.2	8.4.3	Class 35/19 reinforced concrete with ordinary portland cement for water retaining structures	m ³	16		
1.2.6	8.4.4	UNFORMED SURFACE FINISHES				
1.2.6.1	8.4.4(a)	Broom finish to floor	m ²	24		
1.2.7		MISCELLANEOUS				
1.2.7.1		Supply, deliver and cast into pump station roof slab, 900mm x 600mm standard Basaans Type 9E lockable manhole hinged cover and frame	No	4		
1.3	1200 LD 8.2.3	Manholes complete with Type 4 cover and frame over existing 450mm diameter sewer line, for depths over and up to				
1.3.1		2.0 m 2.5 m	No.	6		
1.4	1200DB	EARTHWORKS : (PIPE TRENCHES) As specified in SABS 1200DB and in the Project Specifications				
	8.3.2	a) Excavate in all materials for trenches, backfill, compact and dispose of surplus material, for pipes:				
		iii) 300mm diameter for depths:				
1.4.1		a) 0m up to and including 1m	m	--		Rate Only
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 1 : SEWER PUMP STATIONS

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
		BROUGHT FORWARD				
1.4.2		c) Over 2m up to and including 3m	m	16		
1.4.3		ii) Hard rock excavation	m ³	4		
1.4.4		c) Excavation and dispose of unsuitable material in trench bottom	m ³	4		
1.4.5	PSDB 8.3.2	d) Extra over item 8.1.1 to 8.1.10 for hand excavations where orderd	m ³	4		
	8.3.3	Excavation ancillaries				
	8.3.3.1	Make up deficiency in backfill material				
1.4.6		a) From other necessary excavations on site	m ³	8		
	8.2.2.2	From trench excavations				
1.4.7		a) Selected granular material	m ³	6		
1.4.8		b) Selected fill material	m ³	3		
	8.2.2.3	From commercial or off-site sources				
1.4.9		a) Selected granular material	m ³	6		
1.4.10		b) Selected fill material	m ³	3		
1.5	1200 LD	SEWER				
		As specified in SANS 1200LD and in the Project Specification				
	PSLD 8.2.1	Supply, lay, joint and bed on bedding for flexible pipes and test:				
		a) UPVC sewer pipes as specified complete with joints for:				
1.5.1		iii) 300mm Ø	m	16		
TOTAL FOR SECTION 1 CARRIED FORWARD TO SUMMARY						

BILL 2 : PUMP STATION

SECTION 2 : SEWER RISING MAIN 1& 2

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
2.1	SANS 1200DB	EARTHWORKS (PIPE TRENCHES)				
		Excavation				
	8.3.2 PSDB 1	a) Excavate in all materials for trenches, backfill compact and dispose of surplus or unsuitable material for pipes up to and including 75mm dia. for depths:				
2.1.1		exceeding 0.00m up to 1.0m	m	100		
2.1.2		exceeding 1.0m up to 2.0m	m	2265		
2.1.3		Extra over items 6.1.1 to 6.1.2 for excavation in hard rock material	m³	210		
2.1.4	8.3.2(c)	Excavate and dispose of unsuitable material in trench bottom	m³	120		
	8.3.3(a)	Excavation Ancillaries				
	8.3.3.1	Make up deficiency in backfill material				
2.1.5		From other necessary excavation on site	m³	330		
2.2	SANS 1200LB	BEDDING				
	PSLB	As specified in SANS 1200LB and the project specification				
	8.2.2	Provision of bedding by importation				
	8.2.2.2	From trench excavation				
2.2.1		Selected granular material	m³	50		
2.2.2		Selected fill material	m³	50		
	8.2.2.3	From commercial or off site sources				
2.2.3		Selected granular material	m³	740		
2.2.4		Selected fill material	m³	350		
2.3	SANS 1200L	MEDIUM PRESSURE PIPELINES				
		As specified in SANS 1200L and in Project specification				
2.3.1		uPVC Pipes				
	8.2.1 PSL 8.2.1	Supply, lay, bed with bedding for flexible pipes and test uPVC Class 9 pipes complete with couplings				
2.3.1.1		250mm diameter class 9 uPVC pressure pipes	m	2365		
2.3.2		Anchor/Thrust Blocks and Pedestals				
2.3.2.1		Thrust Blocks	m³	8		
2.4		VALVES				
2.4.1		50mm Flanged "SAAR" A.R.I. D-026 combination airvalve for sewage	No	4		
2.5		VALVE CHAMBERS				
		Provide all materials and construct chambers complete				
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 2 : SEWER RISING MAIN 1& 2

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
2.5.1		BROUGHT FORWARD Precast chamber and cover slab for air valves	No	4		
TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY						

BILL 2 : PUMP STATION

SECTION 3 : SEWAGE PUMPS - ELECTRO AND MECHANICAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1		PUMP STATION				
3.1.1		GENERAL ITEMS				
		Preliminary and General				
3.1.1.1		Contractual Items				
3.1.1.2	PSSP9	Allowance for twelve (12) months Maintenance Period during defects Liability	Sum	1		
3.1.1.3	PSSP7.3	Provision of Electrical Compliance Certificate	Sum	1		
3.1.1.4	PSSP8.1	Provision of Operating Instructions and Record Drawings	Sum	1		
3.1.2		MECHANICAL EQUIPMENT				
3.1.2.1	PSTD4	Pumpsets (Provisional)				
	PSSP2.3	Pumpsets: (Duty/Standby Pumps)	No	2		
3.1.2.2		Pumps (Provisional)				
3.1.2.3		S/S Foot fixed to pump for non fixed placing in the sump. Foot to be sized to ensure effective suction of sewage into the pump	No	4		
3.1.2.4		Lifting chain, Stainless Steel rated up to 1000kg	m	10		
3.1.2.5	PSSP2.4	Alternative Pump:-		0		
3.1.2.5.1		State Make & Model.....	No	—		Rate Only
		State Rotational Speed..... RPM				
3.1.2.6	PSSP4	Piping:				
3.1.2.6.1		250mm diameter Truco 25 bar reinforced flexible rubber hose with quick coupling designed for 16 bar pressure to connect truco pipe to cast in GMS puddle flange pipe	m	24		
3.1.2.6.2		250mm diameter quick coupling designed for 16 bar pressure to connect truco pipe to cast in GMS puddle flange pipe	No	4		
	PSSP4.3	Hot Dipped Galvanised piping - flanged to SANS 1123 - Table 10				
		Delivery Side Piping etc, as per Drawing No J28267 TD020 and TD030				
3.1.2.7		664mm long 250mm diameter HDG flanged at one end with quick coupling fitting on the other end puddle pipe	No	4		
3.1.2.8		250mm diameter flanged HDG 90 degree bend	No	6		
3.1.2.9		500mm Long x 250mm diameter GMS flanged straight pipe	No	2		
3.1.2.10		250mm diameter HDG cross special	No	2		
3.1.2.11		1122mm Long x 150mm diameter HDG flanged at one end only puddle pipe	No	2		
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 3 : SEWAGE PUMPS - ELECTRO AND MECHANICAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1.2.12		BROUGHT FORWARD 205mm long x 250mm x 150mm diameter HDG flanged reducer	No	4		
3.1.2.13		295mm long x 250mm diameter HDG flanged at one end only straight pipe	No	2		
3.1.2.14		600mm long x 250mm diameter HDG flanged at one end only straight puddle pipe	No	4		
3.1.2.15		540mm long x 250mmø flanged steel/uPVC adaptor	No	2		
3.1.2.16		250mm diameter klamflex coupling	No	2		
3.1.2.17	PSSP6	Valves: Class 16 valves:-				
3.1.2.18		250mm diameter flanged AVK gate valve with rising stem	No	4		
3.1.2.19		250mm diameter AVK flanged ball check valve series 53/35 PN16	No	4		
3.1.2.20		150mm diameter flanged AVK gate valve with rising stem	No	2		
3.1.2.21		Sundries:				
3.1.2.22		All joint sets, anchors and fixing not measured	Sum	1		
3.1.2.23	PSSP8.2 PSSP9	Commissioning and testing of all mechanical equipment	Sum	1		
3.1.2.24	PSSP9	Hand-over to the Client, including demonstrating all operational aspects	Sum	1		
3.1.2.25	PSSP8.1	Maintenance & Operational Manuals	Sets	1		
3.1.2.26		150mm diameter flanged in-line macerator; 2.2kW motor standard; 25-1 reducer; tungstor carbideface seal cartridges; 120mm diameter cutters: sea; working pressure up to 6.0 bars	No	2		
3.1.3		ELECTRICAL EQUIPMENT				
3.1.3.1		Low Voltage Cables: Low Voltage (600 / 1000V) Cables, including terminations Supply, delivery & installation of PVC/SWA/PVC cables				
3.1.3.2		Main Electricity installation includes new 200kVA transformer installation complete including supply and installation (nominated sub-contractor)	PSum	1	450 000.00	450 000.00
3.1.3.3		Overhead charges and profit on item 3.2.3.2	%	450000		
3.1.3.4	PSSP7.2	Mains Power Supply from Supply Point kiosk into switchboard including trenching, cable route makers etc.	Psum	1	110 000.00	110 000.00
3.1.3.5	PSSP7.5	Signal Cables to float switches in sump, in 1,5 squ. 4-core and in 20mm galv steel conduit	m	30		
3.1.3.6		Switchboard:				
CARRIED FORWARD						

BILL 2 : PUMP STATION

SECTION 3 : SEWAGE PUMPS - ELECTRO AND MECHANICAL

ITEM	PAYMENT REFERS	DESCRIPTION	UNIT	QUANTITY	RATE R	AMOUNT R
3.1.3.7	PSSP7.1	BROUGHT FORWARD Electrical Switchboard containing all control switchgear, pump starters and instrumentation	Sum	2		
3.1.3.8	PPSP7.1	Supply and install Telemetry system to control the pumping sequence between two pump stations	PSum	1	220 000.00	220 000.00
3.1.3.9		Overhead charges and profit on item 3.1.3.8	%	220000		
3.1.3.10		Float Switches:				
3.1.3.11	PSSP7.5	Supply and install float switch in sumps.	No	8		
3.1.3.12		Testing & Commissioning				
3.1.3.13	PSSP8.2	Allow for testing & commissioning of electrical plant.	Sum	1		
3.1.3.14	PSSP8.2	Allow for demonstrating operation of electrical equipment & completed installation to the Client	Sum	1		
3.1.3.15		Earthing:				
3.1.3.16	PMS7.1	Earthing to standards laid down in terms of OHS Act	Sum	1		
3.2	PSMM	ANCILLARY WORKS / FENCING				
3.2.1	PSMM 8.5 (a)	Security				
		Supply, install and make good fencing to perimeter of pump station, including concrete bases, gates etc. See attached drawing No. J28267C/TD080 Fencing details	PSum	1	250 000.00	250 000.00
3.2.2	PSMM 8.5 (b)	Overhead charges and profit on item 3.2.1	%	250000		
TOTAL FOR SECTION 3 CARRIED FORWARD TO SUMMARY						

BILL 1 : INTERNAL CIVIL ENGINEERING SERVICES

SECTION	DESCRIPTION	AMOUNT R
1	GENERAL	R
2	SITE CLEARANCE	R
3	ROADWORKS - INTERNAL ROADS: 5m WIDE & ACCESS ROUTE	R
4	ROADWORKS - INTERNAL ROADS: 3m WIDE	R
5	STORMWATER DRAINAGE (Internal)	R
6	SEWER RETICULATION (INTERNAL)	R
7	WATER RETICULATION (INTERNAL)	R
	TOTAL BILL 1	R

BILL 2 : PUMP STATION

SECTION	DESCRIPTION	AMOUNT R
1	SEWER PUMP STATIONS	R
2	SEWER RISING MAIN 1& 2	R
3	SEWAGE PUMPS - ELECTRO AND MECHANICAL	R
	TOTAL BILL 2	R