

Bill of Quantities

SECTION : GENERAL

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
1		SECTION 1: PRELIMINARY AND GENERAL				
		Notes:				
		i) The agreement is to be the General Conditions of Contract for Works of Civil Engineering Construction (2015), published by the South African Institute of Civil Engineers.				
		ii) Tenderers are referred to the above mentioned documents for the full intent and meaning of each clause thereof (hereinafter referred to by heading and clause number only) for which such allowance must be made as may be considered necessary.				
		iii) Where standard clauses or alternatives are not entirely applicable to this contract such modifications, corrections or supplements as will apply are given under each relevant clause heading.				
		iv) Where any item is not relevant to this specific contract such item is marked N/A (Signifying 'Not Applicable')				
		v) Time related preliminaries will only be adjusted for omissions or additions, issued by the employer, or delays caused by the employer, for which variations and extension of time has been granted				
	SANS 1200 A	PRELIMINARY AND GENERAL				
1.1	PSA 8.3	FIXED-CHARGE ITEMS	Sum	1.0		
1.1.1	8.3.1	Contractual Requirements				
	PSA 8.3.2	Establish Facilities on the Site :				
	PSA 8.3.2.1	a) Facilities for Engineer				
1.1.2		Offices: 2 air-conditioned, prefabricated and furnished room with telephones, internet connection and name-boards				
	8.3.2.2	b) Facilities for Contractor				
1.1.3		Offices and storage sheds				
1.1.4		Ablution and latrine facilities				
1.1.5		Tools and equipment				
1.1.6		Water supplies, electric power and communications				
1.1.7		Dealing with water (Subclause 5.5)				
Total Carried Forward						

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
1.1.8		Access (Subclause 5.8)				
1.1.9	8.3.3	Other fixed-charge obligations				
1.2	PSA 8.4	TIME-RELATED ITEMS	Sum	1.0		
1.2.1	8.4.1	Contractual Requirements				
	8.4.2	Operate and maintain facilities on the Site:				
	8.4.2.1	a) Facilities for Engineer for duration of construction (SANS 1200 AB)				
1.2.2		Survey assistants and material				
	8.4.2.2	b) Facilities for Contractor for duration of construction, except where otherwise stated				
1.2.3		Offices and storage sheds				
1.2.4		Ablution and latrine facilities				
1.2.5		Tools and equipment				
1.2.6		Water supplies, electric power and communications				
1.2.7		Dealing with water (Subclause 5.5)				
1.2.8		Access (Subclause 5.8)				
1.2.9	8.4.3	Supervision				
1.2.10	8.4.4	Company and head office overhead costs				
1.2.11	8.4.5	Other time-related obligations				
1.3	PSA 8.5	SUMS STATED PROVISIONALLY BY ENGINEER	Sum	1.0	1000000.00	R1,000,000.00
	8.8.5	Land Survey Act				
1.3.1		a) Search for and record tri- gonometrical survey beacons, bench marks and plot boundary pegs, and expose on completion of Works				
1.3.2		b) Protect beacons, etc., located under item .3.6 and reposition or re-establish, as ordered, the same by a Registered Land Surveyor on completion of the Works				
1.3.3		Progress Aerial Photography				
1.3.4		Engineers Testing				
1.3.5		Special Survey and setting out				
1.3.6		Provision of asbuilt information				
1.3.7		Security				
Total Carried Forward						

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ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		Health and Safety				
1.3.8		(a) Fixed obligations for the preparation of risk assessments, safe work procedures, the project H & S file, the H & S plan and any other H & S matters that the contractor deems necessary.	Sum	1.0		
1.3.9		(b) Fixed obligations for completing and checking the Project H & S file and handing over to the Client on completion of the works.	Sum	1.0		
1.3.10		(c) Time related obligations for updating and amending the risk assessments, safe work procedures, the project H & S file, the H & S plan and full compliance with all H & S matters during the construction of the works under the contract.	month	18.00		
1.4	PSA 8.7	Daywork				
		Personnel				
1.4.1		(a) Unskilled labour	h	650.0		
1.4.2		(b) Semi-skilled labour	h	240.0		
1.4.3		(c) Skilled labour	h	240.0		
1.4.4		(d) Ganger	h	240.0		
1.4.5		(e) Flagmen	h	5000.0		
1.4.6		(f) Site Administration Clerk	month	18.00	R10,000.00	R180,000.00
1.4.7		(g) Community Liaison Officer (CLO)	month	18.00	R15,000.00	R270,000.00
1.4.8		(h) Geotechnical Engineer with PrNatSci	month	18.00	R15,000.00	R270,000.00
1.4.9		(i) Surveyor	month	18.00	R10,000.00	R180,000.00
1.4.10		(j) Site Monitoring and Contract Administration	month	18.00	200,000.00	R3,600,000.00
		Plant				
1.4.11		(a) Bulldozer with rippers (minimum 125kW)	h	100.0		
1.4.12		(b) Front end loader (minimum 60kW)	h	100.0		
1.4.13		(c) Tractor loader backhoe 4 x 4 (50kW)	h	100.0		
1.4.14		(d) Track excavator (125kW)	h	100.0		
1.4.15		(e) Smooth drum roller (12 ton)	h	100.0		
1.4.16		(f) Water bowser (10 000 litre)	h	100.0		
1.4.17		(g) Tip truck 6 m³ capacity	h	100.0		
1.4.18		(h) Tip truck 10 m³ capacity	h	240.0		
1.4.19		(i) LDV (1600cc)	km	1800.0		
1.4.20		(j) Water pump (75mm diameter with 50m hose)	h	650.0		
Total Carried Forward						

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Ph2B-4 : 4

Bill of Quantities

SITE CLEARANCE

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Bill of Quantities

ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
3		SECTION 3: ROADWORKS				
	SANS 1200 DM	PREPARATION OF SITE				
3.1	PSDM 8.3.2(a)	Removal of topsoil to 300mm deep, stockpile and maintain	m³	4750.0		
		TREATMENT OF ROAD-BED				
3.2	PSDM 8.3.3 (c)	Three-pass roller compaction				
3.2.1		Vibratory roller	m²	10675.0		
3.2.2		Impact roller	m²	4270.0		
3.3	8.3.3(a)	Road-bed preparation and compaction of material				
3.3.1		Compact to 93 % mod. AASHTO maximum density	m³	1605.0		
		Sidewalk preparation and compaction of material				
3.3.2		Compact to 93 % mod. AASHTO maximum density	m³	570.0		
3.4	8.3.3(b)	In-place treatment of Road-Bed in intermediate or hard material				
3.4.1		Ripping	m³	6405.0		
3.4.2		Blasting	m³	4300.0		
		EARTHWORKS				
3.5	8.3.4	Cut and borrow to Fill to formation (box) level and compact to 93% mod. AASHTO max. density measured in fill including benching:				
3.5.1		Compact to 93 % mod. AASHTO maximum density	m³	1350.0		
3.5.2		Rockfill, process, and compact	m³	300.0		
3.6	8.3.6	Extra-over items 3.5 inclusive for excavating and breaking down material in:				
3.6.1		(a) Intermediate Material	m³	200.0		
3.6.2		(b) Hard material (Includes material such as formations of unweathered rock that can be removed only after blasting)	m³	200.0		
3.6.3		(d) Boulder excavation Class B	m³	200.0		
3.7	8.3.7	Cut to Spoil from				
3.7.1		(a) Soft excavation	m³	22000.0		
Total Carried Forward						

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ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.7.2		(b) Intermediate excavation	m³	8800.0		
3.7.3		(c) Hard excavation (Includes material such as formations of unweathered rock that can be removed only after blasting)	m³	17600.0		
3.7.4		(e) Boulder excavation Class B	m³	3510.0		
3.8	8.3.7	Cut to Stockpile from				
3.8.1		(a) Soft excavation	m³	150.0		
3.8.2		(b) Intermediate excavation	m³	100.0		
3.8.3		(c) Hard excavation (Includes material such as formations of unweathered rock that can be removed only after blasting)	m³	100.0		
3.8.4		(e) Boulder excavation Class B	m³	50.0		
3.9	8.3.4	Cut and borrow to Fill to Attenuation Dams to compact to 93% mod. AASHTO max. density measured in fill including benching:				
3.9.1		Compact to 93 % mod. AASHTO maximum density	m³	5000.0		
3.10	8.3.6	Extra-over items 3.9 inclusive for excavating and breaking down material in:				
3.10.1		Intermediate Material	m³	2000.0		
3.10.2		Hard material (Includes material such as formations of unweathered rock that can be removed only after blasting)	m³	1500.0		
3.10.3		Boulder excavation Class B	m³	500.0		
3.11	SANS 1200 DM	SUNDRIES				
3.11.1	8.3.11	Extra-over items 8.3.2, 8.3.4 and 8.3.5 for temporary stockpiling of material	m³	4700.0		
	8.3.12	OVERHAUL				
3.11.2		Extra-over items 8.3.2, 8.3.4 and 8.3.5 for hauling material in excess of the freehaul of 0,5km but not more than 18,0km	m³.km	43900.0		
3.12	8.3.13	SURFACE FINISHES				
3.12.1		Topsoiling	m²	5700.0		
3.12.2		Grassing	ha	0.6		
Total Carried Forward						

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ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.13		Finishing-off cut and fill slopes:				
3.13.1	PS	(a) Cut slopes	m ²	3500.0		
3.13.2	PS	(b) Fill slopes	m ²	2300.0		
3.14	8.3.14	Construct Subgrade including shoulders with material from borrowpit or commercial sources and all haul				
3.14.1		G9 150mm to carriageways to 95% mod. AASHTO maximum density	m ³	1650.0		
3.14.2		G7 150mm to carriageways to 97% mod. AASHTO maximum density	m ³	1550.0		
3.15	SANS 1200 ME	SECTION : SUBBASE				
	8.3.1	Construct subbase including Sidewalks with material from commercial sources and all haul				
3.15.1		150mm G5 to carriageway 98% mod. AASHTO maximum density	m ³	2050.0		
3.16	8.3.8	Stabilizing agent				
3.16.1		b) Portland cement	t	5.7		
	SANS 1200 MFL	SECTION : BASE (LIGHT PAVEMENT STRUCTURES)				
	8.3.1	Construct base with material from commercial sources and all haul				
3.17		a) Crushed stone G2 (max. size 37.5mm)				
3.17.1		150 mm to all roadways compacted to 99% mod. AASHTO maximum density	m ³	1380.0		
	SANS 1200 MG	SECTION : BITUMINOUS SURFACE TREATMENT				
3.18		PRIME COAT				
	8.4.1	Prime coat using:				
3.18.1		CUTBACK BITUMEN Grade MC30 at 0.8l/m ²	m ²	9700.0		
Total Carried Forward						

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ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
3.19	SANS 1200 MH	SECTION : ASPHALT BASE AND SURFACING				
		TACK COAT				
	8.5.3	Spray surface using emulsion				
3.19.1		Anionic stabilisation grade emulsion 60%	m²	9700.0		
3.20		ASPHALT BASE				
	8.5.4	Continuously graded asphalt base (including Sidewalks & Speedhumps) using:				
3.20.1		b) bitumen Type 50/70 pen grade	t	1200.0		
	SANS 1200 MK	SECTION : KERBING AND CHANNELLING				
3.21		CONCRETE KERBING AND CHANNELLING				
3.21.1	8.2.2	Standard Fig 6 mountable kerb type "E" with 300mm Channel with expansion joints	m	2260.0		
3.21.2	8.2.1	Concrete Edge Beam (150mm x 300mm)	m	100.0		
3.22	PS	Provisional sum for maintaining access to site including regrading and gravelling of access roads where required	Sum	1.0	100000.00	R100,000.00
Total Carried Forward To Summary						

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EARTHWORKS (PLATFORMS)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
4		SECTION 4: PLATFORM EARTHWORKS				
4.1	SANS 1200 C	SITE CLEARANCE				
4.1.1		Clear site, remove trees and other scheduled obstructions	ha	0.2		
4.2	SANS 1200 D	EXCAVATION				
4.2.1	8.3.1.2	Remove topsoil to nominal depth 150mm, stockpile, and maintain	m²	14000.0		
4.3		FINISHINGS				
4.3.1	8.3.10	Topsoiling	m²	8480.0		
4.3.2	8.3.11	Grassing	ha	0.9		
		EARTHWORKS				
4.4	8.3.2	Bulk Excavation				
4.4.1		a) Excavate in all materials and use for embankment or backfill or dispose, as ordered	m³	38800.0		
4.4.2		b) Extra Over for				
4.4.2.1		1) Intermediate excavation	m³	7750.0		
4.4.2.2		2) Hard Rock excavation	m³	15500.0		
4.4.2.3		3) Boulder excavation Class A	m³	0.0		
4.4.2.4		4) Boulder excavation Class B	m³	3100.0		
	SANS 1200 ME					
4.5	8.3.4	Importing of Materials				
4.5.1		a) 2 x layers of 150mm G5 compacted to 98% mod. AASHTO maximum density	m³	3860.0		
4.6	SANS 1200 DM	SUNDRIES				
4.6.1	8.3.11	Extra-over items 4.4 for temporary stockpiling of material	m³	4220.0		
4.7	8.3.12	OVERHAUL				
4.7.1		Extra-over items 4.4 for hauling material in excess of the freehaul of 0,5km but not more than 18,0km	m³	3410.0		
Total Carried Forward						

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EARTHWORKS (PLATFORMS)

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
		RETAINING WALLS				
		Dry Stack Interlocking Retaining Walls along Roads/Platforms				
4.8	SANS 1200 D	Excavate for Retaining Wall Base/Structure				
4.8.1	8.3.3	Restricted Excavation				
4.8.1.1		a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose	m ³	420.0		
4.8.2		b) Extra Over for				
4.8.2.1		1) Intermediate excavation	m ³	100.0		
4.8.2.2		2) Hard Rock excavation	m ³	200.0		
4.8.2.3		3) Boulder excavation Class A	m ³	0.0		
4.8.2.4		4) Boulder excavation Class B	m ³	45.0		
4.8.2.5	8.3.2	Selected Backfill to back of Retaining wall	m ³	1300.0		
4.9	SANS 1200 G	Concrete				
4.9.1	8.1.2.2	b) Welded Mesh - Ref Mesh 245 (For retaining wall base)	m ²	550.0		
4.9.2	8.1.3.1	25MPa Concrete for Retaining Wall Base	m ³	250.0		
4.9.3	PS	Supply and Install dry stack interlocking retaining blocks as per drawings	m ²	1300.0		
4.10		Subsoil Drainage for Retaining Walls				
4.10.1	SANS 1200 LE 8.2.1	160mm diameter geopipe	m	580.0		
4.10.2		Supply and Lay Geofabric (Bidum U14)	m ²	4450.0		
4.10.3	SANS 1200 LB 8.2.2.3	Dust Free 19mm Stone Aggregate	m ³	145.0		
4.10.4	8.2.2.3	Selected Granular Material (Riversand)	m ³	605.0		
4.11		Subsoil Drainage for Platforms				
4.11.1	SANS 1200 LE 8.2.1	160mm diameter geopipe	m	2020.0		
4.11.2		Supply and Lay Geofabric (Bidum U14)	m ²	8470.0		
Total Carried Forward						

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EARTHWORKS (PLATFORMS)

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STORMWATER & SUBSOIL DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
5		SECTION 5: STORMWATER, SUBSOILS DRAINAGE & CABLE DUCTS				
	SABS 1200 DB	EXCAVATION				
5.1	8.3.2(a)	Excavate in all materials for trenches backfill, compact, and dispose of surplus/unsuitable material, for pipes: Over 100 up to 750 mm diam. for total trench depth:				
5.1.1		i) Exceeding 0,0 m but not exceeding 1,0 m	m³	1170.0		
5.1.2		ii) Exceeding 1,0 m but not exceeding 1,5 m	m³	585.0		
5.1.3		iii) Exceeding 1,5 m but not exceeding 2,0 m	m³	455.0		
5.1.4		iv) Exceeding 2,0 m but not exceeding 2,5 m	m³	260.0		
5.1.5		v) Exceeding 2,5 m but not exceeding 3,0 m	m³	130.0		
5.1.6		vi) Exceeding 3,0 m but not exceeding 3,5 m	m³	78.0		
5.1.7		vii) Exceeding 3,5 m but not exceeding 4.0 m	m³	52.0		
5.2	8.3.2(b)	Extra-over items 5.1 incl. for				
5.2.1		Intermediate excavation	m³	1092.0		
5.2.2		Hard rock excavation	m³	936.0		
5.2.3	8.3.2(c)	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m³	1040.0		
5.3	8.3.3.1	Make up deficiency in backfill material: (Provisional)				
5.3.1		a) From Commercial Source	m³	1170.0		
5.3.2		b) From other excavations on site	m³	260.0		
5.4	8.3.3.4	Overhaul				
5.4.1	PSDB 1	Special haul : Over 50 m up to 0,5 km (provisional)	m³.km	235.0		
5.5	8.3.4(a)	Shore trench				
5.5.1		i) Shore Trench opposite structure or service	m	235.0		
		EXISTING SERVICES				
5.6		Excavate by hand in all materials to expose :				
5.6.1		i) Stormwater services (provisional)	m³	65.0		
Total Carried Forward						

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STORMWATER & SUBSOIL DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
	SABS 1200LB	BEDDING				
5.7		PROVISION OF BEDDING				
		Available from trench within 0,5 km (Subclause 3.4.1)				
5.7.1	8.2.1	a) Selected granular material	m³	65.0		
5.7.2		b) Selected fill material	m³	40.0		
	8.2.2.3	c) Commercial sources (Provisional)				
5.7.3		1) Selected granular material	m³	390.0		
5.7.4		2) Selected fill material	m³	585.0		
	SANS 1200 LE	STORMWATER DRAINAGE				
5.8	8.2.1	Supply, handle, lay, bed Class B concrete pipe Type and Class .100D, Spigot and Socket joints fitted with rubber rings				
5.8.1		a) 450 mm diameter	m	1235.0		
5.8.2		b) 600 mm diameter	m	65.0		
	SABS 1200 DK	GABIONS AND PITCHING				
5.9	8.2.1	Surface preparation bedding of gabions				
5.9.1		a) Mattresses 6 x 2 x 0.23m	m²	60.0		
5.10	8.2.2	Gabion mattresses :				
5.10.1		a) Mattresses 6 x 2 x 0.23m	m³	15.0		
5.11		Extra-over items 4.30 for cutting and folding				
5.11.1		a) Gabion mattresses	m²	60.0		
5.11.2	8.2.4	Geotextile blanket, Grade B (270g/m2) Geotextile or similar approved	m²	155.0		
		HEADWALLS				
		Provide all materials & construct headwall onto s/water pipe as per detail. Rate to include for excavation				
5.12		a) Inlet headwall				
5.12.1		i) For pipes up to 600mm idiameter	No.	0.0		
Total Carried Forward						

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STORMWATER & SUBSOIL DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
5.13		b) Outlet headwall including splitter blocks				
5.13.1		i) For pipes up to 600mm idiameter	No.	5.0		
	8.2.8	MANHOLES construct complete with LD covers and frames				
5.14		Type A manhole as per eThekwini standard detail				
5.14.1		i) Exceeding 0,0 m but not exceeding 1,0 m	No.	0.0		
5.14.2		ii) Exceeding 1,0 m but not exceeding 1,5 m	No.	0.0		
5.14.3		iii) Exceeding 1,5 m but not exceeding 2,0 m	No.	3.0		
5.14.4		iv) Exceeding 2,0 m but not exceeding 2,5 m	No.	0.0		
5.14.5		v) Exceeding 2,5 m but not exceeding 3,0 m	No.	4.0		
5.15		Type B manhole as per eThekwini standard detail				
5.15.1		i) Exceeding 3,0 m but not exceeding 3,5 m	No.	0.0		
5.15.2		ii) Exceeding 3,5 m but not exceeding 4,0 m	No.	0.0		
5.15.3		iii) Exceeding 4,0 m but not exceeding 4,5 m	No.	0.0		
	8.2.8	CATCHPITS Construct complete with MD covers and frames				
5.16		Type S2 Kerb Inlet as per eThekwini standard detail				
5.16.1		i) Exceeding 0,0 m but not exceeding 1,0 m	No.	0.0		
5.16.2		ii) Exceeding 1,0 m but not exceeding 1,5 m	No.	0.0		
5.16.3		iii) Exceeding 1,5 m but not exceeding 2,0 m	No.	13.0		
5.16.4		iv) Exceeding 2,0 m but not exceeding 2,5 m	No.	5.0		
5.16.5		v) Exceeding 2,5 m but not exceeding 3,0 m	No.	4.0		
5.16.6		vi) Exceeding 3,0 m but not exceeding 3,5 m	No.	4.0		
5.16.7		vii) Exceeding 3,5 m but not exceeding 4,0 m	No.	3.0		
5.17	8.2.8	Type D3 Kerb Inlet at low points as per eThekwini standard detail				
5.17.1		i) Exceeding 0,0 m but not exceeding 1,0 m	No.	0.0		
5.17.2		ii) Exceeding 1,0 m but not exceeding 1,5 m	No.	0.0		
5.17.3		iii) Exceeding 1,5 m but not exceeding 2,0 m	No.	8.0		
5.17.4		iv) Exceeding 2,0 m but not exceeding 2,5 m	No.	2.0		
5.17.5		v) Exceeding 2,5 m but not exceeding 3,0 m	No.	2.0		
5.17.6		vi) Exceeding 3,0 m but not exceeding 3,5 m	No.	0.0		
Total Carried Forward						

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STORMWATER & SUBSOIL DRAINAGE

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
5.18	8.2.10	ACCESSORIES				
5.18.1		Extra Over Items 5.14 to 5.15 for HD concrete covers and frames	No.	3.0		
5.18.2		Extra Over Items 5.14 to 5.15 for HD Polymer concrete covers and frames	No.	3.0		
5.19		SUBSOIL PIPES				
5.19.1		i) 110 mm dia. slotted Unplasticised PVC pipes and fittings, normal duty complete with couplings	m	1950.0		
5.19.2		ii) 110mm x 45 deg. uPVC bends (provisional)	No.	30.0		
5.19.3		iii) 110mm x 110mm x 45 deg. uPVC junctions	No.	30.0		
5.19.4		iv) Stone - 19mm	m³	380.0		
5.19.5		v) Impermeable backfilling to subsoil drainage systems	m³	50.0		
5.19.6		vi) Sand obtained from approved commercial sources	m³	500.0		
5.19.7		vii) Rodding-eyes on sub-soil drains - complete with concrete slab covers and end-caps	No.	30.0		
5.20		Synthetic fibre filter fabric polletheline sheet				
5.20.1		i) Grade C or similar	m²	6600.0		
5.21		MISCELLANEOUS				
5.21.1	8.2.11	Anchors for pipes	m³	90.0		
Total Carried Forward To Summary						

BMK Consulting Engineers

Bill of Quantities

SEWERS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
6		SECTION 6: SEWERS				
	SABS 1200 DB	EARTHWORKS (PIPE TRENCHES)				
		EXCAVATION				
	8.3.2 (a)	a) Excavate in soft materials for trenches, backfill, compact and dispose of surplus/unsuitable material for pipes:				
6.1		i) 160 mm up to 250 mm diam. for total trench depth:				
6.1.1		0m to 1.0m	m³	1560.0		
6.1.2		Exceeding 1m but not 2.0m	m³	1287.0		
6.1.3		Exceeding 2.0m but not 3.0m	m³	780.0		
6.1.4		Exceeding 3.0m but not 4.0m	m³	468.0		
6.1.5		Exceeding 4.0m but not 5.0m	m³	1729.0		
6.2		Extra-over items 6.1 to 6.2 incl. for				
6.2.1		Intermediate excavation	m²	2330.0		
6.2.2		Hard rock excavation	m²	2558.0		
6.2.3	8.3.2(c)	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m³	650.0		
6.3	8.3.3.1	Make up deficiency in backfill material: (Provisional)				
6.3.1		a)From other excavations on site	m³	650.0		
6.3.2		b)From Commercial Source	m³	2600.0		
		EXISTING SERVICES				
6.4		Excavate by hand in all materials to expose :				
6.4.1		i) Sewer services (provisional)	m³	250.0		
	SABS 1200LB	BEDDING				
6.5		PROVISION OF BEDDING				
		Available from trench within 0,5 km (Subclause 3.4.1)				
6.5.1	8.2.1	a) Selected granular material	m³	65.0		
6.5.2		b) Selected fill material	m³	40.0		
	8.2.2.3	Commercial sources (Provisional)				
6.5.3		a) Selected granular material	m³	520.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

SEWERS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
6.5.4		b) Selected fill material	m³	845.0		
	1200 LD	PIPEWORK				
6.6	8.2.1	Supply, lay, joint, bed (Class 34) Heavy duty uPVC sewer pipe on flexible pipe bedding				
6.6.1		a)160 mm dia.	m	2054.0		
6.6.2		b)200 mm dia.	m	195.0		
6.6.3		c)250 mm dia.	m	0.0		
	SABS 1200 LD	MANHOLES ETC				
	PSLD 1	Manholes as per eThekweni Details complete with LD cover and frame & Type A Benching as per details, for depths over and up to:				
6.7		i) up to 250mm diam. for total trench depth:				
6.7.1		0m to 1.0m	No.	5.0		
6.7.2		Exceeding 1.0m but not 2.0m	No.	36.0		
6.7.3		Exceeding 2.0m but not 3.0m	No.	16.0		
6.7.4		Exceeding 3.0m but not 4.0m	No.	12.0		
6.7.5		Exceeding 4.0m but not 5.0m	No.	38.0		
6.7.6		Exceeding 5.0m but not 6.0m	No.	1.0		
6.8	8.2.10	ACCESSORIES				
6.8.1		Extra Over Items 6.7.1 to 6.7.6 for HD concrete covers and frames	No.	28.0		
6.8.2		Extra Over Items 6.7.1 to 6.7.6 for HD Polymer Concrete covers and frames	No.	2.0		
6.8.3		Extra Over Items 6.7.1 to 6.7.6 for Type A Drop Manhole	No.	120.0		
6.8.4		Extra Over Items 6.7.1 to 6.7.6 for Type B Drop Manhole	No.	26.0		
6.9		SUNDRIES				
6.9.1	8.2.7	Pipe protection Concrete cover slab (25Mpa) accross roadways, inclusive of Ref 395 mesh as per dwg no. BMK-RPE-021	m³	260.0		
6.9.2	8.2.9	Marker posts, complete, installed	No.	273.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

SEWERS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
6.9.3	8.2.10	Permanent plug stoppers	No.	30.0		
6.10	8.2.11	Connect to existing sewer: :				
6.10.1		a) Tie into existing manhole as per engineers instruction.	No.	35.0		
6.11		Erf Connections (110 mm dia uPVC Class 34 sewer pipes) (224 Units)				
6.11.1		Direct Connections out of Main Sewer for the following lengths:				
6.11.1.1		0m to 2.0m	No.	260.0		
6.11.1.2		2m to 4.0m	No.	40.0		
6.11.2		Normal Erf Connections out of Manhole for the following lengths:				
6.11.2.1		0m to 2.0m	No.	28.0		
6.11.2.2		2m to 4.0m	No.	16.0		
6.11.3		Extra over Item 6.11 for supply, excavation, lay, bed, test and backfill of 110 mm uPVC Class 34 (or similar approved) pipes for longer than listed house connections (including all fittings)	m	1300.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
	SABS 1200 DB	SECTION 7: WATER RETICULATION				
	SABS 1200 A	PRELIMINARY AND GENERAL				
7.1		INSPECTION AND DETECTION OF DEFECTS				
7.1.1	PSL 8.2.21	Allow provisional sum for Earthworks (Small Works) testing, where ordered by the Engineer (Prov.)	Sum	1.0		
7.2	PSL 8.2.19	PRESSURE TESTING & DISINFECTION				
7.2.1		Water supplied for testing and disinfection of pipelines (prov)	Sum	1.0		
7.2.2		Testing in accordance with PSL 7.4, PSL 7.2.1 & PSL 7.2.2	Sum	1.0		
7.2.3		Contractors mark-up on item 7.2.2	%	0.0		
		EXCAVATION				
7.3	PSDB 8.3.2 (a)	a) Excavate in soft materials for trenches, backfill, compact, haunch and dispose of surplus/unsuitable material for pipes up to and including 350mm dia. for depths:				
		i) 50mm diam. for total trench depth:				
7.3.1		Exceeding 0,5m but not 1,5m	m³	260.0		
7.3.2		Exceeding 1,5m but not 2,0m	m³	225.0		
		ii) 75mm diam. for total trench depth:				
7.3.3		Exceeding 0,5m but not 1,5m	m³	780.0		
7.3.4		Exceeding 1,5m but not 2,0m	m³	700.0		
		iii) 110mm diam. for total trench depth:				
7.3.5		Exceeding 0,5m but not 1,5m	m³	435.0		
7.3.6		Exceeding 1,5m but not 2,0m	m³	385.0		
		iv) 160mm diam. for total trench depth:				
7.3.7		Exceeding 0,5m but not 1,5m	m³	190.0		
7.3.8		Exceeding 1,5m but not 2,0m	m³	170.0		
		v) 200mm diam. for total trench depth:				
7.3.9		Exceeding 0,5m but not 1,5m	m³	0.0		
7.3.10		Exceeding 1,5m but not 2,0m	m³	0.0		
7.4		Extra-over items 7.3.1 to 7.3.10 incl. for				
7.4.1		Intermediate excavation	m³	935.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.4.2		Hard rock excavation	m³	935.0		
7.4.3	8.3.2(c)	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m³	0.0		
7.5	8.3.3.1	Make up deficiency in backfill material: (Provisional)				
7.5.1		a) From other excavations on site	m³	650.0		
		EXISTING SERVICES				
7.6	PSDB 8	Excavate by hand in all materials to expose :				
7.6.1		i) Water services (provisional)	m³	20.0		
	SANS 1200 LB	BEDDING				
		PROVISION OF BEDDING (Flexible)				
7.7		Available from trench within 0,5 km				
7.7.1	8.2.1	a) Selected granular material	m³	380.0		
7.7.2		b) Selected fill material	m³	410.0		
		Imported from				
7.7.3	8.2.2.3	c) Commercial sources (Provisional)				
7.7.4		1) Selected granular material	m³	80.0		
7.7.5		2) Selected fill material	m³	85.0		
	8.2.5	Overhaul of material for bedding (Provisional) where ordered Extra-over items 7.7.1 to 7.7.5				
7.7.6		a) Selected granular material	m³.km	560.0		
7.7.7		b) Selected fill material	m³.km	310.0		
	SABS 1200 LD	PIPEWORK				
		mPVC PIPELINES FROM 50mm dia. up to and including 300mm dia.(Class 12)				
7.8	8.2.1	Supply, deliver, handle, lay, bed, joint, test and disinfect in accordance with PSL 9, to SABS 966, Part 1 (1998)				
7.8.1		a) 50mm HDPE PE100 PN12.5	m	350.0		
7.8.2		b) 75mm HDPE PE100 PN12.5	m	1080.0		
7.8.3		c) 110mm dia mPVC Class 12	m	600.0		
7.8.4		d) 125mm dia mPVC Class 12	m	0.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.8.5		e) 160mm dia mPVC Class 12	m	260.0		
7.8.6		f) 200mm dia mPVC Class 12	m	0.0		
7.8.7		g) 250mm dia mPVC Class 12	m	0.0		
7.8.8		h) 315mm dia mPVC Class 12	m	0.0		
		Specials and Fittings for mPVC Pipelines (All specials and fittings to EWS standards)				
	8.2.2	Supply, deliver, handle, lay, bed, joint, test and disinfect in accordance with PSL 9.				
7.9		Steel Reducers (for mPVC pipes, all ends flanged)				
7.9.1		a) 315mm x 200mm	No.	0.0		
7.9.2		b) 315mm x 160mm	No.	0.0		
7.9.3		c) 315mm x 110mm	No.	0.0		
7.9.4		d) 315mm x 75mm	No.	0.0		
7.9.5		f) 200mm x 160mm	No.	0.0		
7.9.6		f) 200mm x 110mm	No.	0.0		
7.9.7		g) 200mm x 75mm	No.	0.0		
7.9.8		f) 160mm x 110mm	No.	10.0		
7.9.9		f) 160mm x 75mm	No.	10.0		
7.9.10		e) 110mm x 75mm	No.	10.0		
7.9.11		e) 110mm x 50mm	No.	10.0		
7.9.12		e) 75mm x 50mm	No.	10.0		
		Flange Adaptors - (C.I for mPVC pipe - flange to SABS 1123, Table 1600/3)				
7.10		Include for "Denso-wrapping" bolted connections in accordance with PSL1)				
7.10.1		a) 315mm	No.	0.0		
7.10.2		b) 250mm	No.	0.0		
7.10.3		c) 200mm	No.	0.0		
7.10.4		d) 160mm	No.	20.0		
7.10.5		e) 125mm	No.	0.0		
7.10.6		f) 110mm	No.	30.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.10.7		g) 75mm	No.	30.0		
7.10.8		g) 50mm	No.	20.0		
7.11		Equal Tees (Steel for mPVC pipes, all ends flanged)				
7.11.1		a) 50mm	No.	5.0		
7.11.2		a) 75mm	No.	5.0		
7.11.3		e) 110mm	No.	5.0		
7.11.4		c) 160mm	No.	5.0		
7.11.5		b) 200mm	No.	0.0		
7.11.6		c) 315mm	No.	0.0		
7.12		Unequal Tees (Steel for mPVC pipes, all ends flanged)				
7.12.1		a) 315mm x 315mm x 200mm dia.	No.	0.0		
7.12.2		b) 315mm x 315mm x 160mm dia.	No.	0.0		
7.12.3		c) 315mm x 315mm x 110mm dia.	No.	0.0		
7.12.4		d) 315mm x 315mm x 75mm dia.	No.	0.0		
7.12.5		e) 200mm x 200mm x 160mm dia.	No.	0.0		
7.12.6		f) 200mm x 200mm x 110mm dia.	No.	0.0		
7.12.7		g) 200mm x 200mm x 75mm dia.	No.	0.0		
7.12.8		h) 160mm x 160mm x 110mm dia.	No.	5.0		
7.12.9		i) 160mm x 160mm x 75mm dia.	No.	5.0		
7.12.10		j) 110mm x 110mm x 75mm dia.	No.	5.0		
7.12.11		k) 110mm x 110mm x 50mm dia.	No.	5.0		
7.12.12		l) 75mm x 75mm x 50mm dia.	No.	5.0		
7.13		Endcaps (Steel for mPVC pipe- socketed)				
7.13.1		a) 315mm	No.	0.0		
7.13.2		b) 200mm	No.	0.0		
7.13.3		c) 160mm	No.	5.0		
7.13.4		d) 110mm	No.	5.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.13.5		e) 75mm	No.	5.0		
7.13.6		f) 50mm	No.	5.0		
7.14		Hydrant Tee for mPVC pipes all ends flanged to SABS 1123 table 1600/3				
7.14.1		a) 75 x 80mm dia.	No.	5.0		
7.14.2		b) 315mm x 80mm dia.	No.	0.0		
7.14.3		c) 160mm x 80mm dia.	No.	5.0		
7.14.4		d) 110mm x 80mm dia.	No.	0.0		
7.14.5		e) 50mm x 80mm dia.	No.	5.0		
		Pressure bends with Lyng Joint or similar approved - Class 16				
7.15		Bend 90 Degree				
7.15.1		a) 315mm dia	No.	0.0		
7.15.2		b) 200mm dia	No.	0.0		
7.15.3		c) 160mm dia	No.	5.0		
7.15.4		d) 110mm dia	No.	5.0		
7.15.5		e) 75mm dia	No.	5.0		
7.15.6		a) 50mm dia	No.	10.0		
7.16		Bend 45 Degree				
7.16.1		a) 315mm dia	No.	0.0		
7.16.2		b) 200mm dia	No.	0.0		
7.16.3		c) 160mm dia	No.	5.0		
7.16.4		d) 110mm dia	No.	5.0		
7.16.5		e) 75mm dia	No.	5.0		
7.16.6		a) 50mm dia	No.	5.0		
7.17		Bend 22.5 Degree				
7.17.1		a) 315mm dia	No.	0.0		
7.17.2		b) 200mm dia	No.	0.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.17.3		c) 160mm dia	No.	5.0		
7.17.4		d) 110mm dia	No.	5.0		
7.17.5		e) 75mm dia	No.	5.0		
7.17.6		a) 50mm dia	No.	5.0		
7.18		Bend 11.25 Degree				
7.18.1		a) 315mm dia	No.	0.0		
7.18.2		b) 200mm dia	No.	0.0		
7.18.3		c) 160mm dia	No.	5.0		
7.18.4		d) 110mm dia	No.	5.0		
7.18.5		e) 75mm dia	No.	5.0		
7.18.6		a) 50mm dia	No.	5.0		
		Pipe Sleeves for Roads Crossing				
7.19		Supply, deliver, handle, lay,bed, joint pipe sleeves for road crossings				
7.19.1		a) 50mm dia HDPE PE100 PN12.5	m	0.0		
7.19.2		b) 75mm diameter Class 16 mPVC	m	60.0		
7.19.3		c) 315mm diameter Class 16 mPVC	m	0.0		
7.19.4		d) 160mm diameter Class 16 mPVC	m	15.0		
7.19.5		e) 125mm diameter Class 16 mPVC	m	10.0		
7.19.6		f) 110mm diameter Class 16 mPVC	m	20.0		
7.20	8.2.11	Anchor/Thrust Blocks				
7.20.1		a) Supply and install concrete thrust block grade 25/19	m³	5.0		
7.21	8.2.12	Concrete encasing				
7.21.1		a) Pipe protection Concrete cover slab (25Mpa) accross roadways where indicated by engineer, inclusive of Ref 395 mesh as per eThekwin Standard Details	m³	10.0		
7.22	8.2.13	Fire hydrants				
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

WATER RETICULATION

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
7.22.1		a) Supply and install fire hydrant complete as per dwg. EWS standards. 80mm Isolating valve and 100mm x 80mm dia. reducer measured elsewhere.	No.	15.0		
7.23	PSL 5	Isolation Valves as per eThekweni standard details				
5.23.1		a) 50mm dia.	No.	5.0		
7.23.2		b) 315mm dia.	No.	0.0		
7.23.3		c) 250mm dia.	No.	0.0		
7.23.4		d) 200mm dia.	No.	0.0		
7.23.5		e) 160mm dia.	No.	5.0		
7.23.6		f) 110mm dia.	No.	5.0		
5.23.7		g) 75mm dia.	No.	5.0		
7.24	PSA 4	Connection to main line to ethekweni main line (to be done by eThekweni contractor)	Sum	1.0	40000.00	R40,000.00
7.25		Erf Connections				
7.25.1		Direct Connections	No.	224.0		
Total Carried Forward To Summary						

BMK Consulting Engineers

Bill of Quantities

SECTION : ANCILLARY ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
8	SANS 1200 MM	SECTION 8: ANCILLARY ROADWORKS				
8.1		GUARDRAILS				
8.1.1	8.2.1	Supply and erect galvanized steel guardrails on timber posts, backfilled with material available on Site	m	630.0		
8.1.2	8.2.2	Extra-over Item .1.1 for horizontally curved guardrails factory-bent to a radius of less than 150 mm	m	190.0		
	8.2.3	End Units				
8.1.3		a) End wings	No.	30.0		
8.1.4		b) Terminal sections to eThekwini standard details using single guardrail sections	No.	20.0		
8.1.5	8.2.5	Reflector plates, supply and fix every 5m, to eThekwini standard details	No.	114.0		
8.2		PERMANENT TRAFFIC SIGNS				
	8.3.1	Sign faces with painted or galvanized (as stated) background. Symbols, characters, legend, and borders in engineering grade retroreflective material with signboards constructed from				
8.2.1		a) Aluminium sheet (2,0 mm thick), of area over 2 m2 and up to 10 m2	m²	80.0		
	8.3.3	Sign Supports				
8.2.2		c) Timber to eThekwini standard details diameter 145 mm - 175 mm pine	m	290.0		
8.2.3	8.1.1 & 8.3.4	Excavation for sign supports and backfilling with in-situ material	m³	65.0		
8.2.4	8.3.7	Statutory signs, street names, and the like, supplied and erected complete	No.	35.0		
8.3		ROAD MARKINGS				
	8.4.1	Non-reflectorized paint applied at nominal rate of 0,42 l/m2 (or proprietary brand roadmarking material applied at a nominal rate of ... l/m2)				
8.3.1		a) White lines (unbroken) (width 100 mm)	km	4.3		
8.3.2		b) Yellow lines (unbroken) (width 150 mm)	km	0.5		
8.3.3		c) White characters and symbols	m²	825.0		
8.3.4		e) Traffic island markings (any colour)	m²	50.0		
8.3.5	8.4.3	Road studs (Type, size, shape, and colour, as given on Dwg))	No.	0.0		
8.3.6	8.4.4	Setting out and premarking of lines (excluding traffic island markings, characters, and symbols)	km	4.3		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

SECTION : ANCILLARY ROADWORKS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
Brought Forward						
8.4		GUIDE BLOCKS				
8.4.1	8.1.1 & 8.5.1	Guide blocks supplied and erected (Dwg)	No.	20.0		
		RETAINING WALLS				
		Dry Stack Interlocking Retaining Walls along Roads/Platforms				
8.5	SANS 1200 D	Excavate for Retaining Wall Base/Structure				
8.5.1	8.3.3	Restricted Excavation				
8.5.1.1		a) Excavate for restricted foundations, footings and pipe trenches in all materials and use for backfill or embankment or dispose	m³	920.0		
8.5.2		b) Extra Over for				
8.5.2.1		1) Intermediate excavation	m³	280.0		
8.5.2.2		2) Hard Rock excavation	m³	370.0		
8.5.2.3		3) Boulder excavation Class A	m³	0.0		
8.5.2.4		4) Boulder excavation Class B	m³	100.0		
8.5.2.5	8.3.2	Selected Backfill to back of Retaining wall	m³	980.0		
8.6	SANS 1200 G	Concrete				
8.6.1	8.1.2.2	b) Welded Mesh - Ref Mesh 245 (For retaining wall base)	m²	80.0		
8.6.2	8.1.3.1	25MPa Concrete for Retaining Wall Base	m³	550.0		
8.6.3	PS	Supply and Install dry stack interlocking retaining blocks as per drawings	m²	1000.0		
8.7		Subsoil Drainage				
8.7.1	SANS 1200 LE 8.2.1	160mm diameter geopipe	m	780.0		
8.7.2		Supply and Lay Geofabric (Bidum U14)	m²	3920.0		
8.7.3	SANS 1200 LB 8.2.2.3	Dust Free 19mm Stone Aggregate	m³	150.0		
8.7.4	8.2.2.3	Selected Granular Material (Riversand)	m³	660.0		
Total Carried Forward						

BMK Consulting Engineers

Bill of Quantities

SECTION : ANCILLARY ROADWORKS

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Bill of Quantities

CABLE DUCTS

ITEM NO	PAYMENT	DESCRIPTION	UNIT	QTY	RATE	AMOUNT R
9	SANS 1200 LC	SECTION 9 : CABLE DUCTS				
		EXCAVATION				
9.1		Over 100 up to 300 mm diam. for total trench depth:				
9.1.1		Exceeding 0,0 m but not exceeding 1,0 m	m³	120.0		
9.1.2		Exceeding 1,0 m but not exceeding 2,0 m	m³	180.0		
9.2	8.3.2(b)	Extra-over items .2.1 to .2.12 incl. for (prov):				
9.2.1		Intermediate excavation	m³	115.0		
9.2.2		Hard rock excavation	m³	170.0		
9.3	8.2.5	SUPPLY, LAY, BED, AND PROVE DUCTS				
9.3.1		160 mm diam. uPVC pipes	m	590.0		
9.3.2		110 mm diam. uPVC pipes	m	590.0		
9.3.3	8.2.6	IMPORT BEDDING MATERIAL (provisional)	m³	60.0		
9.4	8.2.7	DRAW PITS/MANHOLES COMPLETE WITH TYPE ... COVER AND FRAME				
9.4.1		Draw pit 600 mm x 600 mm (Dwg)	No.	64.0		
9.4.2		Manhole 1 m x 1 m (Dwg)	No.	64.0		
9.5	PSLC3.4	CABLE PROTECTION				
9.5.1		Concrete Cover Slab over cable ducts for reduced depth of cover	m	55.0		
Total Carried Forward To Summary						

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SUMMARY OF SECTIONS Bill of Quantities		
SECTION	DESCRIPTION	AMOUNT R
1	PRELIMINARY AND GENERAL	
2	SITE CLEARANCE	
3	ROADWORKS	
4	EARTHWORKS (PLATFORMS)	
5	STORMWATER & SUBSOIL DRAINAGE	
6	SEWERS	
7	WATER RETICULATION	
8	ANCILLARY ROADWORKS	
9	CABLE DUCTS	
a	SUB TOTAL	
b	CSDG (0.25% factor applied to a, above)	
c	SUB TOTAL (a + b)	
d	Add 15% VAT (c)	
Total Carried Forward To Form of Offer		

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