

C2.2: BILL OF QUANTITIES

The Bill of Quantities follows and comprises of 15 pages. The pages are numbered BOQ 78 to BOQ 93

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		ETAFULENI PHASE 1A AND 1DA : CONSTRUCTION OF CIVIL SERVICES SECTION 1: PART AB: GENERAL SPECIFICATIONS FIXED CHARGES				
1		Formal contract	sum	1		
2		Sureties	sum	1		
3		Checking of underground services	sum	1		
4		Insurance of works, etc. and damage to persons and property	sum	1		
5		Workman's compensation	sum	1		
6		Initial supply of plant, materials, labour and services required by the contractor	sum	1		
7		Offices for Engineer and staff (Type 1)	sum	1		
8		Contractor's camp site / store yard	sum	1		
9		Notice board	sum	1		
10		Road deviations and Traffic Control	sum	1		
11		Services connection fee (electrical / water / telephone) (Provisional)	Prov Sum	1	30,000.00	
12		Protection of underground services	sum	1		
		TIME RELATED ITEMS				
17	AB 2.1	Preliminary and General: Time Related Items	sum	1		
18		Contractor's superintendence	sum	1		
19		Setting out	sum	1		
20		Watching and lighting	sum	1		
21		Care of works, damage to persons and property	sum	1		
22		Facilities for other contractors	sum	1		
23		Provision of plant, materials and labour	sum	1		
24		Clearance of site during contract and on completion	sum	1		
25		Cost of samples and contractor's preliminary and site control testing	sum	1		
26		Temporary reinstatements	sum	1		
27		Attendance on and maintenance of office for Engineer and staff	sum	1		
TOTAL CARRIED FORWARD to Page 79						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		TOTAL BROUGHT FORWARD FROM PAGE 78				
33		Survey for, and preparation of, 'as-built' drawings	sum	1		
34		Survey coordination of all valves, manholes, catchpits, and cable duct markers	sum	1		
38		b) Community Liason Officers	Prov Sum	1	500,000.00	
39		c) % Profit and attendance on item 38	%	500,000.00		
40		Compliance with occupational health and safety act	sum	1		
41		Allow for the additional survey as ordered by the Engineer	Prov Sum	1	500,000.00	
42		% Profit and attendance on item 41	%	500,000.00		
43		Allow for additional Geotechnical Services as instructed by the Engineer	Prov Sum	1	500,000.00	
44		% Profit and attendance on item 43	%	500,000.00		
45		Cost for Health and Safety Officer	Prov Sum	1	100,000.00	
46		% Profit and attendance on item 45	%	100,000.00		
47		Allow Relocation of structures in way of services	Prov Sum	1	2 000 000.00	
48		% Profit and attendance on item 47	%	2 000 000.00		
51		Special Water fittings not available from EThekwini Stores	sum	1	350,000.00	
		PART AB: GENERAL SPECIFICATIONS				
TOTAL FOR PART AB: GENERAL SPECIFICATIONS CARRIED FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART AH OCCUPATIONAL HEALTH and SAFETY				
1	AH 14.1	Contractor's initial obligation in respect of the Occupational Health and Safety Act in construction regulations	sum	25,000.00		
2	AH 14.2	Contractor's time related obligations in respect of the Occupational Health and Safety Act in construction regulations	sum	1		
		PART AH OCCUPATIONAL HEALTH and SAFETY				
		SECTION 1: PRELIMINARY AND GENERAL				
TOTAL FOR PART AH: OCCUPATIONAL HEALTH AND SAFETY CARRIED FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		SECTION 2: SITE CLEARANCE				
		PART B SITE CLEARANCE				
1	B.8.2	General clearance and grubbing	m ²	14,500.00		
2	B.8.10	Removal of unreinforced concrete (Provisional)	m ³	19		
3	B.8.11	Removal of reinforced concrete (Provisional)	m ³	19		
4	B.8.9	Removal of brickwork above ground (Provisional)	m ³	19		
5	B.8.4	Removal of large trees of girth > 1,5	no.	75		
6	B.8.14	Removal of roadways to tip	m ³	95		
7	B.8.15	Removal of asphalt sidewalks/medians to tip	m ³	15		
8	B.8.16	Removal of precast kerb and channel to tip	m ³	10		
9	B.8.8	Demolition of Existing Structures (Provisional)	Prov Sum	1	200,000.00	
10		% Profit and attendance on item 9	%	200,000.00		
11		Relocation of Existing Services	Prov Sum	1	1000,000.00	
12		% Profit and attendance on item 11	%	1000,000.00		
		SECTION 2: SITE CLEARANCE				
TOTAL FOR SECTION 2 CARRIED FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
SECTION 3: ROADWORKS						
PART DA EARTHWORKS: BULK						
1	DA.8.2	Excavate 100-200mm selected topsoil and stockpile	m ³	3,000		
2	DA 8.3	Excavate soft material and place directly into fill (as directed by Engineer)	m ³	14,000		
3	DA 8.3	Excavate selected suitable soft material to stockpile	m ³	2,850		
4	DA8.3	Excavate unsuitable material and spoil at tip (municipal dump site or approved dump site)	m ³	6,000		
5		EO.for excavation of intermediate material	m ³	2,000		
6		E.O. for excavation of hard material	m ³	5,000		
8	DA 8.5	Extra over item 2-7 for restricted excavation	m ³	1,2000		
9	DA 8.7	Stockpile handling of soft material to fill	m ³	2,850		
10	DA 8.5	Compact soft material from site to 93% Mod. AASHTO	m ³	17,000		
11	DA 5.2.2	Excavate unsuitable material below embankments or formation and spoil at municipal tip or approved dump site (including haulage and fees)	m ³	3,500		
12	DA8.5	Form, scarify and compact formation to 95% Mod AASTHO	m ²	15,000		
13		Import dump rock fill material from commercial source (including haulage)	m ³	3,500		
14		Compact dump rock material	m ³	3,500		
15		Import G7 material from contractor's off-site or commercial source inclusive of haulage and royalties	m ³	2,000		
16	DA 8.5	Compact G7 material to 95% Mod. AASHTO	m ³	2,000		
17		Import G5 material from contractor's off-site or commercial source inclusive of haulage and royalties	m ³	2,950		
18		Compact G5 material to 95% Mod. AASHTO	m ³	2,950		
19		Import clean coarse sand from contractor's off-site source inclusive of haulage and royalties	m ³	200		
20		Compact clean coarse sand to 95% Mod AASHTO.	m ³	200		
21	DA 8.6	Trimming of embankments	m ²	18,000		
22		Shaping of verges	m ²	9,800		
23		Allow PC sum for Engineers acceptance testing	Prov Sum	1	75,000.00	
24		% Profit and attendance on item 23	%	75,000		
25		Environmental Improvements - Attenuation Structures (Provisional)	Prov Sum	1.	50,000.00	
26		% Profit and attendance on item 25	%	50,000		
PART DA EARTHWORKS: BULK						
TOTAL CARRIED FORWARD to Page 83						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART DB EARTHWORKS FOR PIPE TRENCHES				
		TOTAL BROUGHT FORWARD From Page 82				
6	DB 8.5	Excavate and backfill in all material for 375 mm diameter pipe where depth is Over 0 m and not exceeding 1.5 m	m	230		
7	DB 8.5	Excavate and backfill in all material for 375 mm diameter pipe where depth is Over 1.5 m and not exceeding 2 m	m	810		
8	DB 8.5	Excavate and backfill in all material for 375 mm diameter pipe where depth is Over 2 m and not exceeding 2.5 m	m	120		
10	DB 8.5	Excavate and backfill in all material for 450 mm diameter pipe where depth is Over 0.0 m and not exceeding 1.5 m	m	35		
11	DB 8.5	Excavate and backfill in all material for 450 mm diameter pipe where depth is Over 1.5 m and not exceeding 2 m	m	15		
15	DB 8.6	E.O. for trench excavation in hard material (Provisional)	m ³	50		
16		E. O. for trench excavation in rock (Provisional)	m ³	280		
17		E.O. item 4-22 for restricted excavation and backfill	m ³	300		
19	8.10	Placing and compacting of Class C bedding for 375 mm diameter pipe	m	1,160		
20	8.10	Placing and compacting of Class C bedding for 450 mm diameter pipe	m	50		
21	8.12	Provision of selected granular material for pipe bedding (Provisional)	m ³	775		
		PART DB EARTHWORKS FOR PIPE TRENCHES				
TOTAL CARRIED FORWARD to Page 84						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		TOTAL BROUGHT FORWARD From Page 83				
1	EB 8.1	Graded G2 crushed stone base, layer thickness 150mm (Compacted to 98% Mod AASHTO)	m ³	1,800		
2	EB 8.2	Prime coat at 0.61 l/m ²	m ²	11,450		
		PART EB GRADED CRUSHED STONE				
		PART ED ROAD ASPHALT				
1		9.5mm continuously graded wearing course of compacted thickness 30 mm. Mix 'A'. Bitumen content of 5%	t	920		
2	ED 8.3.1	Transverse joints	m	10		
3	ED 8.3.2	Longitudinal joints	m	15		
4		EO Item 3 & 4 for saw cutting with a diamond tipped cutter.	m	10		
5	ED 8.4	Tack coat at 0.3 l/m ²	m ²	500		
		PART ED ROAD ASPHALT				
		PART EF KERBS AND HAUNCHES				
1	EF 5.1.3 C	Modified Type F mountable kerb and channel (150mm)	m	1,850		
5	EF 5.1.3 D	Scoop kerb and channel including transition kerb	m	10		
8		Extra over item 1 & 2 for curves of radius less than 25 m	m	20		
		PART EF KERBS AND HAUNCHES				
		PART EH STEEL GUARDRAILS & CONCRETE MEDIAN BARRIERS				
1	EH 8.1	Straight steel guard rails (including fittings)	m	140		
		PART EH STEEL GUARDRAILS & CONCRETE MEDIAN BARRIERS				
TOTAL CARRIED FORWARD to Page 85						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART F PROTECTION WORKS				
		TOTAL BROUGHT FORWARD From Page 84				
1	F 8.2	Topsoiling from stockpile 100mm thick	m ²	7,500		
2		Hydroseeding to embankments	m ²	7,500		
3	F 8.6	Gabion mattresses 500mm depth	m ³	350		
4	F 8.6	Gabion mattresses 1000mm depth	m ³	400		
5	F 8.6	Gabion mattresses 230mm depth	m ³	20		
6	F 8.4	Stone pitching 150mm deep	m ²	40		
7	F 8.5	Catchwater channel with concrete lining - width 1.50m. Drawing No. ETA-1_Sheet R107	m	150		
8	F 8.5	Catchwater channel with concrete lining - width 2m. Drawing No. ETA-1_Sheet R107	m	50		
11		Excavation for catchwater banks	m ³	50		
12		Bidim U14 or similair approved geofabric	m ²	1,000		
13		Allow Provisional Sum of R150 000 for re-location of fences, gates and other small structures	Prov Sum	1	150,000.00	
14		% Profit and attendance on item 13	%	150,000.00		
15		Excavate for foundations to spoil	m ³	260		
16		Extra over excavation for hard material	m ³	200		
17		Concrete bases (25/19)	m ³	260		
18		Steel reinforcement - Mesh Ref 395	kg	420		
19		Cement Stabilized Backfill (Min. UCS 1.5 - 3.0 MPa). Inclusive of all labour, plant and materials.	m ³	460		
20		Terrace Block - Type TB300 Blocks	m ²	200		
22		Terrace Block - Type TB490 Blocks	m ²	460		
23		170 x 170 Stone wrapped in Bidim with 40mm diameter pipe	no	350		
		PART F PROTECTION WORKS				
TOTAL CARRIED FORWARD to Page 86						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART PG NON-PRESSURE PIPELINES and PC CULVERTS				
		TOTAL BROUGHT FORWARD From Page 85				
2	PG 8.2	Supply and lay 375 mm diameter concrete Class 50D	m	1,160		
5		Supply and lay 450 mm diameter concrete Class 50D	m	50		
8		110 mm diameter uPVC cable ducts	m	250		
9		160 mm diameter uPVC cable ducts	m	250		
10		230 mm brickwork to cable duct headwalls or sump	m ²	10		
12		100mm diameter PVC sub-soil drains in 300x300 crushed stone surround complete wrapped in u14 Bidim and backfilled with clean coarse sand. Inclusive of all labour, plant and materials	m	2,300		
13		Grade 15/26 concrete to anchor blocks	m ³	8		
14	PG 8.11.3	Cable duct markers	No.	30		
15		Additional Stormwater Control for Properties	Prov Sum	1	250,000.00	
16		% Profit and attendance on item 15	%	250,000.00		
17		Allow for river crossing concrete works	Prov Sum	1	500,000.00	
		% Profit and attendance on item 17	%	500,000.00		
		PART PG NON-PRESSURE PIPELINES and PC CULVERTS				
TOTAL CARRIED FORWARD to Page 87						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART PH MANHOLES and APPURTENANT WORKS				
		TOTAL BROUGHT FORWARD From Page 86				
1	PH 8.3	Standard inlet type S1. Depth Over 1.5 m and not exceeding 2.0 m	No.	4		
3	PH 8.3	Standard inlet type S2. Depth Over 0 m and not exceeding 1.5 m	No.	15		
4	PH 8.3	Standard inlet type S2. Depth Over 1.5 m and not exceeding 2m	No.	31		
5	PH 8.3	Standard inlet type S2. Depth Over 2 m and not exceeding 2.5m	No.	2		
6		Standard inlet type D3. Depth Over 1.5 m and not exceeding 2 m	No.	4		
9		Manhole type A with light duty concrete cover. Depth Over 0,0 m and not exceeding 1,5 m	No.	5		
10		Manhole type A with light duty concrete cover. Depth Over 2.5 m and not exceeding 3.0 m	No.	4		
13		Extra over item 12-16 for supply of new heavy-duty cast-iron manhole cover and frame	No.	1		
14		Extra over item 12-16 for supply of new heavy duty concrete manhole cover and frame	No.	2		
15		Construct standard outlet headwall for 375 mm dia. Pipe.Standard drawing no. 38576, including excavation and backfilling	No.	2		
16		Construct standard outlet headwall for 450 mm dia. Pipe.Standard drawing no. 38576, including excavation and backfilling	No.	3		
17		Open channel inlet. Depth Over 0,0 m and not exceeding 1,5 m (As per detail: Drawing No. ETA-1B_Sheet R43)	No.	35		
		PART PH MANHOLES and APPURTENANT WORKS				
TOTAL FOR SECTION 3 CARRIED FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		SECTION 4: PLATFORMS				
		PART DA EARTHWORKS: BULK				
1	DA 8.2	Excavate 100mm topsoil under platforms to stockpile	m ³	950		
2	DA 8.5	Cut to fill to form platforms compacted to 95 % Mod AASHTO	m ³	2,250		
3		Topsoiling from stockpile	m ³	950		
4		Hydroseeding to embankments	m ²	4,200		
5		Excavate for foundations to spoil.	m ³	130		
6		Extra over excavation for hard material	m ³	100		
7		Concrete bases (25/19)	m ³	130		
8		Steel reinforcement - Mesh Ref. 395	kg	120		
9		Cement Stabilized Backfill (Min. UCS 1.5 - 3.0 MPa). Inclusive of all labour, plant and materials.	m ³	130		
10		100mm diameter PVC sub-soil drain in 300x300 crushed stone surround complete wrapped in U14 Bidim or similar approved geofabric.	m	40		
11		Terrace Block - Type TB300 Blocks	m ²	200		
12		Terrace Block - Type TB490 Blocks	m ²	200		
13		170 x 170 Stone wrapped in Bidim with 40mm diameter pipe 30	no	175		
14		Extra over excavation for intermediate excavation	m ³	100		
15		Import G7 material from contractor's off-site or commercial source inclusive of haulage and royalties	m ³	2,115		
16		Compact G7 material to 95% Mod AASHTO	m ³	2,115		
TOTAL FOR SECTION 4 CARRIED FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		SECTION 5: SEWERAGE				
		PART DB EARTHWORKS FOR PIPE TRENCHES				
1	DB 8.5	Excavate, backfill and lay in all material 110mm dia. Sewer connection from rodding eye to house. Depth 0,0-1,5m	m	1,500		
2		Excavate and backfill in all material for 160 mm diameter pipe where depth is Over 0 m and not exceeding 1,5 m	m	740		
3		Excavate and backfill in all material for 160 mm diameter pipe where depth is Over 1,5 m and not exceeding 2,0 m	m	120		
4		Excavate and backfill in all material for 160 mm diameter pipe where depth is Over 2,0 m and not exceeding 2,5 m	m	20		
10	DB 8.6	Extra over for hard excavation	m ³	660		
11		Extra over items for rock excavation	m ³	120		
12	DB 8.8	Excavate unsuitable material from trench bottom.	m ³	40		
13		Extra over item 1-10 for restricted excavation and backfill	m ³	950		
14		Placing and compacting of selected flexible pipe bedding for 110 mm dia. Pipe.(provisional)	m	950		
15		Placing and compacting of selected flexible pipe bedding for 160 mm dia. pipe.	m	880		
16		Extra over items 14 & 15 for importing river sand	m ³	400		
17		Extra over items 14 & 15 for selected bedding material from borrow	m ³	210		
		PART DB EARTHWORKS FOR PIPE TRENCHES				
TOTAL CARRIED FORWARD to Page 90						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART PG NON-PRESSURE PIPELINES and PC CULVERTS				
		TOTAL BROUGHT FORWARD From Page 89				
1	PG 8.2	Supply and lay 110 mm diameter uPVC pipe.	m	950		
2	PG8.3	Supply and install 45 deg. Bend on 110mm dia. HD uPVC pipe. (prov)	no.	165		
3		Supply and install 90 deg. Bend on 110mm dia. HD uPVC pipe. (prov)	no.	165		
5		Supply and install property terminal connection to detail, inclusive of concrete, junctions, rodding eye and endcap with slab. (Drawing No. ETA-1_Sheet R107)	no.	165		
7		Supply and lay 160 mm diameter HD uPVC (class 34)	m	880		
		PART PG NON-PRESSURE PIPELINES and PC CULVERTS				
		PART PH MANHOLES AND APPURTENANT WORKS				
1	PH 8.3	Standard precast class A concrete ring manhole... Light duty cover and frame - Over 0,0 m and not exceeding 1,5 m. Standard Drawing	No.	38		
2		Standard precast class A concrete ring manhole. Light duty cover and frame - Over 1,5 m and not exceeding 2,0 m	No.	5		
3		Standard precast class A concrete ring manhole. Light duty cover and frame - Over 2,0 m and not exceeding 2,5 m	No.	5		
11	PH 8.7	E.O. items 1 - 7 for heavy duty concrete cover and frame	No.	10		
12		Break into existing concrete manhole wall for [100 -400] mm diameter pipe and make good	No.	8		
13		Raise/lower existing manhole with concrete cover and frame in unpaved area by: 0 to 500 mm	No.	2		
		PART PH MANHOLES AND APPURTENANT WORKS				
		SECTION 6: SEWERAGE				
TOTAL FOR SECTION 5 BROUGHT FORWARD TO SUMMARY						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		SECTION 6 : WATER RETICULATION				
		PART DB EARTHWORKS FOR PIPE TRENCHES				
1	DB 8.5	Excavate and backfill in all material for 22-54mm pipe Depth >0.5 to 1.0m(Provisional)	m	1,000		
2		Excavate and backfill in all material for 22-54mm pipe Depth >1.0 to 1.5m (Provisional)	m	950		
3		Excavate and backfill in all material for 75mm dia. pipe. Depth >1,0 to 1,5m	m	950		
4		Excavate and backfill in all material for 75mm dia. pipe. Depth >1,5 to2.0m (Provisional)	m	850		
7	DB 8.6	Extra over items 1-4 for hard excavation	m³	700		
8		Extra over items 1-4 for rock excavation	m³	1,400		
10		Compaction of backfill to 95% MAASTHO density in road crossings were directed	m³	25		
12	DB 8.9	Provision of pipe bedding material from borrow (Provisional)	m³	120		
13	DB .10	Placing and compacting flexible pipe bedding to 22-54mm dia. PC pipes	m	1,950		
14		Placing and compacting flexible pipe bedding to 75mm dia. mPVC pipes	m	1,800		
17		Provision of pipe bedding material from commercial sources (Provisional)	m³	1,000		
		PART DB EARTHWORKS FOR PIPE TRENCHES				
TOTAL CARRIED FORWARD to Page 92						

Item	Clause	Bill description	Unit	Qty	Rate	Amount
		PART PF PRESSURE PIPELINES: OTHER THAN STEEL				
		TOTAL BROUGHT FORWARD From Page 91				
		PIPES AND PIPE FITTINGS TO BE SUPPLIED BY COUNCIL				
2		50mm dia. Class 12 HDPE pipe	m	1,950		
3		75mm diam Class 12 mPVC pipe	m	1,800		
5		75mm flange adaptor to mPVC pipe	no.	10		
6		75x75X75 flanged Tee	no.	12		
7		75x75x75 hydrant Tee	no.	8		
8		75mm flanged waterworks valves	no	8		
9		75 -50mm brass reducer	no	2		
10		ALPRENE 50x50x50 Tee to HDPE pipe	no	2		
11		50x90 degree HDPE elbow	no	2		
12		50-25 HDPE reducer	no	1		
13		Magnum saddle on 75mm diam. mPVC pipe for 22mm stand connection	no	2		
16		Fire hydrants complete with bend, valve, flange bolts and extension complete as per detail as per Drawing No. 52697_Sheet 3.	no	4		
17		Collect and install valve box with rings and cover complete to detail as per Drawing No. 52697_Sheet 3.	no	12		
18		Collect valve marker posts and set in concrete	no	24		
21		Supply and fit set of bolts, nuts, washers plus gasket for 75mm flange.	set	20		
22		Sterilisation of pipeline- 2940mx75 + 2430mx54 + 50mx150	sum	1		
23		Collect necessary end caps, blank flanges, saddle, ferrule & plugs, spade pieces or other fittings and pressure test reticulation system (13000m) at 1200 kPa.	sum	1	177,000	
24		Grade 15/26 concrete to anchor/thrust blocks	m ³	4		
26		Provide for returning all excess pipes and fittings to Council Springfield stores.	sum	1	7,000	
29		54mm flanged waterworks valves	no	2		
32		150x150x150 flanged tee	no	1		
34		50mm flange adaptor to mPVC pipe	no	1		
35		75mm x 50mm BSP male adaptor	no	1		
36		110-75mm brass reducer	no	1		
		SECTION 7: WATER RETICULATION				
		EXTENSION ESTIMATE TOTAL				
TOTAL FOR SECTION 6 CARRIED FORWARD TO SUMMARY						

SUMMARY

DESCRIPTION	AMOUNT (R)
SECTION 1: PRELIMINARY AND GENERAL	
PART AB: GENERAL SPECIFICATIONS	
PART AH OCCUPATIONAL HEALTH AND SAFETY	
SECTION 2: SITE CLEARANCE	
SECTION 3: ROADWORKS	
SECTION 4: PLATFORMS	
SECTION 5: SEWERAGE	
SECTION 6: WATER RETICULATION	
SUB-TOTAL	
ADD – 15% VAT	
TOTAL AMOUNT TO FORM OF OFFER	