

UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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SUB TOTAL			R _____
ADD VAT (15%) - (only if a registered VAT Vendor)			R _____
TOTAL CARRIED TO FORM OF OFFER AND ACCEPTANCE (C.1.1)			R _____

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C.2.2.2 : BILL OF QUANTITIES

SECTION 1 PRELIMINARY AND GENERAL ITEMS

PART 0102 C1.2 GENERAL REQUIREMENTS AND PROVISIONS

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Environmental Management</u>				
1	C1.2.1.1 PS.C1.2.1.1	Monitoring of compliance with and reporting on the EMP	months	5		
2	C1.2.1.2 PS.C1.2.1.2	Dedicated environmental officer	months	5		
		<u>Programming and Reporting</u>				
3	C1.2.2.3 PS.1.1 PS.C1.2.2.3	Submission of a Scheme 2 Initial Programme	Lump sum	1		
4	C1.2.2.4 PS.C1.2.2.3	Submission of a Scheme 2 Full Programme	Lump sum	1		
5	C1.2.2.5 PS.C1.2.2.5	Reviewing and updating a Scheme 2 programme every month	months	5		
		<u>Other Documentation</u>				
6	C1.2.2.6	Preparation and submission of all information and reports specified in the Contract Documentation	months	5		
		<u>Routine road maintenance of existing public roads within the Site of the Works or other public roads outside the Site of the Works which are used as detours</u>				
7	C1.2.3.1	Grass cutting	ha	0.9		
8	C1.2.3.4	Collection of rubbish / litter	km	0.5		
		<u>Stakeholder Management & Liaison</u>				
9	C1.2.4 PS.20	Stakeholder Management and Liaison	months	5		
		<u>Health and Safety</u>				
10	C1.2.5.1 PS.10	Health and safety plan	Lump sum	1		
11	C1.2.5.2 PS.10	Implementation of health and safety plan	months	5		
12	C1.2.6.1	Work adjacent to properties: Survey of adjacent properties	no	33		
13	C1.2.6.2	Preventive and/or mitigation measures	PC Sum	10000	1.00	10,000.00
14	C1.2.6.3	Handling cost, profit and all other charges in respect of item C1.2.6.2	%	10000		
		<u>Community Liaison Officer</u>				
15	PS.20	Allow for CLO to be appointed	PC Sum	112500	1.00	112,500.00

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Part Continued **PART** 0102 C1.2 GENERAL REQUIREMENTS AND PROVISIONS

Item	Clause	Description	Unit	Quantity	Rate	Amount
16	PS.20	Handling costs and profit in respect of PS.12	%	112500		
		<u>Additional Security</u>				
17	PS.11	Provision of security on site to guard against any disruption of the works throughout the duration of the contract	months	5		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0103 C1.3 CONTRACTOR'S SITE ESTABLISHMENT AND

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>The Contractor's General Obligations</u>				
1	C1.3.1.1 PS.C1.3.1	Fixed obligations	Lump sum	1		
2	C1.3.1.2 PS.C1.3.1	Value-related obligations	Lump sum	1		
3	C1.3.1.3 PS.C1.3.1	Time-related obligations	months	5		
4	C1.3.2 PS.C1.3.2	Contract sign boards (as per drawing)	no.	2		
5	PS.16	Submission of As-Built Data	sum	1		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0104 C1.4 FACILITIES FOR THE ENGINEER

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	PS.17	Allowance for Photographs every month digital	PC Sum	30000	1.00	30,000.00
2	PS.17	Handling costs and profit in respect to item above	%	30000		
3	PS.18	Allowance for additional survey required by Engineer	PC Sum	25000	1.00	25,000.00
4	PS.18	Handling costs in respect to item above	%	25000		
5	PS.19	Allowance for Laboratory Acceptance testing as required by Engineer	PC Sum	50000	1.00	50,000.00
6	PS.19	Handling costs in respect to item above	%	50000		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0105 C1.5 ACCOMMODATION OF TRAFFIC

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C1.5.1.1 PS.1.3	Accommodation of pedestrian and non-motorised traffic	months	5		
2	C1.5.2 PS.1.3	Accommodation of vehicular traffic	months	5		

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Part Continued PART 0105 C1.5 ACCOMMODATION OF TRAFFIC

Item	Clause	Description	Unit	Quantity	Rate	Amount
<u>Temporary Traffic Control Facilities</u>						
3	C1.5.7.1(b)	Delineators including mounting bases and ballast: Single sided, reversible left or right (1200m x 250)	no	60		
4	C1.5.7.5 (c)	(c)Illuminated road sign – R & TR series (900)	no	6		
5	C1.5.7.3	Flagmen	man-day	125		
6	C1.5.7.4	Traffic controllers	man-day	90		
7	C1.5.8	Traffic safety officer	months	5		
<u>Provision of Safety Equipment for Visitors</u>						
8	C1.5.11.1	Provision of reflective safety vests for visitors	no	4		
9	C1.5.11.2	Provision of hard hats for visitors	no	4		
<u>Traffic Safety Officer: Penalties</u>						
10	A1.5.3.7 PS.1.4	(a) Fixed Penalty per occurrence, R2000 per day	RateOnly	0		RATE ONLY
11	A1.5.3.7 PS.1.4	(b) Time-Related Penalty, R1000 per hour	RateOnly	0		RATE ONLY

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 2 SITE CLEARANCE

PART 0106 C1.6 CLEARING AND GRUBBING

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Clearing</u>				
1	C1.6.1.1	Clearing with machines and some hand labour where necessary	ha	1.45		
2	C1.6.1.2	Clearing with hand labour only when labour enhanced work is specified	ha	0.6		
		<u>Grubbing</u>				
3	C1.6.2.1	Grubbing with machines and some hand labour where necessary	ha	0.9		
4	C1.6.2.2	Grubbing with hand labour when labour enhancement work is specified or it is not practical to use a machine	ha	0.06		
		<u>Removal and Grubbing of Large Trees and Tree Stumps</u>				
5	C1.6.3.1	Girth equal to or exceeding 1,0 m up to and including 2,0 m	no	1		
		<u>Removal of stormwater pipes</u>				
6	C1.6.4.1 PS.C1.6.4.1	Removal of Stormwater Pipes, Diameter 300mm-600mm. Spoil at tip, including haulage.	m	40		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0107 C1.7 LOADING AND HAULING

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Hauling material for use in the works</u>				
1	C1.7.2.1(a)	Hauling:Hauling material for use in the Works and off-loading it on the site of the Works:(a) Soil, gravel, crushed stone and pavement layer material	m3 * km	2240		
		<u>Hauling material to spoil</u>				
2	C1.7.2.2(a)	Hauling material to spoil and off-loading it at a designated spoil area:(a) Cleared and grubbed material (organic matter and all other unsuitable or waste material)	m3	290		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 3 SERVICES

PART 0201 C2.1 GEN REQMENTS AND TRENCHING SERVICE

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Location, Identification, Protection and Relocation of Existing Services</u>				
1	C2.1.1.1	Contractor's obligation	Lump sum	1		
		<u>Relocation of Services by Others:</u>				
		<u>Water</u>				
2	C2.1.1.2 PS.3	Permanent services relocation or protection work by others: Water	PC Sum	100000	1.00	100,000.00
3	C2.1.1.3 PS.3	Handling costs and profit in respect of item C2.1.1.2 above	%	100000		
		<u>Electricity</u>				
4	C2.1.1.2 PS.3	Permanent services relocation or protection work by others: Electricity	PC Sum	45000	1.00	45,000.00
5	C2.1.1.3 PS.3	Handling costs and profit in respect of item C2.1.1.2 above	%	45000		
6	C2.1.2.5 PS.2.2	Using hand excavation to locate, expose and verify services, Depth of 1.5m to 2.0m (Prov)	m3	5		
		<u>Proving By Hand</u>				
7	C2.1.2.5 PS.2.2	Using hand excavation to locate, expose and verify services, Depth of 0.0m to 1.5m. (Prov)	m3	5		
8	C2.1.7.1	Extra over item for excavating in hard material irrespective of depth	m2	5		
9	C2.1.11 (a)	Backfilling of trenches: Backfill compacted to 93% (100% for sand) of MDD (areas subject to traffic loads) using material: (a) from excavated trench material	m3	5		
10	C2.1.11 (b)	Backfilling of trenches: Backfill compacted to 93% (100% for sand) of MDD (areas subject to traffic loads) using material: (b) from other excavations onsite	m3	5		
11	C2.1.19.1	Dealing with surface water	Lump sum	1		
12	C2.1.19.2	Dealing with subsurface water	Lump sum	1		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 4 DRAINAGE

PART 0302 C3.2 CULVERTS

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Excavation:</u> <u>Pipes</u>				
1	C3.2.1.1(a) PS.C2.1.6 PS.C3.2.1.1	Excavation for culvert structures for pipes: in all material situated within the following depth ranges below the surface level: (a) 0 m to 1,5 m	m3	170		
2	C3.2.1.1(b) PS.C2.1.6 PS.C3.2.1.1	Excavation for culvert structures for pipes: in all material situated within the following depth ranges below the surface level: (b) Exceeding 1,5 m and up to 3,0 m	m3	65		
3	C3.2.2.3(a)	Extra over sub-items C3.2.1.1 for excavation in hard or boulder material, irrespective of depth	m3	5		
		<u>Backfilling:</u> <u>Pipes</u>				
4	C3.2.2.1	Backfilling: Using the excavated material	m3	190		
5	C3.2.2.2(a)	Backfilling: Using imported selected material: (a) From commercial sources (Using granular material)	m3	5		
6	C3.2.3.2 PS.C3.2.3.2	Concrete pipe culverts, Spigot and Socket: On Class B bedding (600mm diameter concrete Class 100D)	m	110		
		<u>Excavation:</u> <u>Manholes, Inlets and Headwalls</u>				
7	C3.2.1.1(a) PS.C2.1.6	Excavation for culvert structures for Manholes Inlets and Headwalls: in all material situated within the following depth ranges below the surface level: (a) 0 m to 1,5 m	m3	70		
8	C3.2.1.1(b) PS.C2.1.6	Excavation for culvert structures for Manholes Inlets and Headwalls: in all material situated within the following depth ranges below the surface level: (b) Exceeding 1,5 m and up to 3,0 m	m3	40		
		<u>Backfilling:</u> <u>Manholes, Inlets and Headwalls</u>				
9	C3.2.2.1	Backfilling: Using the excavated material	m3	180		
10	C3.2.2.2(a)	Backfilling: Using imported selected material: (a) From commercial sources (Using granular material)	m3	30		

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

Part Continued PART 0302 C3.2 CULVERTS

Item	Clause	Description	Unit	Quantity	Rate	Amount
11	PS.C3.2.9	Inlets and outlets to culverts: Headwalls, Type A, for 600mm pipes <u>Manholes and Inlets</u>	no	6		
12	PS.C3.2.15.2	Manhole: Type A with a heavy duty polymer concrete cover; Depth: Exceeding 0,0m and up to 1,5m	no	6		
13	PS.C3.2.15.2	Inlet: Type S1, heavy duty polymer concrete cover; Depth: Exceeding 0,0m and up to 1,5m <u>Compaction</u>	no	6		
14	C3.2.24.1	Compaction of bedding for inlets, outlets, manholes and catchpits: Preparation and compaction of in situ bedding material to 90 % of MDD (depth 150mm)	m3	20		
15	C3.2.24.2	Extra-over sub-item C3.2.24.1 for compaction to 93 % of MDD (depth 150mm) <u>Driveways</u>	m3	10		
16		Construction of affected driveways to original or better conditions (Rate to include excavation, preparation of subbase, provision and compaction of granular base material, supply of all materials,shuttering, formwork, expansion joints,reinforcing Mesh REF 193 and weedkiller). The driveway is to be constructed with a 100mm thick x 3.0m wide concrete pavement with a 150mm-250mm concrete lip above the final road level edge to cater for stormwater drainage	no	17		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0303 C3.3 CONCRETE KERBING AND CHANNELING

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C3.3.2.1, PS.C3.3.2.1	<u>Sidewalk Edge Restraint</u> Prefabricated kerbing (edge restraint, Figure 12 kerb including 100mm x 100mm haunching)	m	1755		
2	C13.4.11	<u>Scoops</u> Cast in situ concrete for Pedestrian / Vehicular Scoop (Grade 20/13)	m3	5		

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Part Continued PART 0303 C3.3 CONCRETE KERBING AND CHANNELING

Item	Clause	Description	Unit	Quantity	Rate	Amount
3	C3.3.6.2	Cast in situ concrete chutes (V Drain, as per drawing) Item to include formation, backfill and compaction, Concrete, reinforcement and formwork	m	925		
		<u>Kerb and Channel</u>				
4	C3.3.1.1	Prefabricated kerbing, cast insitu kerb channeling: Type D barrier Kerb, Fig.6 with 150mm channel, Drawing 38577	m	120		
5	C3.3.2.2	Prefabricated kerbing, cast insitu kerb channeling: Type F Mountable Kerb, Fig.6 with 150mm channel, Drawing 38577	m	48		
6	C3.3.3.1	Extra over items C3.3.1 and C3.3.2 for concrete kerbing and channeling on curves of radii more than or equal to 5,0 m but less than 20 m	m	20		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 5 EARTHWORKS

PART 0402 C4.2 CUT MATERIALS

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Excavation to Stockpile or Fill</u>				
1	C4.2.3.1 PS.C4.2	Excavating of materials in cuttings for use in the works, material obtained from: Soft excavation	m3	2530		
2	C4.2.4.1 PS.C4.2	Excavating of materials in box cuts for use in the works, material obtained from: Soft excavation	m3	3375		
		<u>Removal of Unsuitable: Bulk Excavation</u>				
3	C4.2.7.1	Removal of unsuitable stable cut material to spoil: In layer thicknesses of 200 mm and less	m3	280		
		<u>Excavation to Spoil</u>				
4	C4.2.9.1 PS.C4.2	Excavate material to spoil in sites designated by the Contractor, material obtained from: Soft excavation, overburden and unsuitable material	m3	80		
5	C4.2.12.1(a)	Finishing the side slopes of Cuttings: (a) In soft material	m2	690		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0404 C4.4 COMMERCIAL MATERIALS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C4.4.2.1(b)	Commercial materials identified by the Contractor from commercial, private or other non-commercial suppliers: Pavement layer material:Type G2	m3	1120		
2	C4.4.2.1(f)	Commercial materials identified by the Contractor from commercial, private or other non-commercial suppliers: Pavement layer material:Type G5	m3	1120		
3	C4.4.2.1(g)	Commercial materials identified by the Contractor from commercial, private or other non-commercial suppliers: Pavement layer material:Type G7	m3	1120		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0502 C5.2 FILL

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C5.2.2.1(b)	Fill construction: Normal fill material (G9) in compacted layer thicknesses of 200 mm and less: (b) Compacted to 93 % of MDD	m3	90		

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1Part Continued **PART 0502 C5.2 FILL**

Item	Clause	Description	Unit	Quantity	Rate	Amount
2	C5.2.3	Side-cut to fill compacted to 93 % of MDD in compacted layer thicknesses of 200 mm and less	m3	1125		
3	C5.2.11.1	Finishing-off fill slopes	m2	575		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 6 LAYERWORKS

PART 0501 C5.1 ROADBED

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C5.1.1.2	Roadbed construction and compaction roadbed to 95 % of MDD	m3	750		
		<u>Removal of unsuitable:Undercut</u>				
2	C5.1.4.1(a)	Removal of unsuitable material to spoil: In layer thicknesses of 200 mm and less(a) Stable material	m3	5		
3	C5.1.4.2(a)	Removal of unsuitable material to spoil: In layer thicknesses exceeding 200 mm(a) Stable material	m3	5		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0503 C5.3 ROAD PAVEMENT LAYERS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C5.3.1	Compiling and implementing M&U plans for the construction of all the pavement layers.	no	1		
		<u>Processing and Compaction</u>				
2	C5.3.2.1(k)	Construction of layers: Upper subbase (G2) layer compacted to 98 % of MDD	m3	1120		
3	C5.3.2.1(a)	Construction of layers: Upper selected subgrade layer (G5) compacted to 95 % of MDD	m3	1120		
4	C5.3.2.1(b)	Construction of layers: Upper selected subgrade layer (G7) compacted to 95 % of MDD	m3	1120		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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PART 0901 C9.1 ASPHALT LAYERS

Item	Clause	Description	Unit	Quantity	Rate	Amount
		<u>Bond Coat (Tack)</u>				
1	C9.1.3.1	Application of bond coat:Stable grade 30% net bitumen emulsion as specified. Applied with a calibrated distributor	l	5962		
2	C8.1.1.2	Prime coat: MC -30 cut-back bitumen. 0.8l/m2	l	5962		
		<u>Asphalt Surface</u>				
3	C9.1.5.1(e) PS.C9.1	New construction (paver laid) (a) Stone skeletal mix – continuously graded (SA-S14) (40mm layer)	m2	7455		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

PART 1203 C12.3 GROUND IMPROVEMENT

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C12.3.20 PS.C12.3.20	Importing dump rock for subgrade improvement, 300mm thick	m3	15		
2	PS.C12.3.20	Supply and place minimum grade 5 geofabric to dumprock layer.	m2	135		
3	C12.3.19 PS.C12.3.20	Provision of clean coarse sand as a filter over dumprock layer. Sand layer thickness to be 200mm thick	m3	10		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

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UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

SECTION 7 ANCILLARY ROAD WORKS

PART 1104 C11.4 ROAD RESTRAINT SYSTEMS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C11.4.1.1(c)	Erecting of guardrails at 3,81 m spacing: Complete galvanized system compliant to SANS 1350: (c) on CONCRETE post (Drawing 38580)	m	420		
2	C11.4.1.2(a)	Terminal sections for 3,81 guardrails comprising of: (a) End wings to SANS 1350	no	7		
3	C11.4.5.1	"Additional guardrail posts for 3,81 m systems: Concrete"	no	3		
4	C11.4.6.2	Reflective Plastic plates	no	20		
5	C11.4.4.1	Extra over C11.4.1 for horizontally curved guard rails factory bent to a radius of less than 45m	m	160		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

R

PART 1105 C11.5 FENCING

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C11.5.4.1(d)	Dismantling existing fences: (d) Security fences	m	40		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

R

PART 1106 C11.6 ROAD SIGNS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C11.6.1.3(a)	Road signboards with painted or coloured semi-matt background. Symbols, lettering and borders in semi-matt black or in Class I retro-reflective material, where the sign board is constructed from: Prepainted galvanized steel plate: (a) Area 0 to 0,5 m2	m2	2		
2	C11.6.3.1	Road sign supports:Steel tubing (75m diameter), Galvanised	m	5		
3	C11.6.5.1	Excavation and backfilling for road sign supports:Excavating soft material and backfilling	m3	2		
4	C11.6.5.4	Extra over item C11.6.5.1 for hard material excavation	m3	2		
5	C13.4.11	Cast in situ concrete for road sign footings as directed by the Engineer (Grade 20/19)	m3	2		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

R

UPGRADE OF THOKOZA ROAD FROM GRAVEL TO ASHALT IN WARD 103, KWASONDELA AREA - OUTER WEST PHASE 1

PART 1107 C11.7 ROAD MARKINGS AND ROAD STUDS

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C11.7.3.1 PS.C11.7.1	Thermoplastic road marking, broken or unbroken (White, 150mm wide)	km	1.355		
		<u>Premarking</u>				
2	C11.7.8 PS.C11.7.1	Setting out and premarking the lines	km	1.355		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

R

PART 1109 C11.9 FINISHING ROAD AND ROAD RESERVE

Item	Clause	Description	Unit	Quantity	Rate	Amount
1	C11.9.1.2	Single carriageway road	km	1.355		

TOTAL CARRIED TO C.2.2.3 : SUMMARY OF BILL OF QUANTITIES

R