Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Part C2
Pricing Data

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PRICING DATA

CONTENTS LIST

END OF SECTION

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C2.1
Pricing Instructions

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PRICING INSTRUCTIONS

1. GENERAL

These pricing instructions provide the Tenderer with guidelines and requirements with regard to the completion of the bill of quantities. These pricing instructions also describe the criteria and assumptions which will be assumed in the Contract to have been taken into account by the Tenderer when developing his prices.

The bill of quantities shall be read with all the documents which form part of this Contract.

The following words have the meaning hereby assigned to them:

Unit	:	The unit of measurement for each item of work in terms of the Scope of Work.
Quantity	:	The number of units for each item.
Rate	:	The payment per unit of work at which the tenderer tenders to do the work.
Amount	:	The product of the quantity and the rate tendered for an item.
Lump sum (L.Sum)	:	An amount tendered for an item, the extend of which is described in the Pricing Instructions, Bill of Quantities or the Scope of Work but the quantity of work of which is not measured in any units.

2. PAY ITEMS

The method of measurement published by the South African Bureau of Standards in Clause 8 of the Standardised Specifications for Civil Engineering Construction (SABS 1200) is applicable, subject to the variations and amendments contained in section C3.4.2.

Descriptions in the Bill of Quantities are abbreviated and comply generally with those in the Standard Specifications. The measurement and payment clause of each Standard Specification, read together with the relevant clauses of the Scope of Work, set out what ancillary or associated activities are included in the rates for the operations specified. Should any requirements of the measurement and payment clause of the applicable Standard Specification, or the Scope of Work, conflict with the terms of the Bill of Quantities, the requirements of the Standard Specification or Scope of Work, as applicable, shall prevail.

The units of measurement described in the Bill of Quantities are metric units. Abbreviations used in the Bill of Quantities are as follows:

mm	=	millimetre	h	=	hour
m	=	metre	kg	=	kilogram
km	=	kilometre	t	=	ton (1000kg)
m^2	=	square metre	No.	=	number
m^2.pass	=	square metre pass	sum	=	lump sum
ha	=	hectare	MN	=	meganewton
m^3	=	cubic metre	MN.m	=	meganewton-metre
m^3.km	=	cubic metre-kilometre	PC sum	=	Prime Cost Sum
l	=	litre	Prov sum	=	Provisional sum
kl	=	kilolitre	%	=	per cent
MPa	=	megapascal	kW	=	kilowatt
kPa	=	kilopascal	wt	=	wall thickness
			dia	=	diameter

3. QUANTITIES

3.1 Unless otherwise stated, items are measured net in accordance with the drawings, and no allowance is made for waste.

3.2 The quantities set out in the Bill of Quantities are the estimated quantities of the Works, and do not necessarily represent the actual amount of work to be done. The quantities certified for

payment, and not the quantities given in the Bill of Quantities, shall be used for determining payments to the Contractor. The Contract Price for the completed contract shall be computed from the actual quantities of work done, valued at the relevant unit rates and prices.

4. RATES

4.1 The prices and rates to be inserted in the Bill of Quantities are to be full inclusive prices for the work described under the several items. Such prices and rates shall cover all costs and expenses that may be required in and for the execution of the work described, and shall cover the cost of all general risks, liabilities, and obligations set forth or implied in the documents on which the tender is based, as well as overhead charges and profit. Reasonable prices shall be inserted as these will be used as a basis for assessment of payment for additional work that may have to be carried out.

4.2 A price or rate is to be entered against each item in the Bill of Quantities, whether the quantities are stated or not. An item against which no price is entered or where a word or phrase such as “included” or “provided elsewhere” will be accepted as a rate of nil (R0,00) having been entered against such items and covered by the other prices or rates in the schedule.

Any work executed to which such a pay item applies, shall be measured under the appropriate items in the Bill of Quantities and valued at a rate of nil (R0,00). The rate of nil shall be valid irrespective of any change in the quantities during the execution of the Contract.

4.3 The Tenderer shall fill in a rate against all items where the words “rate only” appears in the amount column. The intention is that, although no work is foreseen under such item and no quantities are consequently given in the quantity column, the tendered rate shall apply should work under this item be actually required.

4.4 Except where rates only are required, the Tenderer shall insert all amounts to be included in his total tendered price in the “Amount” column and show the corresponding total tendered price.

4.5 The Tenderer shall not group together a number of items and tender one rate for such group of items.

4.6 All rates and sums of money quoted in the Bill of Quantities shall be in rands and whole cents. Fractions of a cent shall be discarded.

4.7 **This tender is VAT exempt** (The Client will not pay VAT on this project)

4.8 Should excessively high unit prices be tendered, such prices may be of sufficient importance to warrant rejection of a tender by the Employer.

4.9 Where the Contractor is required to furnish detailed drawings and designs or other information in terms of the Contract Documents, all costs thereof shall be deemed to have been provided for and included in the unit rates and sum amounts tendered for the items scheduled in the Bill of Quantities, and separate additional payments will not be made.

END OF SECTION

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C2.2
Bill of Quantities

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**SCHEDULE: 1** **PRELIMINARY AND GENERAL**				
		FIXED-CHARGE ITEMS				
1.1	8.3.1	Contractual Requirements	sum			
		Establishment of Facilities on Site				
	8.3.2	.1 Facilities for the Engineer				
		Dwg 1396.10.ZA.01.A005 & A006				
1.2	PSAB2	(a) Provide insurance for existing facilities of the Engineer	sum			
1.3	PSAB3	(b) Telephone (Telkom landlines)	sum			
1.4	PSAB1	(c) Nameboards	no	2		
1.5	PSAB5	(d) Survey assistant	sum			
1.6	PSAB6	(e) Survey equipment	sum			
1.7	PSAB4.2	(g) Laboratory equipment	sum			
	8.3.2	.2 Facilities for the Contractor				
1.8		(a) Offices and storage sheds	sum			
1.9		(b) Workshops	sum			
1.10		(c) Laboratories	sum			
1.11		(d) Living accommodation	sum			
1.12		(e) Ablution and latrine facilities	sum			
1.13		(f) Tools and equipment	sum			
1.14		(g) Water supplies, power and communication	sum			
1.15		(h) Dealing with water (Sub-clause 5.5)	sum			
1.16		(i) Access (Sub-clause 5.8)	sum			
1.17		(j) Plant	sum			
1.18	8.3.3	Other fixed-charge obligations	sum			
1.19	8.3.4	Removal of Contractor's and Engineers site establishment on completion of contract or interim de-establishment (Only on Engineers written instruction).	No	2		
1.20	8.3.4	Additional establishment cost to the Contractor when re-establishment for phase 6.2 (Only on Engineers written instruction).	sum			
	8.3.5	Occupational Health and Safety				
1.21	PSA5.1	Compliance with Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employers Health and Safety Specification	sum			
	8.3.6	Environmental Managemant				
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
1.22	PSA6.1	Compliance with Environmental Management plan	sum			
		TIME-RELATED ITEMS				
1.23	8.4.1	Contractual requirements	months	22		
		Operation and maintenance of facilities on the Site for the duration of construction				
	8.4.2	.1 Facilities for the Engineer Dwg 1396.10.ZA.01.A005 & A006				
1.24	PSAB2	(a,f,h) Furnished offices, latrines and carports	months	22		
1.25	PSA.7	(b) Telephone (Telkom landlines)	months	22		
1.26	PSAB1	(c) Nameboards	months	22		
1.27	PSAB5	(d) Survey assistant	months	22		
1.28	PSAB6	(e) Survey equipment	months	22		
1.29	PSAB4.2	(g) Laboratory equipment	months	22		
	8.4.2	.2 Facilities for the Contractor				
1.30		(a) Offices and storage sheds	months	22		
1.31		(b) Workshops	months	22		
1.32		(c) Laboratories	months	22		
1.33		(d) Living accommodation	months	22		
1.34		(e) Ablution and latrine facilities	months	22		
1.35		(f) Tools and equipment	months	22		
1.36		(g) Water supplies, power and communication	months	22		
1.37		(h) Dealing with water (Sub-clause 5.5)	months	22		
1.38		(i) Access (Sub-clause 5.8)	months	22		
1.39		(j) Plant	months	22		
1.40	8.4.3	Supervision for duration of construction	months	22		
1.41	8.4.4	Company and head office overhead costs for the duration of the contract	months	22		
1.42	8.4.5	Other time-related obligations	months	22		
	8.4.6	Occupational Health and Safety				
1.43	PSA5.2	Compliance with Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employers Health and Safety Specification	months	22		
	8.4.7	Environmental Managemant				
1.44	PSA6.2	Compliance with Environmental Management plan	months	22		
		SCHEDULE: 1 PRELIMINARY AND GENERAL				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**SCHEDULE: 2** **PROVISIONAL SUMS AND PRIME COST ITEMS**				
		SUMS STATED PROVISIONALLY BY THE ENGINEER				
		For work to be executed by the Contractor and valued in terms of the "Valuation of Variations" clause in the Conditions of Contract				
		ALLOWANCES				
		Allowances				
	8.5	(a) .1 Community requirements				
2.1	PSA7.3	.1 CLO/LDO remuneration	Prov sum			180 000.00
2.2		.2 Overheads, charges and profit on above	%	10%	180 000.00	
2.3	PSA7.4	.3 Accredited training courses for selected local and other labourers	Prov sum			100 000.00
2.4		.4 Overheads, charges and profit on above	%	10%	100 000.00	
		ENGINEERS REQUIREMENTS				
	8.5	(a) .2 Engineers requirements				
2.5	PSA7.5	.1 Cellular phone costs	Prov sum			30 000.00
2.6		.2 Overheads, charges and profit on above	%	10%	30 000.00	
2.7	PSA7.6	.3 Acceptance control testing	Prov sum			50 000.00
2.8		.4 Overheads, charges and profit on above	%	10%	50 000.00	
2.9	PSA7.7	.5 Site office consumables and personal protective equipment	Prov sum			25 000.00
2.10		.6 Overheads, charges and profit on above	%	10%	25 000.00	
2.11	PSA7.8	.7 Electronic office equipment	Prov sum			15 000.00
2.12		.8 Overheads, charges and profit on above	%	10%	15 000.00	
		WORK TO EXISTING SERVICES				
	8.5	(a) .3 Existing services				
2.13		.1 Locating existing services	Prov sum			50 000.00
2.14		.2 Overheads, charges and profit on above	%	10%	50 000.00	
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
2.15		.3 Clean existing services before connecting	Prov sum			50 000.00
2.16		.4 Overheads, charges and profit on above	%	10%	50 000.00	
2.17		.5 Connection to municipal water supply	Prov sum			25 000.00
2.18		6 Overheads, charges and profit on above	%	10%	25 000.00	
		PRIME COST ITEMS				
	8.6	Materials for dayworks				
2.19	PSA8.1	(a) Materials used in the execution of dayworks	PC item			75 000.00
2.20		(b) Overheads, charges and profit on above	%	10%	75 000.00	
		SCHEDULE: 2 **PROVISIONAL SUMS AND PRIME COST ITEMS**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 A	**SCHEDULE: 3** **DAYWORKS AND TEMPORARY WORKS**				
		DAYWORKS Note: Dayworks executed on instruction of the Engineer only Supervision of dayworks is not payable under this section and is deemed to be included under Preliminary and General items in 1200A				
	8.7.1	**LABOUR**				
3.1		(a) Skilled	hr	100		
3.2		(b) Semi-skilled	hr	200		
3.3		(c) Un-skilled	hr	400		
		PLANTHIRE (WORK RATES ON SITE) **TRUCKS**				
	8.7.2	.1 Tipper trucks (specify capacity)				
3.4		(a) Capacity_____m³ (small)	hr	20		
3.5		(b) Capacity_____m³ (medium)	hr	20		
3.6		(c) Capacity_____m³ (large)	hr	20		
	8.7.2	.3 Flatbed trucks (specify capacity)				
3.7		(a) Capacity_____m³ (small)	hr	20		
3.8		(b) Capacity_____m³ (medium)	hr	20		
3.9		(c) Capacity_____m³ (large)	hr	20		
		LDV'S				
	8.7.2	.4 LDV (specify size)				
3.10		(a) LDV_____ton	km	500		
		WATER TANKERS				
	8.7.2	.5 Water tankers (specify capacity)				
3.11		(a) Capacity_____liter (small, towable)	hr	20		
3.12		(b) Capacity_____liter (medium)	hr	20		
3.13		(c) Capacity_____liter (large)	hr	20		
		GRADERS				
	8.7.2	.7 Motor graders (specify model/kw)				
3.14		(a) Model _____/_____kw	hr	20		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		EXCAVATORS				
	8.7.2	.9 Crawler excavators (specify model/mass/kw)				
3.15		(a) Model____/_____/kg____kw (small)	hr	20		
3.16		(b) Model____/_____/kg____kw (medium)	hr	20		
3.17		(c) Model____/_____/kg____kw (large)	hr	20		
		TLB'S				
	8.7.2	.10 Tractor loader backhoe (TLB)(specify model)				
3.18		(a) Model_____	hr	100		
		RIDE-ON ROLLERS				
	8.7.2	.11 Self propelled vibrating rollers (smooth drum) (specify mass)				
3.19		(a) Mass_____kg (medium)	hr	20		
3.20		(b) Mass_____kg (large)	hr	20		
	8.7.2	.12 Self propelled vibrating rollers (padfoot) (specify mass)				
3.21		(a) Mass_____kg (medium)	hr	20		
3.22		(b) Mass_____kg (large)	hr	20		
		WALK BEHIND ROLLERS				
	8.7.2	.14 Walk behind vibrating rollers (specify model)				
3.23		(a) Model_____(BW 61) (small)	hr	20		
3.24		(b) Model_____(BW 76) (medium)	hr	20		
3.25		(c) Model_____(BW 90) (large)	hr	20		
		COMPACTORS				
	8.7.2	.15 Plate compactors (specify model)				
3.26		(a) Model_____	hr	20		
	8.7.2	.16 Wackers (specify model)				
3.27		(a) Model_____	hr	20		
		WATERPUMPS				
	8.7.2	.19 Waterpump (specify capacity)				
		Carried Forward				

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
3.28		(a) Capacity_____ liter/sec (small)	hr	20		
3.29		(b) Capacity_____ liter/sec (medium)	hr	20		
3.30		(c) Capacity_____ liter/sec (large)	hr	20		
		TRANSPORT (COST TO AND FROM SITE)				
		Note: Distance shall be measured one way only (tender rates shall include for transport in both directions to and from site)				
	8.7.3	.1 Low bed				
3.31		(a) Low-bed (suitable for the largest piece of equipment above)	km	100		
	8.7.3	.2 Tipper truck				
3.32		(a) Small	km	100		
3.33		(b) Medium	km	100		
3.34		(c) Large	km	100		
	8.7.3	.3 Flatbed truck				
3.35		(a) Small	km	100		
3.36		(b) Medium	km	100		
3.37		(c) Large	km	100		
	8.7.3	.4 Water tanker				
3.38		(a) Small	km	100		
3.39		(b) Medium	km	100		
3.40		(c) Large	km	100		
		TEMPORARY WORKS				
3.41	8.8.2 PSD5	Accommodation of traffic	sum			
3.42	PSD6	Haul road to borrow area	sum			
		EXISTING SERVICES				
	8.8.4	Existing services				
	PSL7.2	(c) Excavation and backfill by hand in soft material to expose services, backfiil compacted to				
3.43		90% mod AASHTO density	m^3	400		
		SCHEDULE: 3 **DAYWORKS AND TEMPORARY WORKS**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 C	**SCHEDULE: 4** **SITE CLEARANCE**				
		CLEAR AND GRUB SITE				
	8.2.1	(a) Clear and grub area for				
4.1		.1 Roads	m²	94425		
4.2		.2 Sewer (minimum 3 m wide)	m	6700		
		REMOVE LARGE TREES AND STUMPS				
	8.2.2	Remove and grub large trees and tree stumps of girth				
4.3		(a) Exceeding 1m and up to and including 2m	no	1		
4.4		(b) Exceeding 2m and up to and including 3m	no	1		
		REMOVE TOPSOIL				
	8.2.10	(a) Remove topsoil to a depth of 350mm and				
4.5		.1 Stockpile on site and maintain	m³	5315		
4.6		.2 Spoil at spoil site established by the Contractor	m³	14615		
	SANS 1200 D	**FINISHING, TOPSOILING AND GRASSING**				
	8.3.10	Topsoiling with material from stockpiles on site				
4.7		(a) Spread over site	m³	5315		
		DEMOLISH AND SPOIL MATERIAL OFF SITE				
	8.2.8	(b) Sundry structures, etc.				
4.8		.1 Mass concrete structures	m³	1		
4.9		.5 Concrete kerbing (all types and sizes)	m	80		
		TAKING DOWN OF FENCES				
4.10		(a) Taking down, storage and re-instating of existing fences. (Provisional)	m	25860		
		SCHEDULE: 4 **SITE CLEARANCE**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 D	**SCHEDULE: 5 EARTHWORKS**				
	PSD6	**DESIGNATED BORROW AREA (BORROW AREA ARRANGED BY THE EMPLOYER)**				
5.1	8.3.4	(b) Opening up and closing down of borrow area	sum			
5.2	8.3.4	(c) Dealing with overburden	m³	9760		
		MASS EARTHWORKS				
		MASS EXCAVATION				
		(a) .1 Excavate in all materials and spoil at site established by the Contractor				
5.3		.1 Excavation in open channels	m³	280		
		SCHEDULE: 5 EARTHWORKS				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 DB	**SCHEDULE: 6** **EARTHWORKS (PIPE TRENCHES)**				
		TRENCHES FOR WATER PIPES				
		EXCAVATION AND BACKFILLING Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .1 Up to 1m wide				
6.1		.1 Over 1m and up to 2m deep	m³	6696		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
6.2		.2 Hard rock excavation	m³	700		
	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported material compacted to 90% mod AASHTO density				
6.3			m³	50		
		ADDITIONAL COMPACTION				
	8.3.3	.3 Additional compaction in road reserves				
6.4		.1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	3858		
		TRENCHES FOR SEWER PIPES				
		EXCAVATION AND BACKFILLING Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .1 Up to 1m wide				
6.5		.1 Over 1m and up to 2m deep	m³	3715		
6.6		.2 Over 2m and up to 3m deep	m³	6150		
6.7		.3 Over 3m and up to 4m deep	m³	2250		
6.8		.3 Over 4m and up to 5m deep	m³	420		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
6.9		.2 Hard rock excavation	m³	1250		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
6.10	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported material compacted to 90% mod AASHTO density	m³	100		
		ADDITIONAL COMPACTION				
6.11	8.3.3	.3 Additional compaction in road reserves .1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	1900		
		TRENCHES FOR STORMWATER PIPES				
		EXCAVATION AND BACKFILLING				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials for trenches				
	8.3.2	(a) .1 Over 1m and up to 2m wide				
6.12		.1 Over 1m and up to 2m deep	m³	3525		
6.13		.2 Over 2m and up to 3m deep	m³	385		
	8.3.2	(a) .2 Over 2m and up to 3m wide				
6.14		.1 Over 1m and up to 2m deep	m³	90		
6.15		.2 Over 2m and up to 3m deep	m³	1670		
6.16		.3 Over 3m and up to 4m deep	m³	636		
	8.3.2	(b) Extra over reference 8.3.2 (a) for				
6.17		.2 Hard rock excavation	m³	630		
6.18	8.3.2	(c) Excavate unsuitable material from trench bottom, dispose of material, and re-fill with suitable imported material compacted to 90% mod AASHTO density	m³	50		
6.19		(d) E.O 8.2.2 (a), (b) & (c) for spoiling unsuitable excess material off site and disposal of at a location identified by the contractor and approved by the engineer	m³	1030		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		ADDITIONAL COMPACTION				
	8.3.3	.3 Additional compaction in road reserves				
6.20		.1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	1030		
		EXISTING SERVICES				
		WORK TO EXISTING SERVICES				
		Existing services that intersect or adjoin pipe trench excavations				
	8.3.5	(a) Services that intersect a trench				
6.21		.1 Electric cable	no	2		
6.22		.2 Water pipe	no	2		
		REPAIR ROAD CROSSINGS				
	SANS 1200 DB	**FINISHING AND REPAIRING EXISTING ROAD CROSSINGS COMPLETE**				
	8.3.6.1	(a) Layerworks including extra over item 8.3.2 for careful excavation and stockpiling of materials for re-use, or replacing with new material, including all accommodation of traffic and bypasses, complete				
6.23		.1 Gravel shoulders 150mm thick compacted to 93% mod AASHTO density	m²	20		
6.24		.2 G6 selected layer 150mm thick compacted to 93% mod AASHTO density	m²	20		
6.25		.3 C4 stabilised subbase layer 150mm thick compacted to 95% mod AASHTO density	m²	20		
		Carried Forward				

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
	SANS 1200 MJ	**SEGMENTED PAVING**				
		WORK TO EXISTING PAVING				
		LIFTING EXISTING PAVING				
		Lifting up existing paving blocks including neatly, stacking on site designated by the Engineer (to be re-used, and re-use measured elsewhere)				
6.26		.1 80mm Interlocking paving	m²	20		
		REINSTATEMENT OF EXISTING PAVING				
		Take from stockpile on site existing paving blocks and reinstate in similar position, including levelling and compacting earthworks to 93% mod AASHTO density, supply and lay new 20mm riversand bedding and re-lay existing bricks, compacting and brooming in plastersand into joints on completion				
6.27		.2 80mm Interlocking paving on roads	m²	20		
		SCHEDULE: 6 **EARTHWORKS (PIPE TRENCHES)**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 DM	**SCHEDULE: 7** **EARTHWORKS (ROADS , SUBGRADE)**				
		TREATMENT OF ROADBED				
	8.3.3	(a) Roadbed preparation and compaction of material to				
7.1		.1 Minimum of 93% mod AASHTO density	m³	7510		
	8.3.3	(b) In-place treatment of roadbed or hard rock material by				
7.2		.1 Blasting	m³	255		
		DUMP ROCK FROM COMMERCIAL SOURCES				
		Dump rock from commercial sources supplied by the Contractor				
7.3		.1 Dump rock layer 300mm thick, selected, haul within freehaul distance, placing in position and compacting with 10 pass 10 ton roller compaction	m³	50		
		CUT TO FILL				
	8.3.4	(a) Cut to fill				
7.4		.1 Compacted to 90% mod AASHTO density	m³	865		
		SELECTED LAYERS FROM CUT				
		Excavate from road prism, select, load, transport to point of use and construct layerworks as follows				
		Selected layers				
	8.3.5	(a) .1 Compacted to 93% mod AASHTO density				
7.5		.1 150mm Thick	m³	7395		
		CONSTRUCT LAYERWORKS WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR				
		G7 Selected layers				
		(a) .1 Compacted to 93% mod AASHTO density				
7.6		.1 150mm Thick	m³	7395		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		CUT TO SPOIL				
	8.3.7	Cut to spoil (site established by the Contractor)				
7.7		(a) Soft excavation	m^3	8930		
7.8		(b) Hard rock excavation	m^3	345		
7.9		(d) Boulder excavation class A	m^3	345		
7.10		(e) Boulder excavation class B	m^3	345		
		SCHEDULE: 7 **EARTHWORKS (ROADS , SUBGRADE)**				
		Carried forward to Summary of Schedules			**Total**	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 L	**SCHEDULE: 8** **uPVC MEDIUM PRESSURE PIPELINES**				
		uPVC WATER PIPES				
		Supply, lay, joint, bed (flexible pipe bedding) and test uPVC spigot and socket water pipes with moulded rubber rings to SABS 966				
	8.2.1	(a) Class 9 pipes				
8.1		.1 75mm Diameter	m	221		
8.2		.2 90mm Diameter	m	4272		
8.3		.3 110mm Diameter	m	1681		
8.4		.4 160mm Diameter	m	1162		
8.5		.5 250mm Diameter	m	399		
		DISINFECT PIPES				
	8.2.1	(b) Disinfect pipes				
8.6		.1 75mm Diameter	m	221		
8.7		.2 90mm Diameter	m	4272		
8.8		.3 110mm Diameter	m	1681		
8.9		.4 160mm Diameter	m	1162		
8.10		.5 250mm Diameter	m	399		
		PIPE FITTINGS				
		Extra over reference 8.2.1(a) for supply, install, bed and test the following fittings, including cutting of pipes, couplings, etc				
	8.2.2	(a) .1 uPVC Class 16 pressure bends				
8.11		.3 75mm Diameter 45°	no	3		
8.12		.4 75mm Diameter 90°	no	2		
8.13		.3 90mm Diameter 11.25°	no	3		
8.14		.4 90mm Diameter 22.5°	no	2		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
8.15		.5 90mm Diameter 45°	no	12		
8.16		.6 90mm Diameter 90°	no	14		
8.17		.5 110mm Diameter 11.25°	no	5		
8.18		.6 110mm Diameter 22.5°	no	2		
8.19		.7 110mm Diameter 45°	no	1		
8.20		.8 110mm Diameter 90°	no	7		
8.21		.9 160mm Diameter 11.25°	no	4		
8.22		.10 160mm Diameter 90°	no	1		
8.23		.11 250mm Diameter 11.25°	no	1		
	8.2.2	(a) .2 CI socket-ended tee's, including all adaptors, reducers, etc to SABS 546				
8.24		.1 90x90x75mm	no	3		
8.25		.2 90x90x90mm	no	9		
8.26		.3 110x110x90mm	no	8		
8.27		.4 110x110x110mm	no	4		
8.28		.5 160x160x90mm	no	5		
8.29		.6 160x160x110mm	no	5		
8.30		.7 160x160x160mm	no	2		
8.31		.8 250x250x250mm	no	5		
	8.2.2	(a) .3 CI socket-ended female reducers to SABS 546				
8.32		.1 90x75mm	no	1		
8.33		.3 110x90mm	no	12		
8.34		.5 160x90mm	no	3		
8.35		.6 160x110mm	no	6		
8.36		.8 250x250mm	no	6		
		Carried Forward				

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		.4 CI socketed end caps				
8.37		.1 90mm dia	no	4		
		FIRE HYDRANT ASSEMBLIES				
	8.2.2	(a) .6 Extra over reference 8.2.1(a) for supply, install, bed and testing fire hydrant assemblies complete including cutting of pipes, couplings, tee pieces, etc Dwg 1396.10.ZA.05.D003				
8.38		.1 On 90mm pipeline	no	20		
8.39		.2 On 110mm pipeline	no	8		
8.40		.3 On 160mm pipeline	no	4		
8.41		.4 On 250mm pipeline	no	3		
		VALVES ASSEMBLIES				
	8.2.3	(a) Extra over reference 8.2.1 for supply, install, bed and test "cap top" line valve assembly as SABS 664, including cutting of pipes, couplings, etc Dwg 1396.10.ZA.05.D003				
8.42		.1 80mm Dia (75mm pipeline)	no	8		
8.43		.2 100mm Dia (110mm pipeline)	no	9		
8.44		.3 150mm Dia (160mm pipeline)	no	5		
8.45		.5 250mm Dia (250mm pipeline)	no	2		
		CONCRETE ENCASEMENT AND THRUST BLOCKS				
	8.2.11	Anchor/thrust blocks and pedestals in strength concrete 25Mpa/19mm, including all formwork, reinforcement, etc				
		(b) Measured per m^3				
8.46		.1 Thrust blocks	m^3	5		
	8.2.12	Encasement of pipes in strength concrete 25Mpa/19mm including all formwork, reinforcement, etc				
8.47		.1 Casing around pipes	m^3	5		
		Carried Forward				

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SOILCRETE				
		Soilcrete (5% OPC)				
8.48		(a) Backfilling around pipes	m^3	50		
		VALVE CHAMBERS				
	8.2.13	(a) Valve chambers for valves not exceeding 300mm dia Dwg 1396.10.ZA.05.D003				
8.49		.1 Valve chamber complete	no	24		
		ANCILLARIES				
		Markings and marker posts , etc				
	8.2.16	(a) Inscribed and painted marking on kerbing				
8.50		.1 Kerb marking	no	119		
		SCHEDULE: 8				
		uPVC MEDIUM PRESSURE PIPELINES				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LB	**SCHEDULE: 9** **BEDDING (PIPES)**				
		BEDDING FROM TRENCH EXCAVATIONS				
	8.2.1	Provision of bedding material from trench excavations				
9.1		(a) Selected granular material	m³	0		
9.2		(b) Selected fill material	m³	465		
		BEDDING FROM OTHER EXCAVATIONS ON SITE				
	8.2.2	.1 Provision of bedding material by importation from other necessary excavations within the freehaul distance				
9.3		(a) Selected granular material	m³	0		
9.4		(b) Selected fill material	m³	140		
	PSLB2	**BEDDING FROM COMMERCIAL SOURCES**				
	8.2.2	.1 Provision of bedding material by importation from commercial sources selected by the Contractor (compactability < 0.1)				
9.5		(a) Selected granular material	m³	4730		
9.6		(b) Selected fill material	m³	4025		
		CONCRETE BEDDING CRADLE				
	8.2.3	(a) Strength concrete 25Mpa/19mm				
9.7		.1 Cradle to pipes	m³	5		
		SCHEDULE: 9 **BEDDING (PIPES)**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LC	**SCHEDULE: 10** **CABLE DUCTS**				
		EXCAVATION AND BACKFILLING				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials within the freehaul distance for trenches				
	8.2.2	(a) .1 Up to 1m wide				
10.1		.1 Up to 1m deep	m³	1980		
	8.2.2	(b) Extra over reference 8.2.2 (a) for				
10.2		.2 Hard rock excavation	m³	100		
	SANS 1200 DB	**ADDITIONAL COMPACTION**				
	8.3.3	.3 Additional compaction in road reserves				
10.3		.1 Additional compaction (90% compaction included elsewhere) to obtain 93% mod AASHTO density	m³	1980		
	SANS 1200 LC	**CABLE DUCTS SUPPLIED BY THE CONTRACTOR**				
	8.2.5	(b) Supply, lay, bed, and prove Kabelflex ducts including providing draw wires complete				
10.4		.1 110mm Diameter	m	2215		
10.5		.2 160mm Diameter	m	555		
	8.2.5	(d) Paper plugs to ducts				
10.6		.1 110mm Duct	no	864		
10.7		.2 160mm Duct	no	216		
		BEDDING FROM TRENCH EXCAVATIONS				
	8.2.6	Provision of bedding material from trench excavations				
10.8		(a) Selected granular material	m³	0		
10.9		(b) Selected fill material	m³	40		
				Carried Forward		

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		BEDDING FROM COMMERCIAL				
	8.2.6	(a) Provision of bedding material from commercial sources				
10.10		(a) Selected granular material	m^3	640		
10.11		(b) Selected fill material	m^3	360		
		CABLE MARKERS				
		(a) End markers				
10.12		.1 UV stabilised plastic markers	no	1080		
	8.2.8	(b) painted marking on kerbing				
10.13		.1 Kerb marking	no	1080		
		SOILCRETE				
		Soilcrete (5% OPC)				
10.14		.1 Backfilling around pipes	m^3	40		
		SCHEDULE: 10 **CABLE DUCTS**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LC	**SCHEDULE: 11** **SUBSOIL DRAINAGE**				
		EXCAVATION AND BACKFILLING				
		Excavate in all materials, backfill and compact to 90% mod AASHTO density, and dispose of surplus and unsuitable materials within the freehaul distance for trenches				
	8.2.2	(a) .1 Up to 1m wide				
11.1		.1 Up to 1m deep	m³	645		
	8.2.2	(b) Extra over reference 8.2.2 (a) for				
11.2		.2 Hard rock excavation	m³	33		
	8.2.2	(c) Excavate unsuitable material from trench bottom, dispose within freehaul distance, and re-fill with suitable imported material compacted to 90%				
11.3		mod AASHTO density	m³	10		
		SUBSOIL DRAINS				
		.1 Supply, lay, bed, and test Kaytech perforated subsoil pipes complete				
11.4		.1 110mm Diameter	m	845		
	SANS 1200 DK	**GEOTEXTILES**				
	8.2.4	Supply and lay geotextile fabric				
11.5		(a) Bidim U24 wrapped around stone encasement to pipes	m²	2575		
	SANS 1200 LB	**STONE FROM COMMERCIAL SOURCES**				
	8.2.2	.1 19mm Crushed stone from commercial sources supplied by the Contractor for				
11.6		(c) Encasement of pipes	m³	327		
		SCHEDULE: 11 **SUBSOIL DRAINAGE**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LD	**SCHEDULE: 12** **uPVC SEWERS**				
		uPVC SEWER PIPES				
	8.2.1	(a) Supply, lay, joint, bed (class B bedding) and test uPVC class 400 spigot and socket sewer pipes with moulded rubber rings to SABS 1601				
12.1		.1 160mm Diameter	m	6950		
12.2		.2 200mm Diameter	m	225		
		MANHOLES				
		Precast concrete manholes complete with precast concrete heavy duty cover and frame Type 4A Dwg 1396.10.ZA.06.D001				
	8.2.3	(a) .1 Manholes 1000mm diameter (straight & angle)				
12.3		.1 1,0 - 1,5m Deep	no	25		
12.4		.2 1,5 - 2,0m Deep	no	31		
12.5		.3 2,0 - 2,5m Deep	no	24		
12.6		.4 2,5 - 3,0m Deep	no	13		
	8.2.3	(a) .2 Manholes 1250mm diameter (single junction)				
12.7		.1 1,0 - 1,5m Deep	no	6		
12.8		.2 1,5 - 2,0m Deep	no	8		
12.9		.3 2,0 - 2,5m Deep	no	11		
12.10		.4 2,5 - 3,0m Deep	no	11		
	8.2.3	(a) .3 Manholes 1500mm diameter (double junction)				
12.11		.4 2,5 - 3,0m Deep	no	2		
12.12		.5 3.0 - 3.5m Deep	no	9		
12.13		.6 3.5 - 4.0m Deep	no	6		
12.14		.4 4.0 - 4.5m Deep	no	2		
				Carried Forward		

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		CLEANING EYE				
		Cleaning eye complete Dwg 1396.10.ZA.06.D003				
12.15		(a) Cleaning eye not exceeding 2m deep	no	6		
		ERF CONNECTIONS				
		Supply and install erf connections complete with all fittings as described including excavation, bedding, backfilling, testing, etc complete Dwg 1396.10.ZA.06.D002 & D003				
	8.2.6	On grade erf connections not exceeding 2m deep				
12.16		(a) 110mm Single connection	no	665		
	8.2.6	Sloping drop connections not exceeding 3m deep				
12.17		(b) 110mm Single connection	no	153		
	8.2.6	Vertical drop connections not exceeding 4m deep				
12.18		(c) 110mm Single connection	no	44		
		CONCRETE ENCASEMENT AND THRUST BLOCKS				
	8.2.7	Encasement of pipes in strength concrete 25Mpa/19mm including all formwork, reinforcement, etc				
12.19		(a) Casing around pipes	m^3	5		
		SOILCRETE				
		Soilcrete (5% OPC)				
12.20		(a) Backfilling around pipes	m^3	50		
		KERB MARKINGS				
		Markings and marker posts , etc				
	8.2.9	(a) Inscribed and painted marking on kerbing				
12.21		.1 Kerb marking	no	92		
		Carried Forward				

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		WORK TO EXISTING SERVICES				
		WORK TO EXISTING SERVICES				
	8.2.11	Connection to existing sewer				
12.22		(a) MH 434 (New 160mm uPVC pipe connecting to existing Manhole at 2.47m deep)	sum			
12.23		(b) MH 455 (New 160mm uPVC pipe connecting to existing Manhole at 3.92m deep)	sum			
12.24		(c) MH 459 (New 160mm uPVC pipe connecting to existing Manhole at 2.18m deep)	sum			
12.25		(d) MH 502 (New 250mm uPVC pipe connecting to existing Manhole at 4.38m deep)	sum			
12.26		(e) MH 638 (Two new 160mm uPVC pipe connecting to existing Manhole at 3.52m deep)	sum			
12.27		(f) MH 639 (Two new 160mm uPVC pipe connecting to existing Manhole at 3.79m deep))	sum			
		PIPE INSPECTIONS				
		CCTV CAMERA INSPECTION OF PIPES				
		CCTV camera inspection of sewer pipes to include establishment, camera inspections and submission of inspection report for approval by the Engineer				
12.28		.5 160mm Diameter	m	6950		
12.29		.6 200mm Diameter	m	225		
		SCHEDULE: 12 **uPVC SEWERS**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LE	**SCHEDULE: 13** **STORMWATER DRAINAGE**				
		OGEE PIPES				
		Supply, lay, bed (class B bedding) and test concrete pipe culverts including all cutting to ends				
	8.2.1	(a) Ogee class 50D				
13.1		.1 450mm Diameter	m	1175		
13.2		.2 525mm Diameter	m	485		
13.3		.3 600mm Diameter	m	110		
13.4		.4 825mm Diameter	m	170		
13.5		.5 1050mm Diameter	m	415		
	SANS 1200 LE	**SOILCRETE**				
		Soilcrete (5% OPC)				
13.6		(a) Backfilling around pipe culverts	m^3	50		
		MANHOLES				
		Manhole complete with type 4 cover and frame not exceeding 2m deep				
	8.2.8	(a) .1 Type C (3 pipes connection) Dwg 1396.10.ZA.04D007 & D009				
13.7		.1 450-600mm Dia pipeline	no	10		
13.8		.2 675-1050mm Dia pipeline	no	2		
	8.2.8	(a) 2. Type D (2 pipes connection) (Dwg 1396.10.ZA.04D008 &D009)				
13.9		.1 450-600mm Dia pipeline	no	0		
13.10		.2 675-1050mm Dia pipeline	no	0		
	8.2.8	(c) Extra over or under reference 8.2.8 (a) for variation in depth (deeper than 2m deep)				
13.11		.1 Type C, Pipe OD ≤ than 600mm	m	1		
					Carried Forward	

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
				Brought Forward		
13.12		.2 Type C, Pipe OD > than 600mm	m	3		
13.13		.3 Type D, Pipe OD ≤ than 600mm	m	0		
13.14		.4 Type D, Pipe OD > than 600mm	m	0		
		JUNCTION BOX Junction box complete with cover slab not exceeding 2m deep				
	8.2.8	(a) 1. Type A (junction box connect to catchpit (KI) Dwg 1396.10.ZA.04D005				
13.15		.1 450-600mm Dia pipeline	no	3		
13.16		.2 750-1050mm Dia pipeline	no	1		
		(a) 2. Type B (junction box connect to catchpit (KI) Dwg 1396.10.ZA.04D006				
13.17		.1 450-600mm Dia pipeline	no	19		
13.18		.2 750-1050mm Dia pipeline	no	2		
		(a) 3. Type D (junction box connects 2 pipes) Dwg 1396.10.ZA.04D008				
13.19		.1 450-600mm Dia pipeline	no	16		
13.20		.2 750-1050mm Dia pipeline	no	3		
	8.2.8	(c) Extra over or under reference 8.2.8(a) for variation in depth for junction box (deeper than 2m deep)				
13.21		.1 Type A, Pipe OD ≤ than 600mm	m	0		
13.22		.2 Type A, Pipe OD > than 600mm	m	0		
13.23		.3 Type B, Pipe OD ≤ than 600mm	m	1		
13.24		.4 Type B, Pipe OD > than 600mm	m	2		
13.25		.5 Type D, Pipe OD ≤ than 600mm	m	0		
13.26		.6 Type D, Pipe OD > than 600mm	m	1		
				Carried Forward		

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		CATCHPITS				
	8.2.8	(e) Catchpits complete with kerbs, kerb transitions gutters, etc with opening length of Dwg 1396.10.ZA.04D002 & D003 (All Structural Steelwork to be hot-dipped Galvanized)				
13.27		.1 3m Long	no	23		
		FIELD INLETS				
	8.2.8	Field inlets complete with cover slabs, etc. with the following pipe sizes Dwg 1396.10.ZA.04D010				
13.28		(f) .1 450mm Diameter pipe culvert	no	1		
		OUTLET STRUCTURES TO PIPES				
	8.2.8	(g) Pipe outlet structure complete with the following pipe sizes Dwg 1396.10.ZA.04D010				
13.29		.1 825mm Diameter pipe culvert	no	1		
13.30		.2 1050mm Diameter pipe culvert	no	1		
		WORK TO EXISTING CULVERTS				
		Connecting into existing manholes				
13.31		.1 450mm Diameter pipe connected to MH at 2.35m deep (MH120)	no	1		
13.32		.2 600mm Diameter pipe connected to MH at 1.85m deep (JB192)	no	1		
13.33		.3 825mm Diameter pipe connected to MH at 1.67m deep (JB073)	no	1		
13.34		.4 450mm Diameter pipe connected to MH at 1.45m deep (KI178)	no	1		
13.35		.5 525mm Diameter pipe connected to MH at 1.65m deep (KI178)	no	1		
		SCHEDULE: 13 **STORMWATER DRAINAGE**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 LF	**SCHEDULE: 14** **ERF CONNECTIONS (WATER)**				
		ERF CONNECTIONS MEASURED IN NUMBER				
		Supply and install erf connections complete with all fittings as described including excavation, bedding, backfilling, testing, etc complete (saddles, markers water meters and water meter box assembly measured elsewhere) Dwg 1396.10.ZA.05.D001				
	8.2.1	.1 Single erf connection				
14.1		.1 Near side (type I)	no	150		
14.2		.2 Far side (type III)	no	26		
	8.2.1	.1 Double erf connection				
14.3		.3 Near side (type II)	no	175		
14.4		.4 Far side (type 6)	no	168		
		HDPE PIPES FOR STREET CROSSINGS				
	8.2.1	.2 Supply, lay, bed and test additional HDPE class 10 piping for cross street erf connections including all associated earthworks, complete with backfilling compacted to 93% mod AASHTO density				
14.5		.1 25mm Nominal diameter	m	325		
14.6		.2 32mm Nominal diameter	m	1929		
		SADDLES				
	8.2.1	.3 Supply and install Plasson uPVC saddles to uPVC water pipes for erf connections, including drilling and tapping, etc				
14.7		.1 75mm Diameter	no	13		
14.8		.2 90mm Diameter	no	317		
14.9		.3 110mm Diameter	no	99		
14.10		.4 160mm Diameter	no	69		
14.11		.5 250mm Diameter	no	21		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
		Brought Forward				
		WATER METERS				
14.12		.1 Supply and install water meters and water meter box assembly complete as per drawing 05.D001	no	862		
		YARD TAPS				
14.13		.1 Supply and install yard tap assembly, complete with all pipework from the watermeter, including all fittings, apron slab et alas per dwg 05.D001	no	862		
		KERB MARKINGS				
	8.2.8	.1 Painted marking on kerbing				
14.14		.1 Kerb marking	no	119		
		SCHEDULE: 14 **ERF CONNECTIONS (WATER)**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 ME	**SCHEDULE: 15** **SUBBASE**				
		CONSTRUCT LAYERWORKS WITH COMMERCIAL MATERIAL SUPPLIED BY THE CONTRACTOR				
		G5 Subbase				
	8.3.3	.1 .2 Compacted to 95% mod AASHTO density				
15.1		.1 100mm Thick	m³	4264		
15.2		.2 125mm Thick	m³	990		
		PROCESSING				
		Process layerwork material by the following process				
15.3	8.3.5	(d) Stabilization - all layer thicknesses	m³	5254		
		STABILIZATION				
	8.3.8	Stabilizing agent				
15.4		(b) Portland cement	ton	331		
		SCHEDULE: 15 **SUBBASE**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 MJ	**SCHEDULE: 16** **SEGMENTED PAVING**				
		EDGE RESTRAINTS				
	8.2.1	.1 Cast-in-situ strength concrete 30Mpa/19mm edge beam size 150mm wide x 225mm high, wood floated on top, angle rounded edges and 10mm thick jointex expansion joints at 3m centres Dwg 1396.10.ZA.03.D019				
16.1		.1 Straight sections	m	200		
		INTERLOCKING PRECAST CONCRETE PAVING				
	8.2.2	.1 Grey interlocking precast concrete paving blocks type SA, including all cutting of units to fit between edge restraints, laid on and including 20mm riversand ed, compacted and plastersand broomed into joints on completion Dwg 1396.10.ZA.03.D019				
16.2		.1 60mm To roads (25Mpa)	m²	36250		
16.3		.2 80mm To roads (35Mpa)	m²	6995		
		SCHEDULE: 16 **SEGMENTED PAVING**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 MK	**SCHEDULE: 17** **KERBING, CHANNELLING, EDGE BEAMS, ETC**				
		PRECAST CONCRETE KERBING				
		Supply and install precast concrete kerbing				
	8.2.1	(a) .1 Fig 7 kerbing				
17.1		.2 Curved sections, radius over 20m	m	95		
	8.2.1	(a) .2 Fig 8C kerbing				
17.2		.1 Straight sections	m	1500		
17.3		.2 Curved sections, radius over 20m	m	100		
17.4		.3 Curved sections, radius over 4m, but up to and including 20m	m	40		
	8.2.1	(a) .3 Fig 8B kerbing				
17.5		.1 Straight sections	m	10750		
17.6		.2 Curved sections, radius over 20m	m	270		
17.7		.3 Curved sections, radius over 4m, but up to and including 20m	m	2660		
17.8		.4 Curved sections, radius over 1m, but up to and including 4m	m	100		
		TRANSITIONS TO KERBS				
	8.2.6	.1 .3 Cast-in-situ strength concrete 30Mpa/19mm transitions				
17.9		.1 All transitions 2m long	no	156		
		SCHEDULE: 17 **KERBING, CHANNELLING, EDGE BEAMS, ETC**				
		Carried forward to Summary of Schedules			**Total**	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
	SANS 1200 MM	**SCHEDULE: 18** **ANCILLARY ROADWORKS**				
		TRAFFIC SIGNS ERECTED COMPLETE				
	8.3.6	Statutory signs, street names, etc supplied and erected complete, including posts, excavation, etc				
	8.3.6	(a) Provision and erection of regulatory traffic signs for 60km/h design standard, complete				
18.1		.1 Stop sign (R1)	no	48		
18.2		.4 Yield sign (R2)	no	17		
	8.3.6	(b) Provision and erection of warning traffic signs for 60km/h design standard, complete				
18.3		.1 T-junction (W104)	no	13		
18.4		.6 Dead end/road closed chevron (W410)	no	9		
	8.3.6	(d) Provision and erection of street names complete				
18.5		.2 Double type	no	41		
		RETRO-REFLECTIVE ROAD MARKINGS				
		Retro-reflective paint applied at a nominal rate of 0,42l/m²				
	8.4.1	(a) White lines (broken or unbroken)				
18.6		.1 100mm Lines	m	2620		
18.7		.2 150mm Lines	m	585		
18.8		.4 300mm Lines	m	195		
18.9	8.4.1	(c) White characters and symbols	m²	209		
					Carried Forward	

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
					Brought Forward	
		SETTING OUT AND PREMARKING				
		Setting out and premarking				
	8.4.4	(a) Lines (excluding traffic island, symbols, etc.)				
18.10		.1 Lines	km	3.1		
		SCHEDULE: 18 **ANCILLARY ROADWORKS**				
		Carried forward to Summary of Schedules			**Total**	

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C2.3
Summary of Bill of Quantities

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs
LERATO PARK INTEGRATED HOUSING DEVELOPMENT
TENDER NUMBER: NC/24/2022
INTERNAL CIVIL ENGINEERING SERVICES PHASE 6

Summary of Schedules

Schedule No.	Description	Amount (R)
1	PRELIMINARY AND GENERAL	
2	PROVISIONAL SUMS AND PRIME COST ITEMS	
3	DAYWORKS AND TEMPORARY WORKS	
4	SITE CLEARANCE	
5	EARTHWORKS	
6	EARTHWORKS (PIPE TRENCHES)	
7	EARTHWORKS (ROADS , SUBGRADE)	
8	uPVC PIPELINES	
9	BEDDING (PIPES)	
10	CABLE DUCTS	
11	SUBSOIL DRAINAGE	
12	uPVC SEWERS	
13	STORMWATER DRAINAGE	
14	ERF CONNECTIONS (WATER)	
15	SUBBASE	
16	SEGMENTED PAVING	
17	KERBING, CHANNELLING, EDGE BEAMS, ETC	
18	ANCILLARY ROADWORKS	
	Sub-Total	
	Provisional sum: Allowance for Contract Price Adjustment (14% of Sub-Total)	
	Sub-Total	
	Provisional sum: Allowance for Contingencies (10% of Sub-Total)	
	Total Construction Cost	
	Value Added Tax at 15%	
	Total Amount of Tender Carried Forward to Form of Offer and Acceptance	

Bankers Details :

Contractor's Name: _____
Name reflected on bank statement: _____
Bank: _____
Branch: _____
Account Number: _____
Cheque Account ☐ or Savings Account ☐

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Signature :

By Tenderer : _____

Company Name : _____

Date : _____

Contractor	Witness 1	Witness 2	Employer	Witness 1	Witness 2

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Part C3
Scope of Work

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

SCOPE OF WORKS

CONTENTS LIST

END OF SECTION

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.1
Description of the Works

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.1 DESCRIPTION OF THE WORKS

C3.1.1 Employers Objectives

The Lerato Park Integrated Housing Development Project is intended to capture the principles of an integrated housing development project. In essence the Project aims to achieve a development approach that provides for the integration of:

- Higher level of services than typical of subsidised RDP townships;
- Mixed income residential environment;
- Rich choice of housing modalities;
- Various tenure options;
- Quality built environment;
- Economic opportunities;
- Provision of full range of transport and social facilities; and
- Delivered in one seamless development process.

The Project is located within the jurisdiction area of the Sol Plaatje Municipality ("SPM") planned to deliver approximately 4 654 subsidised, institutional and bonded units over an envisage period of 5 years, subject to the availability of funding by the various funding sources for the Project. COGHSTA is the developer and the SPM is the land owner. The land was made available by the SPM to COGHSTA for the development of the project by means of a Land Availability Agreement.

Phase 6 of the housing project aims to deliver some **825 housing** opportunities in the subsidized, institutional/rental and bonded housing segments.

This contract consists of the construction of internal civil engineering services for the **sixth phase** of the Lerato Park Integrated Housing Project. Electrical reticulation and subsidy houses will be constructed under separate contracts.

C3.1.3 Scope of the Works

The following work is included in this contract:

a) uPVC water mains, reticulated in street reserves;
b) Metered house connections;
c) Yard Taps;
d) uPVC midblock and road frontage sewers;
e) kerbed, interlocking concrete block paved roads;
f) Kerb inlet storm water structures and junction boxes;
g) concrete storm water pipes;
h) Storm water channels lined with concrete interlocking blocks;
i) Cable ducts for future electrical reticulation road crossings;
j) Telkom Sleeves.

C3.1.4 Phasing plan

The project will be implemented in sub-phases due to budget constraints. The following sub-phases have been identified:

- Phase 6.1: A total of 343 sites will be completed in this sub-phase with the current available budget.
- Phase 6.2: The remainder of 482 sites will be completed in this sub-phase and will commence once the funding becomes available.

Refer to the Contract Data for the completion of each phase.

The Preliminary and General fixed items will be measured separated for each phase as well as the de-establishment and re-establishment on site if required and will only be payable on instruction from the Engineer. If the work for phase 6.1 is complete and phase 6.2 has not yet started the Engineer will instruct the contractor to interim de-establish site. A re-establishment on site will be payable once instructed to commence with phase 6.2 if already de-established.

C3.1.5 Location of the Works

The proposed development site is located to the North of Kimberly, in the Northern Cape Province, within the Francis Baard District Municipal area and within the borders of the Sol Plaatjie Local Municipality. It is situated between the townships of Galeshewe and Roodepan (see locality plan).

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.2
Engineering

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.2 ENGINEERING

C3.2.1 Employer's Design

The permanent works included in this contract has been designed by the Employer. The detail of the works is indicated on the drawings and in the specifications. The Tenderer may submit alternative offers for designs prepared by himself subject to the conditions specified in the Contract Data.

C3.2.2 Drawings

Drawings are bound in Volume 2 – Book of Drawing. A drawing list is included in Volume 2.

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.3
Procurement

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.3 PROCUREMENT

C3.3.1 Procurement Principles

The Employer decided to adopt the Standard of Uniformity in Construction Procurement published by the Construction Industry Development Board (CIDB) for his procurement process.

The Standard for Uniformity in Construction Procurement establishes minimum requirements that:

- promote cost efficiencies through the adoption of a uniform structure for procurement documents, standard component documents and generic solicitation procedures;
- provide transparent, fair and equitable procurement methods and procedures in critical areas in the solicitation process;
- ensure that the forms of contract that are used are fair and equitable for all the parties to a contract; and
- enable risk, responsibilities and obligations to be clearly identified.

C3.3.2 Contractors Personnel

The Contractor shall limit the utilisation of his permanently employed personnel to that of key personnel only on the Works, as defined below, and shall execute and complete the Works utilising a temporary workforce employed directly by the Contractor and/or by his sub-contractors, using the assistance of the Labour Desk(s), from the various communities that are established in proximity to the Works or which will be consumers from the Scheme.

Without derogating from the Contractor's obligations to complete the Works within the specified time for completion in terms of the General Conditions of Contract, the numbers in each category of the Contractor's key personnel, as stated by the Contractor in the Returnable Schedules, will be strictly controlled during the contract period and any increase in numbers will be subject to the prior approval of the Employer.

Key personnel means all contracts managers, site agents, site clerks, materials and survey technicians, quantity surveyors, trainers, supervisors, foremen, skilled plant operators, brick layers, welders, shutter hands and the like, and all other personnel in the permanent employ of the Contractor or his sub-contractors who possess special skills, and/or who play key roles within the Contractor's or his subcontractor's operations.

The Engineer may at his discretion, upon receipt of a written and fully motivated application from the Contractor, and where he deems the circumstances so warrant, authorise in writing that the Contractor may utilise in the execution of the Works, workers not being his key personnel but who are in his permanent employ. Without limiting the generality of application of this sub-clause, circumstances which may be considered by the Engineer to warrant authorization of the use of the Contractor's permanent employees other than key personnel, include:

a) The unavailability from local sources of sufficient numbers of temporary workers and/or sub-contractors to execute the Works, provided always that the Contractor has satisfied the Engineer that he has exercised his best endeavours and taken all reasonable actions to recruit sufficient temporary workers and sub-contractors from local sources.

b) The unavailability within the temporary worker pool and/or from subcontractor sources available to the Contractor in terms of the Contract, of sufficient skills necessary to execute the Works or specific portions thereof, in situations where the completion period allowed in the Contract is insufficient to facilitate the creation of the necessary skills through the provision of suitable training as contemplated in the Contract;

c) Any other circumstances which the Engineer may deem as constituting a warrant.

C3.3.3 Temporary Workforce

The Contractor shall employ labour from the local communities through the Labour Desk(s). Accordingly, the workforce that is employed on Site shall consist of local residents, except for

approved key staff in the permanent employ of the Contractor, to the maximum extent that is compatible with the requirements of Clause C3.3.2.

The Labour Desk(s) shall assist in identifying available local labour and, where available, semi-skilled labour as well as local sub-contractors. The Labour Desks shall also assist and advise regarding conditions of employment, minimum wages, disputes and disciplinary procedures. The function of the Labour Desk(s) shall however in no way diminish the responsibilities of the Contractor in terms of the Conditions of Contract.

Although the Contractor shall adhere to the statutory minimum wage rates, he is however at liberty to negotiate additional incentive payments based on performance.

A contract of employment or subcontract should be signed between the Contractor and each of his employees or sub-contractors, as the case may be. Likewise contracts of employment must be entered into between each such sub-contractor, and each of the specific subcontractor's employees. Employment and subcontract agreements shall make clear reference to at least the following conditions:

- The minimum agreed wage rate per hour in respect of labourers;
- The agreed pay rate per unit of production where applicable;
- UIF and WCA payments;
- Minimum working hours per day;
- Start and end times of a daily shift;
- Lunch break times;
- Company Policy regarding :
    - Rain time
    - Sickness and absenteeism
    - Disciplinary matters
    - Grievances
- Method and frequency of payment;
- Work clothes and safety equipment to be issued.

C3.3.4 Labour Intensive Construction

Labour Intensive Construction shall mean the economically efficient employment of as great a portion of labour as is technically feasible to produce a standard of construction as demanded by the Specifications with completion by the Due Completion Date, thus the effective substitution of labour for equipment.

Appropriate portions of the Works included in the Contract shall be executed using labour intensive construction methods. These portions of the Works shall be constructed utilising only locally employed labour and/or the labour of local sub-contractors, supplemented to the extent necessary and unavoidable by the Contractors key personnel as provided for in clause C3.3.2, unless otherwise instructed by the Engineer. The portions of the Works to be executed using labour intensive construction methods are:

- clearing and grubbing of the Site;
- bedding, selected fill, backfilling and compaction of all pipe trenches irrespective of depth, but assisted by mechanical compaction equipment in order to achieve the specified densities;
- reinstatement of all fill, shoulder and pavement layers at road crossings, but using mechanical compaction equipment in order to achieve the specified densities;
- transportation and spoiling of all trench materials, where the disposal site is located within 20 metres of source;
- removal of oversized materials to the edge of the roadway during the construction of roads and streets;
- laying, testing and disinfection of all pipelines, including all fittings, valves and house/erf connections; but excluding all stormwater pipe- and rectangular culverts;
- construction of all manholes, cleaning eyes, kerb inlets, junction boxes, culvert floors, end structures and balustrades, valve chambers, thrust blocks, pipeline markers and the like (earth-, concrete-, brick- and metalworks), but excluding the mixing of concrete and transporting of same to the point of pouring;
- construction of concrete interlocking block pavement;
- kerbing;
- road marking and signage;
- dismantling and re-erection of fences; and
- cleaning and tidying up of the Site.

In respect of those portions of works which are not listed above, the construction methods adopted and plant utilised shall be at the discretion of the Contractor, provided always that the construction methods adopted and plant utilised by the Contractor are appropriate in respect of the nature of the Works to be executed and the standards to be achieved in terms of the Contract.

C3.3.5 Subcontracting

The Contractor shall appoint such authorities and/or specialist subcontractors and suppliers as may be designated or nominated by the Employer or the Engineer for those portions of the Works specified in the Scope of Works.

The Contractor shall sub-let to local emerging sub-contractors appropriate portions of the works that are designated in C3.3.4 as being reserved for labour intensive construction methods.

As required by the Conditions of Contract, the Contractor shall be responsible for all work carried out by sub-contractors (whether nominated by the Employer or selected by the Contractor) on his behalf. The Engineer will not liaise directly with any such sub-contractor, nor will he become involved in any problems and/or disputes related to payments, programming, workmanship, etc, unless provided for in the Conditions of Contract. Such problems and/or disputes shall remain the sole concern of the Contractor and his sub-contractors.

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.4
Construction

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.4.1
Standard Specifications

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.4 CONSTRUCTION

C3.4.1 Standard Specifications

The Standard Specifications on which this contract is based are the South African Bureau of Standard's Standardized Specifications for Civil Engineering Construction (SABS 1200). (Note: "SABS has been changed to "SANS"; the SABS 1200 specifications are due to be replaced in the foreseeable future by SANS 2001 amongst other specifications).

Although not bound in nor issued with this Document, the relevant sections of the standard specifications shall form part of this Contract. These documents are available at the Contractor's expense from the SA Bureau of Standards, Private Bag X191, PRETORIA, 0001.

The applicable SABS 1200 Standardised Specification for this Contract shall be the following:

A - General

AB - Engineers office

C - Site clearance

D - Earthworks

DB	-	Earthworks (Pipe Trenches)
DK	-	Gabions and pitching
DM	-	Earthworks (roads, subgrade)
G	-	Concrete (structural)
GA	-	Concrete (small works)
GE	-	Precast concrete
H	-	Structural steelwork
HC	-	Corrosion protection of structural steelwork
L	-	Medium pressure pipelines
LB	-	Bedding (pipes)
LC	-	Cable ducts
LD	-	Sewers
LE	-	Stormwater drainage
LF	-	Erf connections (water)
M	-	Roads (general)
ME	-	Subbase
MF	-	Base
MJ	-	Segmented paving
MK	-	Kerbing and channelling

MM - Ancillary roadworks

The various documents listed in section C3.4.1 shall be treated as mutually explanatory. However, should any requirement of section C3.4.2 conflict with any requirement of the Standardised Specifications or with any requirement of the Particular Specifications, then the requirement of section C3.4.2 shall prevail.

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.4.2
Variations and Additions to Standard and Particular Specifications

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.4.2 VARIATIONS AND ADDITIONAL CLAUSES TO THE STANDARD AND PARTICULAR SPECIFICATIONS

The following variations and additions to the Standard and Particular Specifications will be applicable to this Contract:

The various documents listed in section C3.4.1 shall be treated as mutually explanatory. However, should any requirement of section C3.4.2 conflict with any requirement of the Standardised Specifications or with any requirement of the Particular Specifications, then the requirement of section C3.4.2 shall prevail.

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PSA GENERAL

PSA1 QUALITY (Clause 3.1)

All material used in the Works shall, where such mark has been awarded for a specific type of material, bear the SABS mark. Alternatively, the Contractor shall furnish the Engineer with certificates of compliance of materials, which bear the official mark of the appropriate standard.

PSA2 PLANT (Clause 4.3)

Except where the use of plant is essential in order to meet the specified requirements by the Due Completion Date, the Contractor shall use only hand tools and equipment in the construction of those portion(s) of the Works that are required in terms of the Scope of Works to be constructed using labour intensive construction methods.

PSA3 SITE FACILITIES

PSA3.1 SITE FACILITIES AVAILABLE

PSA3.1.1 Contractor's Camp

A Site will be made available by the Employer for the Contractor's camp and depot adjacent to the existing camp site for the Engineer.

PSA3.1.2 Source of Water Supply

The Contractor shall be responsible under the Contract for the supply and distribution at his cost of all water that he may require for purposes of constructing the Works. Accordingly, the Contractor shall pay all connection fees and consumption charges, and at his cost provide all connections, consumption meters, pipework, storage tanks, transport and other items associated with the supply of water for the Works.

Water can be provided by Sol Plaatje Local Municipality.. The Contractor shall, subject to the approval of the Engineer, make any necessary arrangements with the relevant authority for the connection(s), and shall provide in his tender for the payment of al charges and costs that are associated with making water available for purposes of constructing the Works.

Water for filling, testing and disinfecting the pipelines and structures will be made available by the Employer at no cost to the Contractor. However, should the pipelines and/or structures have to be drained and refilled due to defective materials or workmanship by the Contractor or by his subcontractors, then the water required for refilling shall be made available at the cost of the Contractor.

PSA3.1.3 Source of Power Supply

The Contractor shall be responsible under the Contract for the supply and distribution at his cost of all electricity that he may require for purposes of constructing the Works. Accordingly, the Contractor shall pay all connection and consumption charges, and at his cost provide all connections, transformers, consumption meters, cables, distribution boards and other items that are associated with the supply of electricity for construction of the Works.

Sol Plaatje Local Municipality is the power supply authority in the area. The Contractor shall, subject to the approval of the Engineer, make any necessary arrangements with the relevant authority for the connection(s), and shall provide in his tender for the payment of all charges and costs that are associated with making electricity available for purposes of constructing the Works. The distribution of electricity shall be in accordance with the applicable bylaws and regulations of the supply authority.

PSA3.1.4 Housing

The Contractor shall be permitted to house Key Personnel only within his camp site(s). At the commencement of the Contract, the Contractor shall inform the Engineer of his intentions regarding the housing of Key Personnel on Site, and he shall thereafter ensure that all such accommodation is kept neat and tidy, hygienic and properly controlled at all times. Should at any stage of the Contract the Employer and/or the Engineer be of the opinion that the housing of Key Personnel within the camp site(s) of the Contractor is causing disturbance or inconvenience to the landowner or to nearby residents, then the authority granted by this clause for the Contractor to house Key Personnel on Site may be withdrawn, either partially or entirely.

The Contractor shall at all times conform with all requirements contained in law or bylaws, as well any other requirements set by the controlling local authority.

PSA3.2 SITE FACILITIES REQUIRED

PSA3.2.1 For the Contractor

Whatever may be required for the satisfactory execution of the Contract.

PSA3.2.2 For the Engineer

As specified under Section PSAB.

PSA3.2.3 Sanitary facilities

Water borne sewerage is available at the Engineer's camp site. Flush toilets or Chemical toilets shall be provided and maintained for the use of the Contractor's personnel at all camp sites that the Contractor may establish for construction of the Works. In addition, the Contractor shall at all times during construction of the Works provide adequate sanitary facilities on site so that all employees are at all times within easy reach of sanitary facilities.

PSA4 ADJUSTMENT OF PRELIMINARY AND GENERAL TIME-RELATED ITEMS (Clause 8.2.2)

PSA4.1 Replace the note on the end of the clause with the following:

Note: An approved extension of time will qualify the Contractor to receive additional payment for each relevant time related item at the original tendered unit rate for such item. The additional payment will be calculated pro rata to the extension of time in relation to the time for achieving Practical Completion for the Works at the date when the agreement came into effect.

PSA4.2 Should the Time for Completion be automatically extended due to abnormal weather conditions occurring during execution of the Contract as provided for in the Conditions of Contract, adjustment to the total for time-related preliminary and general items will be applicable as specified in Clause PSA4.1.

PSA5 HEALTH AND SAFETY

The maintenance of safe work practice at all times and in all sections of the execution of the works is embedded in the day to day site activities of all the Contractor's management, staff and workforce on the contract.

The introduction of the Construction Regulations in 2003 requires from the Employer to ensure that the Contractor has made adequate provision for the execution of the works within the specifications of said regulations. The contractor shall comply to the Health and Safety Specification bound into section C3.4.3 of this document.

It must be noted that the lists below are not exhaustive and that many items have been traditionally priced by the Contractor as an integral part of his Preliminary and General items or as part of the overhead costs of other items. The tender document, although not detailed with regards the Construction Regulations, requires that the Contractor ensures adherence to the Occupational Health and Safety Act (Act 85 of 1993) the Construction Regulations, 2003.

PSA5.1 Fixed-charge Items

Add the following new Clause (Clause 8.3.5):

	Unit
Compliance with the Occupational Health and Safety Act (Act 85 of 1993) and its regulations and with the Employer's Health and Safety Specification.	Sum

The fixed charge item shall include but shall not be limited to the following:

- Preparation of Health and Safety Plan,
- Establishment of Health and Safety File,
- Health and Safety Training
- Personal Protective Clothing and Equipment
- Establishment of Safety Administration
- Signage to demarcate site as a restricted construction area

- Other Health and Safety Fixed-charge Obligations

PSA5.2 Time-related Items

Add the following new Clause (Clause 8.4.6):	Unit
Compliance with the Occupational Health and Safety Act. (Act 85 of 1993) and its regulations and with the Employer's Health and Safety Specification.	Sum

The time related item shall include but shall not be limited to the following:

- The employment cost of all health and safety personnel including consultants, health and safety officers, inspectors, supervisors and issuers required in terms of the Contractor's Health and Safety Plan,
- Updating the Health and Safety Plan as needed,
- Carrying out of periodic own audits and follow-up audits,
- Compiling ongoing risk assessments and risk assessment reports as required by the Works,
- Convening of regular safety meetings with the Safety Representatives,

- Accompanying and supporting the Employer or his Safety Agent during ad hoc audits,
- Compilation of monthly safety reports and statistics for the Employer or his Safety Agent,
- Implementation and maintenance of Training
- Maintenance of personal protective clothing and equipment
- Maintenance of fences, signs and barricades
- Access control to construction site
- Implementation and maintenance of safety administration
- Other Health and Safety Time-related Obligations

PSA6 ENVIRONMENTAL MANAGEMENT PLAN

The Contractor shall comply with all the conditions of the Record of Decision and the Environmental Management Plan bound into Section C4).

PSA6.1 Fixed-Charge Items

Add the following Clause (Clause 8.3.7):

	Unit
Compliance with Environmental Management Plan and Record of Decision	Sum

The sum tendered shall cover all costs, overheads, profits and charges incurred in complying with all the conditions of the Environmental Management Plan and Record of Decision bound into Section C4

PSA6.2 Time-related Items

Add the following Clause (Clause 8.4.8):

	Unit
Compliance with Environmental Management Plan and Record of Decision	Sum

The sum tendered shall cover all costs, overheads, profits and charges incurred in complying with all the conditions of the Environmental Management Plan and Record of Decision bound into Section C4.

PSA7 SUMS STATED PROVISIONALLY (Clause 8.5)

PSA7.1 Contingencies

A Provisional Sum shall be included in the Summary of Schedules for contingencies. No percentage mark up will be applicable to any payments made using contingency money other than the mark up included in prices for variations determined in terms of the Conditions of Contract.

PSA7.2 Contract Price Adjustment

A Provisional Sum shall be included for Contract Price Adjustment in the Summary of Schedules to make provision for contract price adjustment in terms of the Conditions of Contract. The value of the Provisional Sum shall be based on the percentage of the subtotal value as specified in the Summary of Schedules. No percentage mark up will be applicable to any payments made in this regard.

PSA7.3 Salary for Labour Desk Officer and Community Liaison Officer

A Provisional Sum has been included in Schedule 2 for a salary to be paid to the Labour Desk Officer and Community Liaison Officer.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA7.4 Artisans and Skills Training

A Provisional Sum has been included in Schedule 2 for payments to be made to specialists for the training of unskilled or semi-skilled persons in industry accredited management and generic skills. Payment to the Contractor will be based on invoices certified by the Engineer and issued by training specialists to the Contractor for work undertaken in terms of this item.

In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA7.5 Telephone Calls and Rental

A Provisional Sum has been included in Schedule 2 for telephone calls and facsimile transmissions for the Engineer's Representative. The Engineer's representative will provide his own cellular telephone for the contract. Payment will be based on call and rental costs, but excluding any deposits and installation costs which shall be priced under the preliminary and general items.

In addition to the above amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA7.6 Acceptance Control Testing

A Provisional Sum has been included in Schedule 2 for acceptance control testing ordered by the Engineer to be undertaken by a commercial laboratory. Payment will be based on the actual invoicing by the laboratory to the Contractor.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on any payments made by the Contractor in this regard. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA7.7 Office Consumables for Engineer's Site Facility

A Provisional Sum has been included in Schedule 2 for the appointment and payment of office consumables for Engineer's site facility.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA7.8 Electronic equipment for Engineer's office

A Provisional Sum has been included in Schedule 2 for the appointment and payment of a specialist sub-contractor for electronic equipment for Engineer's site office.

In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the amount to be paid. The mark-up shall be regarded as full compensation for overheads, charges and profits as provided for in the Conditions of Contract.

PSA8 PRIME COST ITEMS (Clause 8.6)

PSA8.1 Materials for Dayworks

A Provisional Sum has been included in Schedule 2 for materials to be used during the execution of dayworks. In addition to the abovementioned amount, provision is made in Schedule 2 for a mark-up on the materials used during the execution of the dayworks by the Contractor. Payment made shall be regarded as full compensation for overheads, charges and profit on the materials that are used when executing dayworks.

PSAB ENGINEER'S OFFICE

PSAB1 NAME BOARDS (Clause 3.1)

Two name boards conforming to the standard requirements of the South African Association of Consulting Engineers and as shown on drawing 01A003. must be provided and erected at points to be designated by the Engineer.

PSAB2 OFFICE BUILDING (Clause 3.2 and Clause 5.2))

Office accommodation has already been provided for the Engineer under the contract for the construction of the first phase of the internal civil engineering services. This accommodation will be used by the Engineer for the duration of the project and no additional accommodation is required for the Engineer under this contract. The office facility has been furnished as per Drawing No. 01A005 and Drawing No. 01A006.

The Contractor shall provide cleaning and maintenance for the duration of the contract, as well as 24 hour security for the office. The Contractor shall provide insurance for the buildings as well as the contents of the buildings at the replacement cost for new buildings and contents.

PSAB3 TELEPHONE (Clause 4.1 and 5.4)

The Contractor shall arrange for the installation of four telephone lines. Provisional sums have been allowed under item PSA7 for all telephone rental and associated costs.

PSAB4 TESTING

PSAB4.1 General

No laboratory building or fittings are required by the Engineer. The Engineer will arrange separately with a commercial laboratory of designate specialists to carry out all acceptance control testing, excepting for density control test and moisture content determinations. The Contractor shall remain responsible to carry out the process control testing required by the Standardised, Particular and Project Specifications.

PSAB4.2 Laboratory Equipment

The Contractor shall supply the following equipment for the duration of the Contract.

(a) A Troxler nuclear system, complete with accessories and stored in a suitable transit case as supplied by the manufacturer. A detailed description of the unit and principals of operation should be given in the manual for the nuclear instrument.

(b) Dinamic cone penetrometer

(c) Six concrete cube moulds, 150mm nominal size, as well as a suitable concrete cube curing basin to keep all concrete cubes submerged in water for at least 28 days.

PSAB5 SURVEY ASSISTANTS (Clause 5.5)

One suitably educated Survey Assistant shall be made available for the sole use of the Engineer's Representative for the duration of the Contract. Transport shall be supplied for the Survey Assistant by the Contractor for the duration of the Contract should he be requested to do so.

A full time gate guard and camp assistant for the sole use of the Engineer must be provided.

PSAB6 SURVEY EQUIPMENT

The survey equipment listed below shall be made available and be maintained in good condition for the exclusive use of the Engineer or his Representative for the duration of the Contract. Payment will be made as provided for in the Time Related Items included in Schedule 1.

(a)	Automatic surveyor's level complete with tripod and leather carry case such as Zeiss N1-2 or equivalent	1 No
(b)	20-second tachometer with optical plumbob complete with tripod and leather carry case such as Sokkisha TM20C or equivalent.	1 No.
(c)	Nylon-coated steel surveyor's tape 100m long and 10mm wide	1 No.

(d)	5m long steel tape	1 No.
(e)	5m long three-piece telescopic survey staves (metric double-face) complete with angle bracket level	2 No
(f)	Survey books: Level	3 No.
(g)	2kg hammer with rubber handle	1 No.
(h)	Steel pegs, 300mm long and 12mm dia	120 No.
(i)	Aluminium tags, 100mm long, 15mm wide and 2mm thick	120 No.
(j)	Reverse polar notation pocket calculator (Hp32SII or similar)	1 No
(k)	Change point	2 No
(l)	Measuring wheel	1 No
(m)	Tripod holders for ranging rods (heavy duty)	2 No.
(n)	Optical square (Sokkisha or Wild), complete with telescopic aluminium rod and bubble	1 No.
(o)	"Rabone" steel tape 10 meters long and 13mm wide	1 No.
(p)	Triangular change plate with chain	2 No.
(q)	100m long 50 kg strength fish line	1 No.
(r)	One metre long spirit level	1 No.
(s)	Three metre aluminium straight edge	1 No.

PSAB7 CARPORTS

The Contractor shall provide and maintain carports as indicated on the detailed on the drawing mentioned in PSAB2 for the duration of the Contract. The floor shall consist of crushed aggregate to alleviate dusty and muddy conditions.

PSC SITE CLEARANCE

PSC1 DISPOSAL OF MATERIAL (Sub-clauses 3.1 and 8.2.1)

Materials arising form clearing and grubbing shall be disposed of at a suitable spoil site. The Contractor shall be responsible to make his own arrangements for a suitable spoil site. Trees and stumps necessarily removed shall not be burnt unless authorised by the Engineer but shall be cut and stacked at areas designated by the Engineer.

PSC2 AREAS TO BE CLEARED AND GRUBBED (Clause 5.1)

The areas to be cleared and grubbed will be indicated by the Engineer. Should a portion or the whole of the site have been cleared and grubbed by others prior to the start of construction then no clearing and grubbing will be ordered or payment made with respect to the applicable portion of the site.

PSC3 PRESERVATION OF TREES (Sub-clause 5.2.3)

The penalty in respect of every individual tree, designated as a tree to be preserved, that is damaged or removed unnecessarily by the Contractor, shall be R500. Trees that fall within areas upon which the Works are to be constructed or within areas that the Contractor must occupy for the proper construction of the Works will not be designated for preservation.

PSC4 FREEHAUL AND OVERHAUL

Refer to clause PSD7 in this regard.

PSD EARTHWORKS

PSD1 CLASSIFICATION FOR EXCAVATION PURPOSES (Clause 3.1.2)

Delete clause 3.1.2 (a) and clause 3.1.2 (b) and replace with the following:

3.1.2 (a) Soft excavation:

"All material that is not classified as hard rock excavation in terms of clause 3.1.2 (c), boulder excavation class A in terms of clause 3.1.2 (d) or boulder excavation class B in terms of clause 3.1.2 (e) shall be classified as soft excavation"

In clause 3.1.2 (c) (1), replace the words "equivalent to that specified in (b) (1) above" with the words "of mass approximately 35 t, fitted with a single-tine ripper suitable for heavy ripping and of fly wheel power approximately 220 kW."

In the last sentence of clause 3.1.2 (d), replace the words "intermediate excavation" with the words "soft excavation."

In the last sentence of clause 3.1.2 (e), replace the words "or intermediate excavation, according to the nature of the material" with the word "excavation."

PSD2 SAFEGUARDING OF EXCAVATIONS (Sub-Clause 5.1.1.2)

Any cost the Contractor may undergo in ensuring the safety of excavations or any additional excavation and backfilling he may have to undertake due to the unstable sides of excavations and trenches shall be held to his account and the various rates for excavation and trenching included in the Schedule of Quantities shall include full compensation therefore.

PSD3 EXPLOSIVES (Sub-Clause 5.1.1.3)

Add the following to the sub-clause:

"The Contractor shall record for the information of the Engineer the spacing and loading of the charge in each blast. Compliance with this requirement will not relieve the Contractor of any responsibility as provided for in this sub-clause".

PSD4 DISPOSAL OF SURPLUS MATERIAL (Sub-Clause 5.1.4.3 and 5.2.2.3)

Add the following to the sub-clause:

"All surplus or unsuitable materials arising from trench excavations shall be spoiled and neatly spread and levelled along the route of the pipeline so as not to interfere with future works nor to disrupt the natural overland flow of storm runoff. Rocks, trees, debris and other unsightly material from trench excavations shall be disposed of at a suitable spoil site. Where the pipeline is laid within a road reserve the route of the pipeline shall be finished neatly to be flush with the natural ground level or finished sidewalk level as may be applicable.

The Contractor shall be responsible to make his own arrangements for a suitable spoil site".

PSD5 ACCOMMODATION OF TRAFFIC (Sub-Clause 5.1.6)

The Contractor shall tender a lump sum in Schedule 3 for accommodating traffic during the duration of the Contract, which sum shall cover all his obligations in this regard, including but not limited to temporary barricades; the erection and re-erection of existing and/or temporary traffic signs; lights and flagmen for the guarding and protection of the Works; and for making all necessary arrangements with the applicable traffic authorities. Payment shall be made monthly pro-rata to the overall progress of the Works.

PSD6 BORROW PITS (Sub-Clause 5.2.2.2)

The is no borrow pits available on site. Material will be required from commercial sources. The Contractor shall be responsible for making his own arrangement regarding the provision of material, from commercial borrow pits where required in the Bill of Quantities. The Contractor shall provide in his tender prices for all royalties payable and for the transport of the material to site.

PSD8 FREEHAUL (Sub-Clause 5.2.5.1) AND OVERHAUL (Sub-Clause 5.2.5.2)

No overhaul will be payable on site and from borrow pits.

END OF SECTION

PSDB EARTHWORKS (PIPE TRENCHES)

PSDB1 ACCOMMODATION OF TRAFFIC (Sub-Clause 5.1.3)

See Clause PSD5.

PSDB2 EXISTING SERVICES (Sub-Clauses 5.1.4)

Where any existing service occurs within the specified trench excavation, and the presence of such service is known before being uncovered, then the protection of the service will be scheduled and measured as provided for in Clause 8.3.5 of 1200DB. Only known services (as defined in Clause 5.4 of 1200A) shall be measured for payment.

Where an unknown existing service is damaged during construction, and the Engineer orders that the Contractor should undertake the repair of such service, then such repair will either be measured and paid as dayworks or alternatively as a contractual variation in terms of the Conditions of Contract.

No construction activity which may affect the integrity of telephone or electrical poles or stays may be carried out without the prior written approval of the Engineer, which approval shall only be given subject to the acceptance of a modus operandi that will ensure the integrity of such structures during construction.

PSDB3 TRENCH WIDTHS (Sub-Clauses 4.1 and 5.2)

Trenches in general shall not exceed the widths laid down in Sub-Clause 8.2.3. If trenches exceed the specified width the Contractor shall be liable for the cost of any thicker pipes or more expensive bedding which may be required as a result of the additional trench width.

PSDB4 TRENCH BOTTOMS (Sub-Clause 5.5)

Replace the first paragraph of this sub-clause "Material that ..... compacted as directed" with the following :-

Where a firm foundation cannot be obtained at the grade indicated due to soft or unsuitable material, the Engineer may instruct the Contractor to remove such unsuitable

material and to backfill the excess depth with approved selected material or concrete, as directed by the Engineer in each particular case, at the cost of the Employer. Backfill other than concrete, shall be placed in layers of 100mm un-compacted thickness, each layer thoroughly compacted to the entire satisfaction of the Engineer, to provide adequate support for the pipe bedding to be placed on top of it.

Should the Contractor remove more ground than is required to secure the proper grade of the pipeline, the Contractor must, at his own cost, backfill the excess excavation with approved selected material or concrete, as directed by the Engineer in each particular case.

PSDB5 DISPOSAL OF EXCAVATED MATERIAL (Sub-Clauses 5.6.3 and 5.6.4)

All surplus or unsuitable materials arising from excavation shall be spoiled and spread within or adjacent to the Site of the Works or when ordered by the Engineer be spoilt at a spoil site established by Contractor.

PSDB6 FREEHAUL AND OVERHAUL (Sub-Clause 5.6.8)

No overhaul will be payable on earthworks for pipe trenches.

PSDB7 AREAS SUBJECTED TO TRAFFIC LOADS (Clause 5.7.2)

The requirements of Clause 5.7.2 shall apply only to pipes and sleeves crossing streets or paved areas and pipes running parallel to the road as described below.

All service trenches running parallel to the road of which the roadside edge of the trench is located less than 1,4m away from the edge of the travelled way, will be subject to the requirements for the above mentioned clause.

The measurement and payment will apply to the full trench width. Pipes and sleeves crossing streets or paved areas will be measured and paid for to a length equal to the width of road or length of pavement crossed plus 1,4 m either side of the travelled edges.

Compaction of other pipe trenches running parallel to the roadway shall be considered areas subject to traffic loads only where instructed by the Engineer in writing. The volume will be computed from the minimum base width determined in accordance with

Sub-Clause 5.2 and the depth from the top of the back fill to the top of the bedding as specified in Sub-Clause 8.3.3.1.

PSDB8 REINSTATEMENT OF EXISTING BITUMEN SURFACED ROADS (Clause 3.6 and 5.9.4)

Pipe trenches through the existing bitumen surfaced roads shall be reinstated with a 150mm upper selected subgrade layer compacted to 93 % mod AASHTO density, followed by a 150mm subbase layer compacted to 95 % mod AASHTO density and a 150mm graded crushed stone base compacted to 98 % of mod AASHTO density. The road shall be provided with a 25mm thick asphalt seal.

The upper selected subgrade layer shall have a CBR of at least 15, a grading modulus of at least 0,75 and a maximum PI of 12. The subbase shall conform to SABS 1200 ME and the base to SABS 1200 MF.

PSDB9 MEASUREMENT AND PAYMENT (Clause 8.3.2)

PSDB9.1 Basic Principles (Clause 8.1)

Add the following to the sub-clause 8.1.2(a):

Payment for the excavation and backfilling of trenches shall be made at the tendered rates and at the following stages of the construction:

i) upon completion and approval of the trench bottom, prior to bedding : 40 %
i) upon completion and approval of top of selected backfill: 70% (cumulative)
ii) upon completion and approval of the main fill: remaining 30 %.

PSDM EARTHWORKS (Roads, subgrade)

PSDM1 OVERHAUL

No overhaul will be payable on earthworks.

PSDM2 ACCOMMODATION OF TRAFFIC

Refer to clause PSD5 in this regard.

PSDM3 DISPOSAL OF SURPLUS MATERIAL

All surplus material removed from the road reserve shall be used to backfill the borrow pit on site. Material shall be temporary stockpiled until all usable material has been removed from the borrow pit. Thereafter the borrow pit shall be backfilled in layers not exceeding 200mm thickness and compacted to 90% mod AASHTO density. All surplus material that cannot be used for the backfilling of borrow pits, as well as rocks, trees debris and other unsightly material shall be removed to a suitable spoil area. The Contractor shall make his own arrangements for a spoil area.

PSDM4 BORROW PITS

Refer to clause PSD5 in this regard.

PSDM5 ROLLING BY SPECIFIED NUMBER OF PASSES (Sub-clause 5.2.3.3)

PSDM5.1 General

Where shown on the drawings or ordered by the Engineer, the road-bed shall be subjected to a specified number of passes using a designated type of roller.

PSDM5.1.1 Pneumatic-tyred roller

A pneumatic-tyred roller shall consist of pneumatic-tyred wheels mounted on a rigid frame with a loading platform or body suitable for ballast loading to produce a load of at least 70kN on each wheel and arranged in a manner that allows all wheels to bear equally while operating on uneven surfaces.

The total load on any axle line shall not exceed 300kN. Tyres shall be uniformly inflated under operating conditions to a pressure within the rage 500-800 kPa.

PSDM5.1.2 Vibratory roller

The vibratory roller shall be capable of exerting a combined static and dynamic force of not less than 120 kN/m width for every metre of loose-layer thickness at an operating frequency not exceeding 25 Hz and shall move at a speed not exceeding 4 km/h.

PSDM5.1.3Grid roller

A grid roller shall have a mass of at least 13 t when ballasted, and shall be operated at this mass.

PSDM5.1.4Impact roller

◊ Type 1

Impact roller type 1 shall be a single multifaced roller having a maximum of five flat or nearly flat faces and a mass of over 8 t. The roller shall be of the free fall type, and the roller and towing mechanism shall be so designed that all the energy applied in lifting the roller to the position in which it is supported on an edge between consecutive faces, is dissipated on impact when the roller drops again. The roller shall be towed by a tractor of engine power not less than 160kW and towed within 20 % of its optimum towing speed.

◊ Type 2

Impact roller type 2 shall be an impact compactor or roller delivering impact energy per blow of not less than 25 kilojoules, of the HEIC Series 600 type supplied by Compaction Technology (Pty) Limited or equal approved. The roller shall be towed by a tractor of engine power not less than 160kW and towed within 20 % of its optimum towing speed.

PSDM5.2 Roller Compaction

Any layer which is shown on the drawings or is specified or is prescribed by the Engineer to be rolled by a specified number of passes shall be prepared by shaping if necessary and then be compacted with a specified roller which complies with the requirements specified in subclause PSDM5.1.

A pass for a double drum roller is hereby defined as two passes of the roller over a suitable lane width such that one drum of the roller during its second passage travels in the inter drum space created by the first passage of the roller. Adjacent lanes shall not overlap or have a gap exceeding 250mm.

Except where otherwise authorised by the Engineer, compaction shall comprise not less than the required number of complete coverage by the wheels of the roller, specified or ordered, over every portion of the area being compacted. Although it is not the intention that water be applied to the roadbed by the Contractor under this class of compaction and no rigid control of the moisture content will be exercised during compaction, the Contractor shall nevertheless satisfy the Engineer that every possible endeavour is being made to take advantage of favourable soil- moisture conditions and to carry out such compaction in so far as is possible during periods when the roadbed is neither excessively dry not excessively wet. The Engineer shall instruct the Contractor to water the roadbed at the Contractor's expense where, in the opinion of the Engineer, the Contractor has failed to comply with these requirements.

PSDM5.3 Payment

Payments for roller compaction shall be measured as follows:

(a)	Heavy pneumatic-tyred roller	.....m².pass
(b)	Vibratory roller	.....m².pass
(c)	Grid roller	.....m².pass
(d)	Tamping roller	.....m².pass
(e)	Impact roller	.....m².pass

PSGA CONCRETE (Small Works)

PSGA1 CEMENT (Sub-clause 3.2.1)

All cement material used in concrete shall comply with the following standards:

SABS ENV 197-1:1992 Cement B composition, specifications and conformity criteria B Part 1: Common cements

PSGA2 CONCRETE FINISHES (Sub-clauses 4.4.2)

Concrete against which earth will be backfilled shall be finished rough. All exposed concrete surfaces shall be finished smooth to degree of accuracy II.

PSGA3 STRENGTH CONCRETE (Sub-clause 5.4.1.7)

The grade of concrete and nominal size of aggregate shall be as specified on the Drawings. The successful tenderer will be required to submit samples of the coarse and fine aggregate which he proposes using, to the Engineer's Representatives for tests regarding the suitability of such aggregates. The Contractor shall prepare trial mixes of the grades of concrete required for the Contract to establish acceptable design mixes. These mixes shall be designed for vibration. All data and reports prepared by the Contractor shall be submitted to the Engineer for information and approval prior to the commencement of concreting operations.

PSGA4 ANCHOR AND THRUST BLOCKS

At tees, bends, terminal valves, end caps, and where otherwise directed, anchor/thrust blocks shall be constructed to dimensions ordered, shown on the Drawings or agreed to by the Engineer. Unless otherwise specified, anchor/thrust blocks and pedestals shall be constructed of prescribed mix 25MPa/19 mm concrete.

The concrete shall be well punned round the pipe and, if in trenches, against the undisturbed faces and bottom of the trench. Backfilling behind or under thrust faces will not be permitted. Excess excavation shall be replaced with the prescribed mix concrete given above for anchor/thrust blocks at the Contractor’s expense, unless an item is scheduled to cover payment for over break. Care shall be taken to leave the joints accessible. No anchor/thrust blocks and pedestals shall be concreted until the approval of the Engineer has been obtained.

Anchor and thrust blocks will be measured by volume of concrete; the rate tendered shall include for any formwork required to construct the block.

PSL MEDIUM PRESSURE PIPELINES

PSL1 MATERIALS - WATER SUPPLY MAINS (Clauses 3.1 to 3.7)

(a) Steel fittings and specials shall be manufactured in accordance with the requirement of BS 534 but to the dimensions shown on the detailed layouts. Steel pipe sections shall be 6mm thick grade A complying with the requirements of SANS 719.

(b) Cast iron fittings and specials shall be, manufactured in accordance with the requirements of 1200L, clause 3.3.

(c) Flexible slip-on type Viking Johnson couplings shall be complete with removable centre registers (locating lugs). The area surrounding the locating lug shall be built up to prevent damage to the female thread on the Viking Johnson coupling.

(d) uPVC pipes shall confirm to SANS 966.

(d) PVC-O pipes shall confirm to SANS 16422.

(e) HDPE pipes shall confirm to SANS 533.

PSL2 CORROSION PROTECTION (Clause 3.9)

Protective coatings described in this sub-section shall not be measured for payment but shall be included in the rates tendered for piping, fittings, couplings and specials.

a) All cast iron valves, cast iron or steel fittings and cast iron or steel specials shall receive a two component solvent borne epoxy pipe coating and lining such as Copon KSIR 88 from Plascon or similar approved equivalent.

Surface preparation, application, testing and performance shall comply with the requirements of SANS 1217 type 1A, except that the minimum total dry film thickness shall be 300 micron.

Materials shall be applied in accordance with SANS 1217 and in accordance with the manufacturer's data sheet. Attention is drawn to the need for strict observance

of the manufacturer's minimum and maximum coating thickness and time interval between coats relative to ambient and steel temperatures.

The coating shall be applied in either two or three coats with either one or two coats being applied in the workshop. After installation any scratch or chip marks shall be touched up and the whole item covered with a further coat (or two coats) of copon to give a total thickness of not less than 250 micron.

b) All bolts, nuts and washers used for flanges and couplings shall be heavy duty galvanised (clause 3.9.5 of 1200L)

c) All steel fittings and specials indicated for encasing in concrete shall be wire

d) brushed externally and left uncoated for encasing in concrete. Lining shall be as described in (a) above.

e) Steel fittings that are partly enclosed in concrete shall be coated internally as well as the exposed external part of the fitting up to 100 mm into the concrete encasement as described in (a) above.

PSL3 VALVES (Clause 3.10)

(a) Gate valves shall be cast iron flanged waterworks pattern resilient seal valves of the class shown on the drawings and manufactured in accordance with the requirements of SANS 664. Valves shall have non-rising spindles, cap-top and be clockwise closing. Valves shall be provided with a spur gear if specified on the detailed fittings lists and with a mechanism to indicate the percentage closure of the valve. An arrow on the valve shall indicate the direction of flow.

(b) Valves 150mm and smaller shall be provided with a plain thrust collar. All of the valves shall be provided with ball thrust collars.

PSL4 MANHOLES, DRAW BOXES AND SURFACE BOXES (Clause 3.11)

Valve boxes shall confirm to the details as indicated on drawing 05.D004.

PSL5 HANDLING AND RIGGING (Clause 4.1)

PSL5.1 Transportation

Fittings, specials and valves shall be protected during transportation and handling against damage caused by impact, dropping, etc.

PSL5.2 Off-loading and storage

Pipes, fittings and specials shall at no time be laid, stacked or rolled directly onto the ground but shall be supported on suitable padded cradles or other approved material near each end of the pipe, fitting or special. Particular care shall be taken where pipes with fitted couplings are handled or stacked to prevent any pressure on the couplings.

PSL5.3 Inspection on delivery

The Engineer's Representative will thoroughly inspect all pipes, fittings and specials delivered to the site but his acceptance of same as being in good condition shall not relieve the Contractor of any of his obligations or responsibilities under this contract.

Materials rejected by the Engineer shall be removed from the site within 30 days and shall be replaced by other approved materials by the Contractor at his own expense.

PSL6 STANDARD HYDRAULIC PIPE TEST (Clause 7.3)

PSL 6.1 Acceptance Test

All water pipelines shall be tested as specified in Clause 7.3 after the erf connections have been installed before a Certificate of Practical Completion will be issued for a phase as specified in Clause C3.5.1.3. Field test pressures shall be 13,5 Bar in the lowest laying point of the pipeline or pipe network being tested.

Compensation for the acceptance testing of water pipes shall be included in the rate for the supply and lay of the pipeline.

PSL 6.2 Re-testing of Pipe Networks

After all civil engineering services, including the water reticulation for a phase as specified in Clause C3.5.1.3. have been tested and accepted a Certificate of Practical Completion will be issued for the phase and it will then be handed to the Electrical Contractor for the installation of the electrical work. During the period which the Site is handed over to the Electrical Contractor the water network will be kept under normal working pressure. Any visible leaks occurring during this period shall be repaired by the Civil Contractor. The repair cost of the leaks caused by the Electrical Contractor will be paid to the Contractor on daywork basis.

After completion of the electrical work, the existing pipelines shall be tested in the isolating zones as indicated on the drawings. Before an isolating zone is tested it shall be put under pressure from the water reticulation for at least 7 days. The test section shall be isolated by means of the existing isolating valves and shall be tested in accordance with clause PSL7.2. If the test section does not pass the initial test, the Contractor shall leave the testing equipment in place and locate and repair all leaks until the test section passes the prescribed test.

The leaks shall be located by digging exploratory holes at positions on the pipeline agreed with the Engineer

When the isolation zone passes the test the Contractor shall invite the Engineer's Site Representative and an official of the Sol Plaatje Local Municipality to witness the test. No section will be accepted as tested before it is signed off by the Engineer's Site Representative and the official of the Sol Plaatje Local Municipality.

PSL7 MEASUREMENT AND PAYMENT (Clause 8)

PSL7.1 Protective coatings and linings described in this sub-section shall not be measured for payment separately but shall be included in the rates tendered for piping, fittings and specials.

PSL 7.2 Re-testing and repairing of existing water reticulation..

The re-testing of existing water reticulation shall be measured per phase specified in clause PSL6.2. Each phase will be measured once only after all isolating zones in the phase have passed the prescribed hydraulic test.

The rate shall include for the isolating of the test sections, including all temporary fittings, the filling of the pipes with water and keeping the pipes full of water by means of a water tanker truck and the testing of the section until all leaks are repaired. Please note that the testing of sub-Phase 3 and sub-Phase 4 will be done during the Defects Liability Period. The Contractor shall allow in his rates to return to Site to do the testing.

All excavations to locate and repair leaks caused by the Electrical Contractor will be measured under SANS 1200A Clause 8.8.4: Excavation in soft material to expose existing services. (Item 3 43)

Repair cost of the leaks caused by the Electrical Contractor will be measured on daywork basis. Labourers engaged in the repairing of leaks shall not be used for any earthworks measured separately as specified above.

PSLB BEDDING (PIPES)

PSLB1 BEDDING (Sub-Clause 3.3)

PSLB1.2 Rigid Pipes

All concrete pipes shall be laid on a class B bedding as shown on Drawing LB-1 of SABS 1200LB.

PSLB1.3 Flexible pipes

All steel, PVC and polyethylene pipes will be regarded as being flexible and shall be bedded as per Drawing LB-2 of SABS 1200 LB.

PSLB2 MATERIAL NOT AVAILABLE FROM TRENCH EXCAVATION (Clause 3.4.2)

Material for the selected granular material for sewer pipes as well as PVC-O pipes shall be imported from a commercial source designated by the Contractor. Imported selected granular material shall conform to Clause 3.1, with the exception that the compactibility factor shall not exceed 0,1.

Bedding for other water pipes and stormwater pipes will be available from trench excavations, other excavations on site or from the designated borrow pit for subgrade material.

PSLB3 CLASS A BEDDING (Sub-Clause 5.2.1)

Concrete to be used in class A bedding to pipes shall be of grade 25MPa/19mm.

PSLB4 CONCRETE CASING TO PIPES (Sub-Clause 5.4)

Concrete to be used in the casing of pipes shall be of grade 25MPa/19mm.

PSLB5 TOLERANCE ON COMPACTION OF BEDDING MATERIAL

Degree of accuracy II shall prevail.

PSLB6 VOLUME OF BEDDING MATERIAL (SUB-CLAUSE 8.1.3)

The cross sectional area of the pipe shall be deducted from the area of the bedding calculated in terms of Drawing LB-4.

PSLB7 STONE BEDDING (Sub-Clause 8.2.6)

Add the following new sub-clause:

Stone bedding will be measured per cubic metre under the appropriate item in SABS 1200LB.

PSLC CABLE DUCTS - SABS 1200 LC

PSLC1 MATERIALS (Subclause 3.1)

Cable ducts for electrical cables shall be 110 mm diameter single or multiple Kabelflex ducts.

PSLC2 INSTALLATION (Subclause 5.3)

Ducts shall be laid, bedded, proved and marked according to the details contained in the specification drawing LC-1 (SABS 1 200LC).

PSLC2.1 In addition to painted marking on kerbs, cable ducts shall be provided with UV stabilized plastic service markers on both ends as specified for sewer erf connection. Refer to drawings 06D002.

PSLD SEWERS

PSLD1 PIPE MATERIAL (Sub-Clause 3.1)

Sewers shall be constructed using heavy duty uPVC structured wall sewer pipes in accordance with SABS 1601.

PSLD2 MANHOLES (Sub-Clause 3.5.2)

Manholes shall be constructed of precast concrete sections in accordance with the details that are shown in Drawing.D001.

Drop manholes shall conform to the details shown on Drawing.D005.

PSLE STORMWATER DRAINAGE

PSLE1 SKEWED ENDS (Subclause 3.1)

Skew ends shall be obtained from the manufacturer.

PSLE2 SOILCRETE LINING AND BACKFILL (New clause)

Soilcrete lining and backfill shall consist of an approved soil or gravel, 9 % OPC in channel linings and 5 % OPC in culvert backfill, calculated as a percentage of the dry mass of the soil used, a sand filler if required by the Engineer and a suitable volume of water, determined to ensure the correct slump and consistency. The exact mix proportions shall be determined in association with the Engineer after suitable trials. Soilcrete shall be mixed in a mechanical mixer and all constituents properly batched. Cubes manufactured form the approved mix shall be crushed in an approved laboratory and a proof strength determined. This proof strength and the average deviation obtained on cubes manufactured form batches controlled by the Engineer will be used to establish the strength of soilcrete produced during construction of the Works.

The aggregate used for soilcrete shall be sandy material, but may contain particles of diameter up to 38 mm and shall have a PI of less than 10. Material containing detrimental amounts of silt or clay shall not be used for soilcrete. The aggregate shall be obtained from an approved source.

The soilcrete shall be placed and then thoroughly compacted by means of vibrators so that all voids are filled. Stones or other approved formwork shall be packed at culvert ends to prevent the soilcrete from flowing outside the required limits.

The height to which the backfill in soilcrete is done shall be determined by the Engineer or shown on the Drawings and any remaining backfilling shall be carried out with a granular material as specified.

Payment for soilcrete shall be made per m3. The volume will be calculated form the authorised plan dimensions of the excavations and the height of the backfilling in soilcrete. The volume occupied by the conduits or other structures will not be included in the quantities measured.

The rate shall cover the cost of constructing soilcrete backfilling or channel linings complete, including OPC.

Overhaul will not be paid on any cement, water, or aggregate used for soilcrete.

PSLF ERF CONNECTIONS

PSLF1 MATERIALS

PSLF1.1 The following types of material shall be used for erf connections:

- Plasson uPVC saddles
- HDPE type IV class 10 pipes and compression fittings.
- GMS medium duty piping to SABS 62 for water meter installations.

PSLF2 CONSTRUCTION

Erf connections shall be constructed to the specifications and dimensions as set out on drawing .05D001.

PSLF4 MEASUREMENT AND PAYMENT

PSLF4.1 Supply, install and test erf connections as shown on the drawings. This rate also includes all pipes, fittings, excavations, bedding and backfill. Unit No.

PSLF4.2 Extra over the standard erf connections for supplying, laying in silty sand obtained from excavations, coupling and testing additional lengths of Type IV class 10 HDPE piping to SABS 533 for long and cross-street erf connections including excavation and backfill. m

The price shall include for the excavating and backfill, supplying, laying, coupling and testing of additional HDPE Type IV class 10 piping to extend the erf connections across and along the street.

PSLF4.3 Supply, install and test meterbox installations as shown on the drawings. This rate also includes all meters, meter boxes, pipes, fittings, excavations, bedding and backfill. Unit No.

PSLF4.4 Supply, install and test yard taps as shown on the drawings. This rate includes all pipes, fittings, from the meter box to the inside of the stand, including the apron slab, excavations, bedding and backfill. Unit No.

PSM ROADS (GENERAL)

PSM1 SOURCES OF MATERIAL (Sub-clause 3.5.1)

Materials for road pavement layers shall be obtained from excavations and the designated borrow pits on site or from commercial sources

No overhaul will be payable for road materials.

PSME SUBBASE

PSME1 REGIONAL FACTOR (Subclause 3.2.1)

A regional factor of 0,4 is applicable to the area of the Works.

PSME2 THICKNESS OF LAYERS (Sub-clauses 5.4.1 and 6.1.4)

The thickness of the layers shall be as indicated on the Drawings.

PSMJ SEGMENTED PAVING

PSMJ1 CLASS (Sub-clause 3.1.2)

Class 35 blocks are required for bus routes. Type A, S-A blocks as shown in Figure 17 of UTG2 shall be used.

PSMJ2 SAND FOR BEDDING AND JOINTING (Sub-clause 3.3)

Add the following to the first paragraph of the clause:

Sand for bedding shall conform to the relevant requirements of SANS 1083 for fine concrete aggregate, with the exception of the grading which shall conform to the specification below.

PSMJ3 LAYING OF UNITS (Sub-clause 5.4)

Units will be laid in the herringbone pattern.

PSMJ4 DEGREE OF ACCURACY

Paving shall be constructed to a degree of accuracy I.

PSMM ANCILLARY ROADWORKS - SABS 1200 MM

PSMM1 SCOPE OF THE WORKS: ROAD MARKINGS

Distributor streets shall receive full centre-line marking. Access collectors, access loops and cul-de-sac shall be marked at intersections only. Typical markings at these intersections are shown on the drawings. Access courts shall not be marked.

PSMM2 MECHANICAL EQUIPMENT FOR ROAD MARKINGS (Subclause 4.2.1)

The mechanical road-painting machine shall be provided with clearly visible amber warning flashing lights which shall always be in operation when the machine is on the road.

PSMM3 SCHEDULED ITEMS FOR PERMANENT ROAD SIGNS (Subclause 8.3)

Road signs will be measured per number which price shall include for signs manufactured from sheet steel, painting of background, symbols, characters, etc., retro-reflective materials where applicable, painted sign supports, all bolts, nuts and washers, excavation, backfilling and concreting, all as specified and detailed, complete.

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PORTION 2: CONTRACT

Section C3.4.3
Particular Specifications

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

C3.4.3 PARTICULAR SPECIFICATIONS

The following additional specifications for work not covered by the SABS 1200 Standardised Specifications are required for the Contract and are bound in hereafter:

- PWA: Fencing
- Health and Safety Specifications

Northern Cape Department of Co-operative Governance, Human Settlement and Traditional Affairs

LERATO PARK INTEGRATED HOUSING DEVELOPMENT

TENDER NUMBER: NC/24/2022

INTERNAL CIVIL ENGINEERING SERVICES: PHASE 6

PWA : FENCING

INDEX

PWA FENCING

PWA1 SCOPE

This specification includes all work in connection with the erection of fencing and taking down and re-erection of fencing as required. The standard of fencing, the positioning of the gates and the quantities shown in the Schedule of Quantities against each item under this section, may be subject to variation and the Contractor shall ascertain, from the Engineer, the exact location of, and specification to which the fencing shall be constructed, before placing any order for materials.

PWA2 MATERIALS

PWA2.1 Vermin, Stock Proof and Residential Fencing

Straining posts and stays, standards and droppers shall be either of timer or steel sections. All sections shall be to the dimensions and masses indicated on the Drawings. Timber sections shall be of creosote impregnated hardwood. Steel sections shall be either galvanised or painted to the specifications that are indicated on the Drawings.

All plain wire, barbed wire, wire netting, diamond mesh and blinding wire shall be according to the diameters and specifications indicated on the Drawings.

PWA2.2 Security Fencing

All posts, standards and droppers for security fencing shall be galvanised steel sections to the dimensions and details indicated on the Drawings. Plain and diamond wire and other fencing material shall all be according to the details indicated on the Drawings. All gates shall be to the details indicated on the Drawings and components shall either be galvanised or painted according to the specifications on the Drawings.

PWA2.3 Bolts

Bolts shall be galvanised steel bolts of the required length and diameter which shall not be less than 12mm. Eyebolts to gates of 18mm diameter. All the necessary bolts together with nuts and workers, shall be supplied with each post or gate.

PWA3 CORROSION PROTECTION

PWA3.1 General

All component of the security fence, excluding concertina barbed tape coils, shall be hot dip galvanised to the following requirements:

PWA3.2 Fencing Posts

Fabricate all posts from mild steel with due attention to Clause 6. After fabrication, fencing posts shall be hot dip galvanised to comply with SABS 763. The bottom of fencing posts to be buried in soil shall be cleaned in accordance with PSL 6.1.4 then coated with one coat water based vinyl chloride-vinylidene chloride copolymer primer, containing zinc phosphate, to a dry fill thickness of 16 hours drying, then apply two coats bituminous aluminium paint, complying with SABS 802, allowing a minimum of 16 hours between coats and a minimum of 3 days before burial.

The coating shall cover the whole of the base plate and upwards to a height of not less than 800mm above ground. The total dry film thickness of a primer and bituminous aluminium shall not be less than 80 micrometers.

PWA3.3 Straining wires, fencing wire, tie wires and barbed wire

Shall not be hot dip galvanised to comply with SABS 675 Class A, or SABS 935, as appropriate.

PWA4 CONSTRUCTION

PWA4.1 Clearing of Fence Site

All brush and other obstructions which may interfere with the proper construction of the fences shall be removed and surface irregularities shall be graded so that the fence will conform to the general contour of the ground.

No separate payment will be made for this clearing and full provision for these coats must be made in the tender.

PWA4.2 Connections

Existing cross fences shall be connected to the new fences. Straining posts with stays for every direction of strain shall be placed at the junction with existing fences and the wires of both fences properly fastened to the posts.

PWA4.3 Placing of Posts

All posts, struts and standards shall be firmly planted into the natural ground, be it soil, gravel or rock to the depths detailed. Gate posts and struts shall be erected at all gates and straining posts and struts shall be erected at all ends and corners or bends in the line of the fence and at all junctions with other fences. Intermediate straining posts and struts, and standards shall be spaced at the intervals indicated on the Drawings. All posts (excepting struts), standards and droppers shall be placed in a vertical position except in unusual locations where, in the opinion of the Engineer, it will be more satisfactory to place such member perpendicular to the slope of the ground. All posts, struts, standards and droppers shall be set in holes dug to the specified depth even in rock where blasting might be necessary to obtain the required depth. All gate posts shall be set in concrete and other members shall either be set in concrete or in well compacted backfill as indicated on the Drawings. No concreting or backfilling shall be done until all members have been properly aligned. All posts and struts for security fencing shall be set in concrete as shown on the Drawings. Steel members, not required to be set in concrete, may be driven into the ground provided such members are not buckled or otherwise damaged after being driven in, and provided further that correct alignment on the driven members is maintained.

PWA4.4 Attaching Wire

After all posts, struts and standards have been set firmly and after all concrete has hardened for at least four days the fence wire shall be attached accordingly to the details indicated on the Drawings. All wire shall be attached to the sides of the posts and standards furthest from the object being fenced. Wire shall be carefully stretched and strung in true alignment and without sag. Wire shall be attached to each post and standard by one of the following methods:

(a) By notching the member and securing the wire by means of binding wire or;

(b) By drilling holes through the member and strapping the wire with plain iron samples passing completely through the member or;

(c) Where iron members are used, by securing the wire by means of binding wire which must pass through the hole in the standard. Droppers shall be placed parallel to the standard at the intervals detailed on the drawings. Droppers shall be fixed to each fence wire with binding wire in such a manner as to prevent any slipping.

PWA4.5 Attaching Wire Netting or Diamond Mesh

Wire netting and diamond mesh covering shall be securely fixed to the fence according to the details on the drawings. In addition the wire netting on vermin proof fencing shall be fixed according to the Engineer's instruction by one of the following methods:

(a) By packing stones, placed end to end, on both sides of the fence so that no gap exist beneath the fence, or

(b) By folding back the bottom 150mm of wire netting so that it lies flat on the ground, and packing stones end to end on this flap, or

(c) By embedding the lower part of the wire netting at least 100mm into the ground and ramming the earth thoroughly to secure the netting.

PWA4.6 Installing Gates

Gates shall be installed in the position indicated by the Engineer. The gates shall be erected so as to swing in a horizontal plane at right angles to gate post clear of the ground in all positions.

PWA5 FINISHING: TRIMMING AND PAINTING

Where timber posts have been used, the tops of the posts shall be trimmed after the fencing has been erected, such that the top of the completed fence has a pleasing profile. The cuts shall be literally painted with creosote. All ungalvanised metal components of fencing shall be painted according to the specifications on the Drawings. After the fencing has been erected, any chipped or damaged paint work shall be touched up according to the same paint specifications.

PWA6 MEASUREMENT AND PAYMENT

PWA6.1 Vermin Proof, Stock Proof, Residential and Security Fencing

This fencing shall be measured in metres between the centres of gate and end posts along the general slope of the ground. Payment shall include full compensation for the clearing of the line, for the supply, painting and erection of all standards, intermediate straining posts and stays, droppers, plain wire, blinding wire, and all other components on the drawings but shall specifically exclude corner, end and gate posts and their stays. Payment shall also include for the concreting of posts where specified.

PWA6.2 Corners, Bends and Ends

Corners, ends and bends shall be measured by the number and shall include compensation for the supply, painting and erection of all posts and stays required at such ends, corners or bends shall also include for any concreting where so specified.

PWA6.3 Gates

Gates shall be measured by the number. A double gate as required for security fencing shall be measured as on number double gate. Payment shall include full compensation for the supply, painting and erection of the gate and ancillary components, as well as for the supply, painting and erection of gate posts and struts and for the concreting of such posts and struts (where required).

PWA6.4 Pay Items

1.	Vermin proof fencing	:	m
2.	Stock proof fencing	:	m
3.	Residential fencing	:	m
4.	Security fencing	:	m
5.	Corners, bends and ends (Shall distinguish between the different types of fencing)	:	No

6.	Gates (shall distinguish between the different types and dimensions of gates)	:	No
7.	Taking down and re-erection of fencing (shall distinguish between the different types of fencing)	:	m
8.	Taking down an re-erection of corners, bends and ends	:	No
9.	Taking down and re-erection of Gates	:	No
10.	Maintenance of fence for the duration of contract. (Shall distinguish between the different types of fencing)	:	m
11.	Taking down fence at the end of the contract and hand materials to the Employer	:	m

END OF SECTION