108/114/12/R4-2

UMKHOMAZI WATER PROJECT

MODULE 3 – POTABLE WATER MODULE

Detailed Feasibility Study

Pipeline Design Report - Volume 2

(BOQ Option B2)

Revision 1

October 2015

Planning Services
Engineering & Scientific Services
Umgeni Water

Prepared By:
Knight Piésold CONSULTING
171 Rodger Sishi Road, Westville, 3630

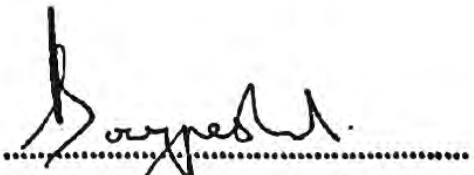
UMGENI WATER **OCTOBER 2015**

uMkhomazi Water Project

Detailed Feasibility Study – Pipeline Design Report – Volume 2 (BOQ Option B2)

Report No. 108/114/12/R4-2

Prepared by Knight Piésold Consulting



A Doorgapershad, Pr Eng
Study Leader: Knight Piésold Consulting

Approved for Umgeni Water Planning Services by:

K Meier, Pr Eng
Manager: Planning Services

This report is to be referred in bibliographies as:

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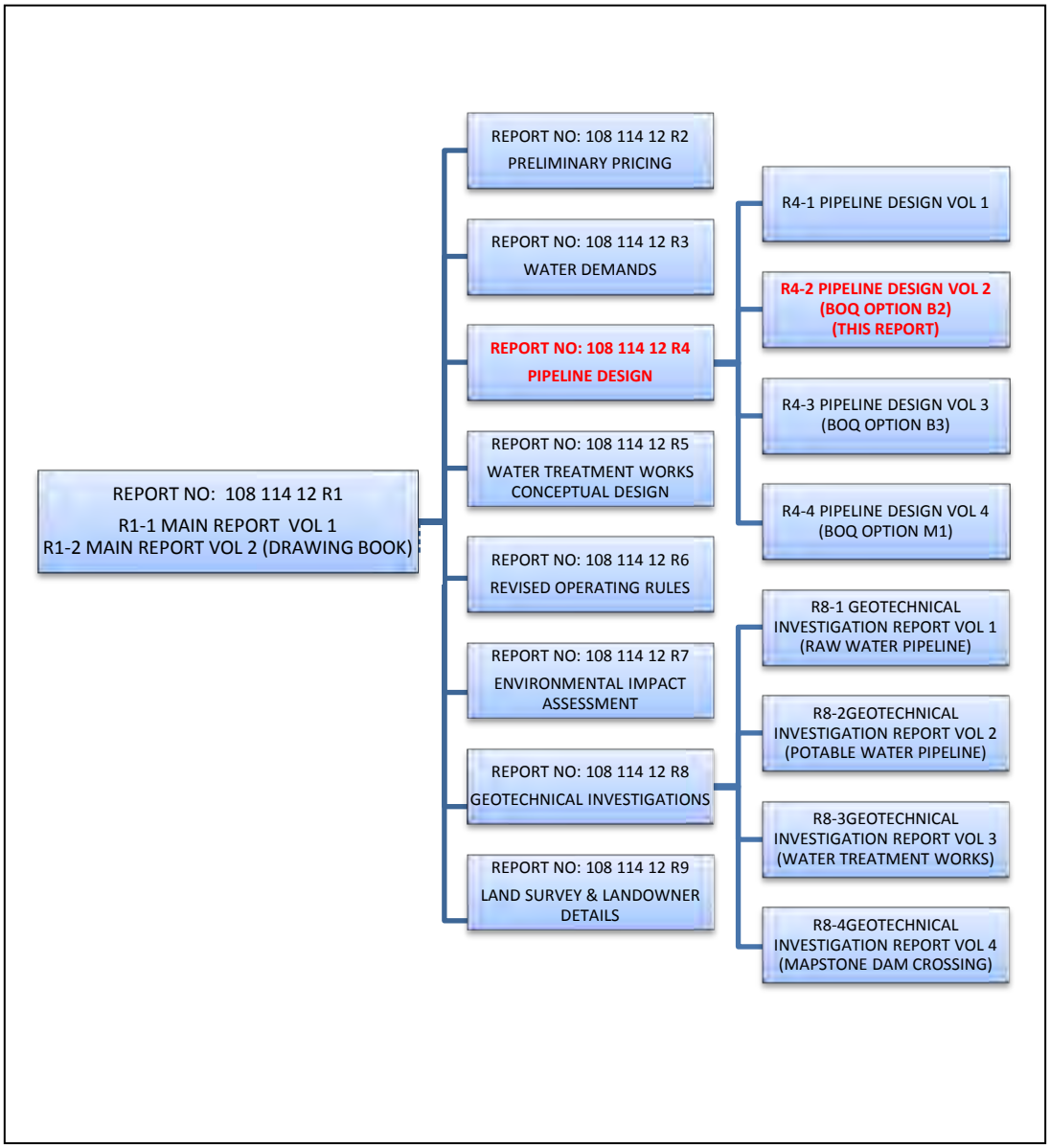
UMKHOMAZI WATER PROJECT

MODULE 3 – POTABLE WATER MODULE

Structure of Suite of Reports



DOCUMENT CONTROL SHEET

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31 OCT 2015	1	CLIENT APPROVAL	A. DOORGAPERSHAD

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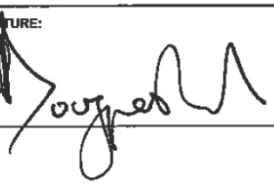
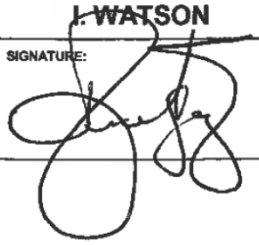
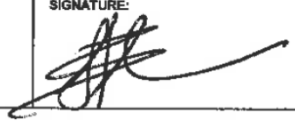
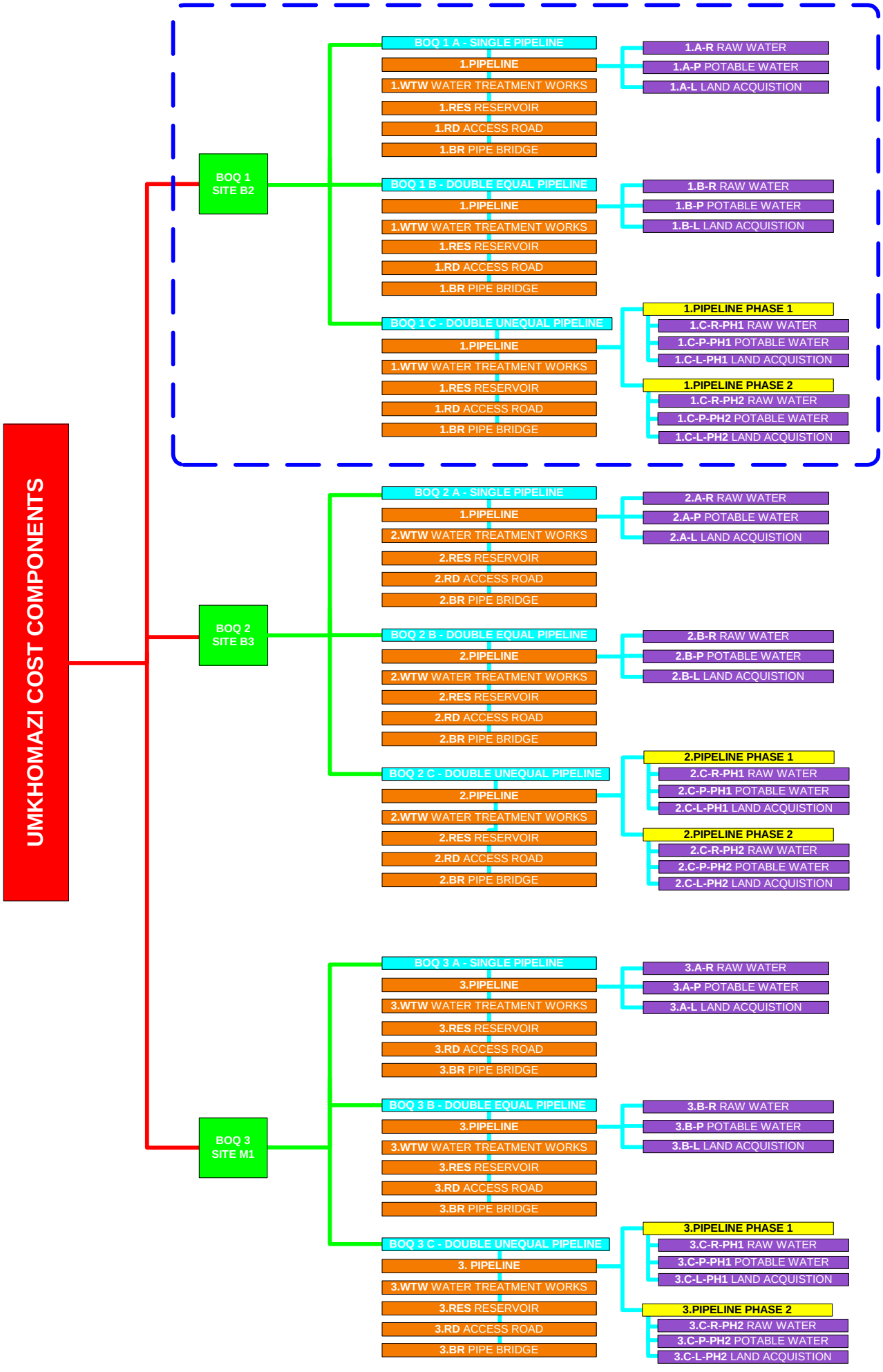
REVISION: 1	NAME: A. DOORGAPERSHAD	NAME: I. WATSON	NAME: K. MEIER
CLIENT APPROVAL	SIGNATURE: 	SIGNATURE: 	SIGNATURE: 

Knight Piésold (Pty) Limited

P O Box 221
RIVONIA
2128
Tel. +27 11 806-7111
Fax. +27 11 806-7100
E mail : enquiries@kprsa.co.za
Web site : www.knightpiesold.com


UMKHOMAZI COST COMPONENTS
BOQ 1 SITE B2
BOQ 1 A - SINGLE PIPELINE
1.PIPELINE
1.WTW WATER TREATMENT WORKS
1.RES RESERVOIR
1.RD ACCESS ROAD
1.BR PIPE BRIDGE
1.A-R RAW WATER
1.A-P POTABLE WATER
1.A-L LAND ACQUISTION
BOQ 1 B - DOUBLE EQUAL PIPELINE
1.PIPELINE
1.WTW WATER TREATMENT WORKS
1.RES RESERVOIR
1.RD ACCESS ROAD
1.BR PIPE BRIDGE
1.B-R RAW WATER
1.B-P POTABLE WATER
1.B-L LAND ACQUISTION
BOQ 1 C - DOUBLE UNEQUAL PIPELINE
1.PIPELINE
1.WTW WATER TREATMENT WORKS
1.RES RESERVOIR
1.RD ACCESS ROAD
1.BR PIPE BRIDGE
1.PIPELINE PHASE 1
1.C-R-PH1 RAW WATER
1.C-P-PH1 POTABLE WATER
1.C-L-PH1 LAND ACQUISTION
1.PIPELINE PHASE 2
1.C-R-PH2 RAW WATER
1.C-P-PH2 POTABLE WATER
1.C-L-PH2 LAND ACQUISTION
BOQ 2 SITE B3
BOQ 2 A - SINGLE PIPELINE
1.PIPELINE
2.WTW WATER TREATMENT WORKS
2.RES RESERVOIR
2.RD ACCESS ROAD
2.BR PIPE BRIDGE
2.A-R RAW WATER
2.A-P POTABLE WATER
2.A-L LAND ACQUISTION
BOQ 2 B - DOUBLE EQUAL PIPELINE
2.PIPELINE
2.WTW WATER TREATMENT WORKS
2.RES RESERVOIR
2.RD ACCESS ROAD
2.BR PIPE BRIDGE
2.B-R RAW WATER
2.B-P POTABLE WATER
2.B-L LAND ACQUISTION
BOQ 2 C - DOUBLE UNEQUAL PIPELINE
2.PIPELINE
2.WTW WATER TREATMENT WORKS
2.RES RESERVOIR
2.RD ACCESS ROAD
2.BR PIPE BRIDGE
2.PIPELINE PHASE 1
2.C-R-PH1 RAW WATER
2.C-P-PH1 POTABLE WATER
2.C-L-PH1 LAND ACQUISTION
2.PIPELINE PHASE 2
2.C-R-PH2 RAW WATER
2.C-P-PH2 POTABLE WATER
2.C-L-PH2 LAND ACQUISTION
BOQ 3 SITE M1
BOQ 3 A - SINGLE PIPELINE
3.PIPELINE
3.WTW WATER TREATMENT WORKS
3.RES RESERVOIR
3.RD ACCESS ROAD
3.BR PIPE BRIDGE
3.A-R RAW WATER
3.A-P POTABLE WATER
3.A-L LAND ACQUISTION
BOQ 3 B - DOUBLE EQUAL PIPELINE
3.PIPELINE
3.WTW WATER TREATMENT WORKS
3.RES RESERVOIR
3.RD ACCESS ROAD
3.BR PIPE BRIDGE
3.B-R RAW WATER
3.B-P POTABLE WATER
3.B-L LAND ACQUISTION
BOQ 3 C - DOUBLE UNEQUAL PIPELINE
3. PIPELINE
3.WTW WATER TREATMENT WORKS
3.RES RESERVOIR
3.RD ACCESS ROAD
3.BR PIPE BRIDGE
3.PIPELINE PHASE 1
3.C-R-PH1 RAW WATER
3.C-P-PH1 POTABLE WATER
3.C-L-PH1 LAND ACQUISTION
3.PIPELINE PHASE 2
3.C-R-PH2 RAW WATER
3.C-P-PH2 POTABLE WATER
3.C-L-PH2 LAND ACQUISTION

SUMMARY OF BILL OF QUANTITIES

OPTION A - SINGLE PIPELINE			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
SINGLE PIPELINE - RAW WATER	R 277 358 359.80	R 431 599 585.32	R 877 323 974.06
SINGLE PIPELINE - POTABLE WATER	R 953 743 967.97	R 927 949 467.07	R 645 876 139.68
LAND ACQUISITION AND CROP COMPENSATION	R 40 501 107.39	R 37 396 554.88	R 37 993 347.64
PIPE BRIDGE	R 44 228 054.00	R 44 228 054.00	R 44 228 054.00
ACCESS ROAD	R 12 999 470.88	R 7 729 519.56	R 7 673 300.04
WATER TREATMENT WORKS	R 1 551 215 453.02	R 1 647 167 855.80	R 1 562 054 964.77
RESERVOIR	R 194 287 465.26	R 194 287 465.26	R 194 287 465.26
TOTAL	**R 3 074 333 878.33**	**R 3 290 358 501.89**	**R 3 369 437 245.47**

OPTION B - DOUBLE EQUAL PIPELINE			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE EQUAL PIPELINE - RAW WATER	R 337 984 306.16	R 574 566 276.53	R 1 174 701 879.72
DOUBLE EQUAL PIPELINE - POTABLE WATER	R 1 260 210 982.21	R 1 205 162 552.49	R 775 046 998.60
LAND ACQUISITION AND CROP COMPENSATION	R 45 957 241.69	R 42 578 408.89	R 43 157 317.96
PIPE BRIDGE	R 44 228 054.00	R 44 228 054.00	R 44 228 054.00
ACCESS ROAD	R 12 999 470.88	R 7 729 519.56	R 7 673 300.04
WATER TREATMENT WORKS	R 1 551 215 453.02	R 1 647 167 855.80	R 1 562 054 964.77
RESERVOIR	R 194 287 465.26	R 194 287 465.26	R 194 287 465.26
TOTAL	**R 3 446 882 973.23**	**R 3 715 720 132.53**	**R 3 801 149 980.36**

OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 1			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE UNEQUAL PIPELINE - RAW WATER	R 218 617 038.06	R 341 652 937.21	R 678 688 674.69
DOUBLE UNEQUAL PIPELINE - POTABLE WATER	R 744 589 044.01	R 668 788 131.48	R 487 290 269.67
LAND ACQUISITION AND CROP COMPENSATION	R 41 935 124.28	R 38 936 576.75	R 39 407 078.51
PIPE BRIDGE	R 44 228 054.00	R 44 228 054.00	R 44 228 054.00
ACCESS ROAD	R 12 999 470.88	R 7 729 519.56	R 7 673 300.04
WATER TREATMENT WORKS	R 1 551 215 453.02	R 1 647 167 855.80	R 1 562 054 964.77
RESERVOIR	R 194 287 465.26	R 194 287 465.26	R 194 287 465.26
TOTAL	**R 2 807 871 649.50**	**R 2 942 790 540.06**	**R 3 013 629 806.95**

OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 2			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE UNEQUAL PIPELINE - RAW WATER	R 152 162 552.55	R 233 268 006.41	R 481 919 415.23
DOUBLE UNEQUAL PIPELINE - POTABLE WATER	R 492 774 860.29	R 449 411 777.08	R 361 885 686.88
LAND ACQUISITION AND CROP COMPENSATION	R 33 966 442.08	R 30 292 824.91	R 31 354 501.86
TOTAL	**R 678 903 854.92**	**R 712 972 608.40**	**R 875 159 603.98**

OPTION C - DOUBLE UNEQUAL PIPELINE - COMBINED			
TOTAL	**R 3 486 775 504.42**	**R 3 655 763 148.47**	**R 3 888 789 410.93**

SUMMARY OF BILL OF QUANTITIES

OPTION A - SINGLE PIPELINE			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
SINGLE PIPELINE - RAW WATER	1.A-R	2.A-R	3.A-R
SINGLE PIPELINE - POTABLE WATER	1.A-P	2.A-P	3.A-P
LAND ACQUISITION AND CROP COMPENSATION	1.A-L	2.A-L	3.A-L
PIPE BRIDGE	1.BR	2.BR	3.BR
ACCESS ROAD	1.RD	2.RD	3.RD
WATER TREATMENT WORKS	1.WTW	2.WTW	3.WTW
RESERVOIR	1.RES	2.RES	3.RES
DETAILED SUMMARY	**1A**	**2A**	**3A**

OPTION B - DOUBLE EQUAL PIPELINE			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE EQUAL PIPELINE - RAW WATER	1.B-R	2.B-R	3.B-R
DOUBLE EQUAL PIPELINE - POTABLE WATER	1.B-P	2.B-P	3.B-P
LAND ACQUISITION AND CROP COMPENSATION	1.B-L	2.B-L	3.B-L
PIPE BRIDGE	1.BR	2.BR	3.BR
ACCESS ROAD	1.RD	2.RD	3.RD
WATER TREATMENT WORKS	1.WTW	2.WTW	3.WTW
RESERVOIR	1.RES	2.RES	3.RES
DETAILED SUMMARY	**1B**	**2B**	**3B**

OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 1			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE UNEQUAL PIPELINE - RAW WATER	1.C-R-PH1	2.C-R-PH1	3.C-R-PH1
DOUBLE UNEQUAL PIPELINE - POTABLE WATER	1.C-P-PH1	2.C-P-PH1	3.C-P-PH1
LAND ACQUISITION AND CROP COMPENSATION	1.C-L-PH1	2.C-L-PH1	3.C-L-PH1
PIPE BRIDGE	1.BR	2.BR	3.BR
ACCESS ROAD	1.RD	2.RD	3.RD
WATER TREATMENT WORKS	1.WTW	2.WTW	3.WTW
RESERVOIR	1.RES	2.RES	3.RES
DETAILED SUMMARY	**1C-PH1**	**2C-PH1**	**3C-PH1**

OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 2			
COSTS COMPONENTS	**WTW OPTION 1 - SITE B2**	**WTW OPTION 2 - SITE B3**	**WTW OPTION 3 - SITE M1**
DOUBLE UNEQUAL PIPELINE - RAW WATER	1.C-R-PH2	2.C-R-PH2	3.C-R-PH2
DOUBLE UNEQUAL PIPELINE - POTABLE WATER	1.C-P-PH2	2.C-P-PH2	3.C-P-PH2
CROP COMPENSATION	1.C-L-PH2	2.C-L-PH2	3.C-L-PH2
DETAILED SUMMARY	**1C-PH2**	**2C-PH2**	**3C-PH2**

OPTION C - DOUBLE UNEQUAL PIPELINE - COMBINED			
DETAILED SUMMARY	**1C**	**2C**	**3C**

BILL OF QUANTITIES 1 A		
BOQ No.	**DESCRIPTION**	**AMOUNT**
1.A-R	SINGLE PIPELINE - RAW WATER	**R 277 358 359.80**
1.A-P	SINGLE PIPELINE - POTABLE WATER	**R 953 743 967.97**
1.A-L	LAND ACQUISITION AND CROP COMPENSATION	**R 40 501 107.39**
1.BR	PIPE BRIDGE	**R 44 228 054.00**
1.RD	SITE B2 ACCESS ROAD	**R 12 999 470.88**
1.WTW	SITE B2 WATER TREATMENT WORKS	**R 1 551 215 453.02**
1.RES	SITE B2 RESERVOIR	**R 194 287 465.26**
TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES		**R 3 074 333 878.33**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 64 005 775.34
SECTION 2	SITE CLEARANCE	R 1 597 373.91
SECTION 3	EARTHWORKS	R 251 917.16
SECTION 4	PIPE TRENCHES	R 28 919 744.70
SECTION 5	GABIONS AND PITCHING	R 871 381.30
SECTION 6	CONCRETE STRUCTURAL	R 2 222 158.72
SECTION 7	MEDIUM PRESSURE PIPELINES	R 164 294 386.07
SECTION 8	BEDDING (PIPES)	R 11 809 222.60
SECTION 9	CATHODIC PROTECTION & AC MITIGATION	R 3 386 400.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 A		**R 277 358 359.80**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	22.41	R 9 775.00	R 219 057.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	7.26	R 39 716.00	R 288 338.16
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	224100	R 3.22	R 721 602.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	65	R 58.65	R 3 812.25
	b) Gravel	m^2	3395	R 54.05	R 183 499.75
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	15	R 27.60	R 414.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence.	m	200	R 126.00	R 25 200.00
	ii) All timber fence.	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence.	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence.	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 1 597 373.91**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	Isolating Valve Chambers (1 Off)	m^3	252	R 132.02	R 33 269.04
	Meter Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (7 Off)	m^3	404	R 132.02	R 53 336.08
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	230	R 20.70	R 4 761.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	0	140	R 243.80	R 34 132.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
CARRIED FORWARD TO SUMMARY					**R 251 917.16**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches for DN3030 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	5 -6 m	m^3	113050	R 171.47	R 19 384 683.50
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	33915	R 20.70	R 702 040.50
2)	Hard Rock (Provisional Quantity)	m^3	23215	R 243.80	R 5 659 817.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	2265	93.22	R 211 143.30
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	1135	R 81.32	R 92 298.20
	SELECTED BACKFILL	0			
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
	FINISHINGS				
	Topsoiling	m^2	224100	R 10.47	R 2 346 327.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	3395	R 97.75	R 331 861.25
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	65	R 162.15	R 10 539.75
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	5	R 2 505.24	R 12 526.20
CARRIED FORWARD TO SUMMARY					**R 28 919 744.70**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	560	R 1 355.24	R 758 934.40
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	560	R 15.99	R 8 954.40
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	250	R 413.97	R 103 492.50
CARRIED FORWARD TO SUMMARY					**R 871 381.30**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN3000 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	0	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN3000 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN2800 Meter Chamber (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2800 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (7 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	435	R 272.90	R 118 711.50
8.2.2	Smooth to exposed face of Internal walls	m^2	330	R 406.79	R 134 240.70
8.2.2	Smooth to underside of roof slab	m^2	50	R 435.54	R 21 777.00
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	75	R 143.73	R 10 779.75
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	14	R 476.94	R 6 677.16
				CARRIED FORWARD	**R 542 250.44**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 542 250.44**
	DN200 air vents in roof slab	No.	14	R 476.94	R 6 677.16
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	7	R 1 586.47	R 11 105.29
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
8.3	**REINFORCEMENT**				
	DN3000 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN2800 Meter Chamber (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (7 Off)				
8.3.1	Mild Steel	t	3.66	R 12 032.07	R 44 037.38
8.3.1	High Tensile Steel	t	14.65	R 12 032.07	R 176 269.83
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	Concrete encasement DN3000 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN3000 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 42 037.45
	Walls	m^3	54	R 1 955.23	R 104 604.81
				CARRIED FORWARD	**R 1 358 387.86**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 358 387.86**
	DN2800 Meter Chamber (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 104 604.81
	DN200 Scour Chambers (7 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	125	R 125.27	R 15 658.75
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	57	R 1 955.23	R 110 470.50
	Walls	m^3	81	R 1 955.23	R 157 396.02
	Roof slab	m^3	9.5	R 1 955.23	R 18 574.69
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	Concrete encasement DN3000 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN3000 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 829.68
	To top of walls	m^2	10	R 21.55	R 204.73
8.4.4(a)	**DN2800 Meter Chamber (1 Off)** Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 829.68
	To top of pipe cradle	m^2	6.5	R 21.55	R 140.08
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (7 Off)				
8.4.4(a)	Wood-floated				
				CARRIED FORWARD	**R 2 064 889.12**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 064 889.12**
	To floor slabs	m^2	125	R 21.55	R 2 687.29
	To roof slabs	m^2	47	R 21.55	R 1 019.32
	To top of walls	m^2	32	R 21.55	R 691.76
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	40	R 33.92	R 1 356.80
	Polyurethane joint sealant (10mm x 20mm)	m	40	R 44.41	R 1 776.40
	Neoprene inserts for pipes at pipe supports - For DN3000	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chamber	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Meter Chamber	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m^3	7.0	R 2 215.64	R 15 509.48
	Removable roof slabs in Air Valve Type 4	m^3	7.0	R 2 215.64	R 15 509.48
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN3000 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	ii) DN300 in IV Chamber	No.	2	R 2 873.22	R 5 746.44
	iii) DN200 in IV Chamber	No.	1	R 1 969.29	R 1 969.29
	iv) DN2800 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	v) DN200 in Scour Chamber	No.	7	R 1 969.29	R 13 785.03
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	14	R 750.50	R 10 507.00
	Securex manhole cover in roof slab in chambers	No.	7	R 2 680.10	R 18 760.70
				CARRIED FORWARD TO SUMMARY	**R 2 222 158.72**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN3000 * 16mm thick * grade X42 pipe	m	5234	R 20 218.00	R 105 826 066.50
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN3000 * 16mm thick * grade X42 pipe	m	5234	R 7 879.43	R 41 242 906.48
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN3000 * 16mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	25	R 30 943.90	R 773 597.52
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	22	R 52 071.94	R 1 145 582.71
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 68 471.61	R 410 829.66
8.2.3 & PSL 3.4.4.1	46 to 60 deg	0	3	R 68 471.61	R 205 414.83
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 87 504.80	R 87 504.80
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 100 313.30	R 200 626.61
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 84 748.30	R 508 489.80
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 140 890.51	R 845 343.06
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	7	R 30 216.41	R 211 514.87
	DN3000 Isolating Valve Assembly Complete	No.	1	R 7 330 671.12	R 7 330 671.12
	DN2800 Meter Chamber Assembly Complete	No.	1	R 4 140 172.80	R 4 140 172.80
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
				CARRIED FORWARD	**R 162 928 720.76**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 162 928 720.76**
	Scour Valve Chamber				
	a) Type 1	No.	7	R 28 475.27	R 199 326.89
	Air Valve Chambers				
	a) Type 2	No.	6	R 61 874.57	R 371 247.42
	b) Type 4	No.	6	R 61 875.57	R 371 253.42
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	26	R 421.80	R 11 039.03
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN3000 * 16mm thick * grade X42 pipe	No.	2	R 57 458.69	R 114 917.39
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	5234.25	R 56.91	R 297 881.17
				CARRIED FORWARD TO SUMMARY	**R 164 294 386.07**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown,				
	i) from commercial sources	m^3	40880	R 284.97	R 11 649 573.60
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m^3	100	R 425.07	R 42 507.00
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	1000	R 15.99	R 15 990.00
CARRIED FORWARD TO SUMMARY					**R 11 809 222.60**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 220 094 761.84
SECTION 2	SITE CLEARANCE	R 4 321 475.20
SECTION 3	EARTHWORKS	R 660 016.74
SECTION 4	PIPE TRENCHES	R 99 901 079.20
SECTION 5	GABIONS AND PITCHING	R 1 454 016.93
SECTION 6	CONCRETE STRUCTURAL	R 5 125 059.55
SECTION 7	MEDIUM PRESSURE PIPELINES	R 534 595 075.94
SECTION 8	BEDDING (PIPES)	R 40 991 575.45
SECTION 9	PIPE JACKING	R 33 199 467.13
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 13 401 440.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 A		**R 953 743 967.97**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	88.17	R 9 775.00	R 861 861.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	4.7	R 39 716.00	R 186 665.20
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	881700	R 3.22	R 2 839 074.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	135	R 58.65	R 7 917.75
	b) Gravel	m^2	3170	R 54.05	R 171 338.50
	c) Concrete	m^2	1521	R 41.40	R 62 969.40
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	36	R 27.60	R 993.60
	b) Concrete	m	300	R 33.35	R 10 005.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence.	m	200	R 126.00	R 25 200.00
	ii) All timber fence.	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence.	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence.	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 4 321 475.20**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN2820 Isolating Valve Chambers (3 Off)	m^3	756	R 132.02	R 99 807.12
	DN2540 Isolating Valve Chambers (1 Off)	m^3	252	R 132.02	R 33 269.04
	Meter Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (16 Off)	m^3	927	R 132.02	R 122 382.54
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	550	R 20.70	R 11 385.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	330	R 243.80	R 80 454.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	3000	R 93.15	R 279 450.00
CARRIED FORWARD TO SUMMARY					**R 660 016.74**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches for DN2820 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	5 -6 m	m^3	311340	R 171.47	R 53 385 469.80
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	93405	R 20.70	R 1 933 483.50
2)	Hard Rock (Provisional Quantity)	m^3	64000	R 243.80	R 15 603 200.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	6230	93.22	R 580 760.60
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	3115	R 81.32	R 253 311.80
8.3.2(a)	Excavate in all materials for trenches for DN2540 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	4 - 5 m	m^3	64565	R 156.01	R 10 072 785.65
	5 -6 m	m^3	17525	R 171.47	R 3 005 011.75
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	24630	R 20.70	R 509 841.00
2)	Hard Rock (Provisional Quantity)	m^3	17295	R 243.80	R 4 216 521.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	1645	93.22	R 153 346.90
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	825	R 81.32	R 67 089.00
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
	FINISHINGS				
	Topsoiling	m^2	881700	R 10.47	R 9 231 399.00
				CARRIED FORWARD	**R 99 180 728.00**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 99 180 728.00**
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	3170	R 97.75	R 309 867.50
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	135	R 162.15	R 21 890.25
	c) Concrete	m^2	1521	R 247.25	R 376 067.25
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	5	R 2 505.24	R 12 526.20
	CARRIED FORWARD TO SUMMARY				**R 99 901 079.20**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	985	R 1 355.24	R 1 334 775.88
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	985	R 15.99	R 15 748.55
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	250	R 413.97	R 103 492.50
CARRIED FORWARD TO SUMMARY					**R 1 454 016.93**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2820 IV Chambers (3 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	535	R 272.90	R 146 001.50
8.2.2	Smooth to exposed face of Internal walls	m^2	475	R 406.79	R 193 225.25
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	145	R 143.73	R 20 840.85
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	3	R 381.55	R 1 144.65
	DN300 pipe through chamber walls	No.	6	R 476.94	R 2 861.64
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2820 pipe through chamber walls	No.	6	R 3 091.57	R 18 549.42
	DN2540 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	2	R 381.55	R 763.10
	DN300 pipe through chamber walls	No.	4	R 476.94	R 1 907.76
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2540 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN2540 Meter Chamber (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
				CARRIED FORWARD	**R 629 955.21**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 629 955.21**
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2540 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (16 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	995	R 272.90	R 271 535.50
8.2.2	Smooth to exposed face of Internal walls	m^2	755	R 406.79	R 307 126.45
8.2.2	Smooth to underside of roof slab	m^2	115	R 435.54	R 50 087.10
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	170	R 143.73	R 24 434.10
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	32	R 476.94	R 15 262.08
	DN200 air vents in roof slab	No.	32	R 476.94	R 15 262.08
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	16	R 1 586.47	R 25 383.52
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	286	R 143.73	R 41 106.78
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	286	R 143.73	R 41 106.78
8.3	**REINFORCEMENT**				
	DN2820 IV Chambers (3 Off)				
8.3.1	Mild Steel	t	5.59	R 12 032.07	R 67 259.27
8.3.1	High Tensile Steel	t	22.35	R 12 032.07	R 268 916.76
	DN2540 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN2540 Meter Chamber (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (16 Off)				
				CARRIED FORWARD	**R 1 987 225.13**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 987 225.13**
8.3.1	Mild Steel	t	8.36	R 12 032.07	R 100 588.11
8.3.1	High Tensile Steel	t	33.45	R 12 032.07	R 402 472.74
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	Concrete encasement DN2820 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
	Concrete encasement DN2540 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2820 IV Chambers (3 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	141	R 125.27	R 17 663.07
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	64	R 1 955.23	R 124 157.11
	Walls	m^3	160	R 1 955.23	R 312 836.80
	DN2540 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN2540 Meter Chamber (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 104 604.81
	DN200 Scour Chambers (16 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	286	R 125.27	R 35 827.22
				CARRIED FORWARD	**R 3 625 608.44**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 3 625 608.44**
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	130	R 1 955.23	R 253 202.29
	Walls	m^3	184	R 1 955.23	R 358 784.71
	Roof slab	m^3	22.0	R 1 955.23	R 43 015.06
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	Concrete encasement DN2820 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
	Concrete encasement DN2540 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2820 IV Chambers (3 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	115	R 21.55	R 2 486.87
	To top of walls	m^2	29	R 21.55	R 614.18
	DN2540 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN2540 Meter Chamber (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 829.68
	To top of pipe cradle	m^2	6.5	R 21.55	R 140.08
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (16 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	286	R 21.55	R 6 163.30
				CARRIED FORWARD	**R 4 764 572.48**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 4 764 572.48**
	To roof slabs	m^2	108	R 21.55	R 2 327.40
	To top of walls	m^2	73	R 21.55	R 1 573.15
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	40	R 33.92	R 1 356.80
	Polyurethane joint sealant (10mm x 20mm)	m	40	R 44.41	R 1 776.40
	Neoprene inserts for pipes at pipe supports - For DN2820	m^2	20	R 114.33	R 2 286.60
	Neoprene inserts for pipes at pipe supports - For DN2540	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	37.7	R 2 215.64	R 83 441.00
	Removable roof slabs in Meter Chamber	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m^3	11.7	R 2 215.64	R 25 922.99
	Removable roof slabs in Air Valve Type 4	m^3	11.7	R 2 215.64	R 25 922.99
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2820 in IV Chamber	No.	6	R 6 618.09	R 39 708.54
	ii) DN2540 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	iii) DN300 in IV Chamber	No.	8	R 2 873.22	R 22 985.76
	iv) DN200 in IV Chamber	No.	4	R 1 969.29	R 7 877.16
	v) DN2540 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	vi) DN200 in Scour Chamber	No.	16	R 1 969.29	R 31 508.64
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	32	R 750.50	R 24 016.00
	Securex manhole cover in roof slab in chambers	No.	16	R 2 680.10	R 42 881.60
				CARRIED FORWARD TO SUMMARY	**R 5 125 059.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2820 * 16mm thick * grade X42 pipe	m	15908	R 18 809.00	R 299 204 167.50
	DN2540 * 12mm thick * grade X42 pipe	m	4788	R 12 718.00	R 60 893 784.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2820 * 16mm thick * grade X42 pipe	m	15908	R 6 825.08	R 108 569 960.10
	DN2540 * 12mm thick * grade X42 pipe	m	4788	R 5 537.03	R 26 511 299.64
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2820 * 16mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	18	R 26 803.28	R 482 459.04
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	19	R 45 104.17	R 856 979.23
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	17	R 59 309.40	R 1 008 259.80
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	4	R 59 309.40	R 237 237.60
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 75 795.75	R 75 795.75
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 86 890.34	R 173 780.68
	Bends for DN2540 * 12mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	20	R 21 744.89	R 434 897.80
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	10	R 36 591.98	R 365 919.80
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 48 116.35	R 288 698.10
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 48 116.35	R 144 349.05
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	3	R 61 491.36	R 184 474.08
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 70 492.14	R 281 968.56
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 84 748.30	R 1 101 727.90
				CARRIED FORWARD	**R 500 815 758.63**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 500 815 758.63**
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 140 890.51	R 1 831 576.63
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	16	R 30 216.41	R 483 462.56
	DN2820 Isolating Valve Assembly Complete	No.	3	R 6 443 761.69	R 19 331 285.07
	DN2540 Isolating Valve Assembly Complete	No.	1	R 4 533 829.62	R 4 533 829.62
	DN2540 Meter Chamber Assembly Complete	No.	1	R 4 140 172.80	R 4 140 172.80
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
	Scour Valve Chamber				
	a) Type 1	No.	16	R 28 475.27	R 455 604.32
	Air Valve Chambers				
	a) Type 2	No.	13	R 61 874.57	R 804 369.41
	b) Type 4	No.	13	R 61 875.57	R 804 382.41
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	100	R 421.80	R 42 180.00
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2820 * 16mm thick * grade X42 pipe	No.	2	R 49 770.12	R 99 540.24
	DN2540 * 12mm thick * grade X42 pipe	No.	2	R 37 566.67	R 75 133.34
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	20695.5	R 56.91	R 1 177 780.91
				CARRIED FORWARD TO SUMMARY	**R 534 595 075.94**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) DN2820	m^3	113205	R 284.97	R 32 260 028.85
	i) DN2540	m^3	30080	R 284.97	R 8 571 897.60
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m^3	100	R 425.07	R 42 507.00
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	1000	R 15.99	R 15 990.00
CARRIED FORWARD TO SUMMARY					**R 40 991 575.45**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200LG	**SECTION 9 : PIPE JACKING**				
	DN4000 PIPE JACK - BAYNESFIELD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 92 504.16	R 1 850 083.20
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 81 144.00	R 1 622 880.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	550	R 1 840.00	R 1 012 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	100	R 3 450.00	R 345 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	160	R 3 450.00	R 552 000.00
PSLG 8.2.15, 5.11	Close DN4000 sleeve end with brick wall	No.	2	R 9 088.13	R 18 176.26
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN4000 PIPE JACK - R56				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
				CARRIED FORWARD	**R 7 743 369.46**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 7 743 369.46**
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 92 504.16	R 1 850 083.20
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 81 144.00	R 1 622 880.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	440	R 1 840.00	R 809 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	80	R 3 450.00	R 276 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	125	R 3 450.00	R 431 250.00
PSLG 8.2.15, 5.11	Close DN4000 sleeve end with brick wall	No.	2	R 9 088.13	R 18 176.26
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN4000 PIPE JACK - R624				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
				CARRIED FORWARD	**R 14 006 631.42**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 14 006 631.42**
8.2.2 PSLG 3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 92 504.16	R 1 850 083.20
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 81 144.00	R 1 622 880.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	440	R 1 840.00	R 809 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	80	R 3 450.00	R 276 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	125	R 3 450.00	R 431 250.00
PSLG 8.2.15, 5.11	Close DN4000 sleeve end with brick wall	No.	2	R 9 088.13	R 18 176.26
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3750 PIPE JACK R603				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 73 743.75	R 1 474 875.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 64 687.50	R 1 293 750.00
				CARRIED FORWARD	**R 23 033 975.88**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 23 033 975.88**
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	400	R 1 840.00	R 736 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	75	R 3 450.00	R 258 750.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	120	R 3 450.00	R 414 000.00
PSLG 8.2.15, 5.11	Close DN3750 sleeve end with brick wall	No.	2	R 7 245.00	R 14 490.00
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3750 PIPE JACK UMLAAS RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	35	R 73 743.75	R 2 581 031.25
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	35	R 64 687.50	R 2 264 062.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	700	R 1 840.00	R 1 288 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
				CARRIED FORWARD	**R 31 866 789.63**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 31 866 789.63**
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	135	R 3 450.00	R 465 750.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	210	R 3 450.00	R 724 500.00
PSLG 8.2.15, 5.11	Close DN3750 sleeve end with brick wall	No.	2	R 7 245.00	R 14 490.00
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
				CARRIED FORWARD TO SUMMARY	**R 33 199 467.13**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	LAND ACQUISITION	R 4 302 050.66
SECTION 2	CROP COMPENSATION - FORESTRY	R 7 117 200.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 14 115 027.76
SECTION 4	CROP COMPENSATION - MAIZE	R 3 326 400.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 2 504 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 523 846.01
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 1 588 950.00
SECTION 8	LAND RENTAL	R 5 023 382.97
TOTAL CARRIED TO BILL OF QUANTITIES 1 A		**R 40 501 107.39**

DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 1B		
BOQ No.	**DESCRIPTION**	**AMOUNT**
1.B-R	DOUBLE EQUAL PIPELINE - RAW WATER	**R 337 984 306.16**
1.B-P	DOUBLE EQUAL PIPELINE - POTABLE WATER	**R 1 260 210 982.21**
1.B-L	LAND ACQUISITION AND CROP COMPENSATION	**R 45 957 241.69**
1.BR	PIPE BRIDGE	**R 44 228 054.00**
1.RD	SITE B2 ACCESS ROAD	**R 12 999 470.88**
1.WTW	SITE B2 WATER TREATMENT WORKS	**R 1 551 215 453.02**
1.RES	SITE B2 RESERVOIR	**R 194 287 465.26**
TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES		**R 3 446 882 973.23**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 77 996 378.34
SECTION 2	SITE CLEARANCE	R 1 858 876.87
SECTION 3	EARTHWORKS	R 410 684.32
SECTION 4	PIPE TRENCHES	R 35 934 595.10
SECTION 5	GABIONS AND PITCHING	R 1 470 142.59
SECTION 6	CONCRETE STRUCTURAL	R 4 272 646.71
SECTION 7	MEDIUM PRESSURE PIPELINES	R 195 180 156.02
SECTION 8	BEDDING (PIPES)	R 17 474 426.20
SECTION 9	CATHODIC PROTECTION & AC MITIGATION	R 3 386 400.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 B		**R 337 984 306.16**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	24.91	R 9 775.00	R 243 495.25
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.07	R 39 716.00	R 320 508.12
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	249100	R 3.22	R 802 102.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	106	R 58.65	R 6 216.90
	b) Gravel	m^2	5652	R 54.05	R 305 490.60
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	15	R 27.60	R 414.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence.	m	200	R 126.00	R 25 200.00
	ii) All timber fence.	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence.	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence.	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 1 858 876.87**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	Isolating Valve Chambers (2 Off)	m^3	504	R 132.02	R 66 538.08
	Meter Chamber (2 Off)	m^3	504	R 132.02	R 66 538.08
	Scour Valve Chambers				
	a) Type 1 (14 Off)	m^3	808	R 132.02	R 106 672.16
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	460	R 20.70	R 9 522.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	280	R 243.80	R 68 264.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
CARRIED FORWARD TO SUMMARY					**R 410 684.32**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches for DN2300 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	4-5 m	m^3	145465	R 156.01	R 22 693 994.65
	5-6 m	m^3	17975	R 171.47	R 3 082 173.25
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	33915	R 20.70	R 702 040.50
2)	Hard Rock (Provisional Quantity)	m^3	23215	R 243.80	R 5 659 817.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	3270	93.22	R 304 829.40
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	1635	R 81.32	R 132 958.20
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
	FINISHINGS				
	Topsoiling	m^2	249100	R 10.47	R 2 608 077.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	5652	R 97.75	R 552 483.00
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	106	R 162.15	R 17 187.90
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	5	R 2 505.24	R 12 526.20
CARRIED FORWARD TO SUMMARY					**R 35 934 595.10**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	997	R 1 355.24	R 1 350 713.50
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	997	R 15.99	R 15 936.59
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	250	R 413.97	R 103 492.50
CARRIED FORWARD TO SUMMARY					**R 1 470 142.59**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2300 IV Chambers (2 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m^2	320	R 406.79	R 130 172.80
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	70	R 143.73	R 10 061.10
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	2	R 381.55	R 763.10
	DN300 pipe through chamber walls	No.	4	R 476.94	R 1 907.76
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2300 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	DN2100 Meter Chamber (2 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m^2	320	R 406.79	R 130 172.80
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	70	R 143.73	R 10 061.10
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2100 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (14 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	870	R 272.90	R 237 423.00
8.2.2	Smooth to exposed face of Internal walls	m^2	660	R 406.79	R 268 481.40
8.2.2	Smooth to underside of roof slab	m^2	100	R 435.54	R 43 554.00
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	150	R 143.73	R 21 559.50
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	28	R 476.94	R 13 354.32
				CARRIED FORWARD	**R 1 080 433.02**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 080 433.02**
	DN200 air vents in roof slab	No.	28	R 476.94	R 13 354.32
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	14	R 1 586.47	R 22 210.58
	DN200 Air Valve Chamber Type 2 (12 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	270	R 143.73	R 38 807.10
	DN200 Air Valve Chamber Type 4 (12 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	270	R 143.73	R 38 807.10
8.3	**REINFORCEMENT**				
	DN2300 IV Chambers (2 Off)				
8.3.1	Mild Steel	t	3.76	R 12 032.07	R 45 240.58
8.3.1	High Tensile Steel	t	15.00	R 12 032.07	R 180 481.05
	DN2100 Meter Chamber (2 Off)				
8.3.1	Mild Steel	t	3.76	R 12 032.07	R 45 240.58
8.3.1	High Tensile Steel	t	15.00	R 12 032.07	R 180 481.05
	DN200 Scour Chambers (14 Off)				
8.3.1	Mild Steel	t	7.32	R 12 032.07	R 88 074.75
8.3.1	High Tensile Steel	t	29.30	R 12 032.07	R 352 539.65
	DN200 Air Valve Chamber Type 2 (12 Off)				
8.3.1	Mild Steel	t	0.18	R 12 032.07	R 2 165.77
8.3.1	High Tensile Steel	t	0.70	R 12 032.07	R 8 422.45
	DN200 Air Valve Chamber Type 4 (12 Off)				
8.3.1	Mild Steel	t	0.18	R 12 032.07	R 2 165.77
8.3.1	High Tensile Steel	t	0.70	R 12 032.07	R 8 422.45
	Concrete encasement DN2300 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2300 IV Chambers (2 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	94	R 125.27	R 11 775.38
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	44	R 1 955.23	R 86 030.12
	Walls	m^3	108	R 1 955.23	R 211 164.84
				CARRIED FORWARD	**R 2 566 217.45**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 566 217.45**
	DN2100 Meter Chamber (2 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	94	R 125.27	R 11 775.38
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	15.0	R 1 789.80	R 26 847.00
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	88	R 1 955.23	R 172 060.24
	Walls	m^3	108	R 1 955.23	R 211 164.84
	DN200 Scour Chambers (14 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	250	R 125.27	R 31 317.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	114	R 1 955.23	R 222 896.22
	Walls	m^3	162	R 1 955.23	R 316 747.26
	Roof slab	m^3	19.0	R 1 955.23	R 37 149.37
	DN200 Air Valve Chamber Type 2 (12 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.0	R 1 955.23	R 13 686.61
	DN200 Air Valve Chamber Type 4 (12 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.0	R 1 955.23	R 13 686.61
	Concrete encasement DN2300 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	150	R 2 215.64	R 332 346.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2300 IV Chambers (2 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	78	R 21.55	R 1 680.90
	To top of walls	m^2	20	R 21.55	R 431.00
8.4.4(a)	**DN2100 Meter Chamber (2 Off)** Wood-floated				
	To floor slabs	m^2	78	R 21.55	R 1 680.90
	To top of pipe cradle	m^2	13.0	R 21.55	R 280.15
	To top of walls	m^2	20	R 21.55	R 431.00
	DN200 Scour Chambers (14 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	250	R 21.55	R 5 387.50
	To roof slabs	m^2	94	R 21.55	R 2 025.70
				CARRIED FORWARD	**R 3 967 811.63**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 3 967 811.63**
	To top of walls	m^2	64	R 21.55	R 1 379.20
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	80	R 33.92	R 2 713.60
	Polyurethane joint sealant (10mm x 20mm)	m	80	R 44.41	R 3 552.80
	Neoprene inserts for pipes at pipe supports - For DN2300	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chamber	m^3	19.0	R 2 215.64	R 42 097.16
	Removable roof slabs in Meter Chamber	m^3	19.0	R 2 215.64	R 42 097.16
	Removable roof slabs in Air Valve-Type2 Chamber	m^3	14.0	R 2 215.64	R 31 018.96
	Removable roof slabs in Air Valve Type 4	m^3	14.0	R 2 215.64	R 31 018.96
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2300 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
	ii) DN300 in IV Chamber	No.	4	R 2 873.22	R 11 492.88
	iii) DN200 in IV Chamber	No.	2	R 1 969.29	R 3 938.58
	iv) DN2100 in Meter Chamber	No.	4	R 5 165.34	R 20 661.36
	v) DN200 in Scour Chamber	No.	14	R 1 969.29	R 27 570.06
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	28	R 750.50	R 21 014.00
	Securex manhole cover in roof slab in chambers	No.	14	R 2 680.10	R 37 521.40
				CARRIED FORWARD TO SUMMARY	**R 4 272 646.71**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2300 * 12mm thick * grade X42 pipe	m	10460	R 11 697.00	R 122 351 789.70
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2300 * 12mm thick * grade X42 pipe	m	10460	R 4 687.35	R 49 030 149.74
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2300 * 12mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	50	R 18 408.03	R 920 401.32
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	44	R 30 976.76	R 1 362 977.27
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	12	R 40 732.65	R 488 791.85
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	6	R 40 732.65	R 244 395.92
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	2	R 52 055.19	R 104 110.39
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 59 674.76	R 238 699.05
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	12	R 84 748.30	R 1 016 979.60
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	12	R 140 890.51	R 1 690 686.12
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	14	R 30 216.41	R 423 029.74
	DN2300 Isolating Valve Assembly Complete	No.	2	R 3 940 670.25	R 7 881 340.50
	DN2100 Meter Chamber Assembly Complete	No.	2	R 3 395 025.04	R 6 790 050.08
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
				CARRIED FORWARD	**R 192 543 401.27**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 192 543 401.27**
	Scour Valve Chamber				
	a) Type 1	No.	14	R 28 475.27	R 398 653.78
	Air Valve Chambers				
	a) Type 2	No.	12	R 61 874.57	R 742 494.84
	b) Type 4	No.	12	R 61 875.57	R 742 506.84
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	50	R 421.80	R 21 090.00
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2300 * 12mm thick * grade X42 pipe	No.	4	R 34 181.25	R 136 725.00
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	10460	R 56.91	R 595 284.29
				CARRIED FORWARD TO SUMMARY	**R 195 180 156.02**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown,				
	i) from commercial sources	m^3	60760	R 284.97	R 17 314 777.20
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m^3	100	R 425.07	R 42 507.00
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	1000	R 15.99	R 15 990.00
CARRIED FORWARD TO SUMMARY					**R 17 474 426.20**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 290 817 918.97
SECTION 2	SITE CLEARANCE	R 4 719 488.52
SECTION 3	EARTHWORKS	R 945 981.26
SECTION 4	PIPE TRENCHES	R 113 460 978.75
SECTION 5	GABIONS AND PITCHING	R 2 529 088.67
SECTION 6	CONCRETE STRUCTURAL	R 22 624 124.75
SECTION 7	MEDIUM PRESSURE PIPELINES	R 701 172 254.39
SECTION 8	BEDDING (PIPES)	R 62 288 808.40
SECTION 9	PIPE JACKING	R 48 250 898.50
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 13 401 440.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 B		**R 1 260 210 982.21**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	97.97	R 9 775.00	R 957 656.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	5.22	R 39 716.00	R 207 317.52
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	979700	R 3.22	R 3 154 634.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	110	R 58.65	R 6 451.50
	b) Gravel	m^2	2703	R 54.05	R 146 097.15
	c) Concrete	m^2	1345	R 41.40	R 55 683.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	36	R 27.60	R 993.60
	b) Concrete	m	300	R 33.35	R 10 005.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence	m	200	R 126.00	R 25 200.00
	ii) All timber fence.	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 4 719 488.52**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN2234 Isolating Valve Chambers (6 Off)	m^3	1506	R 132.02	R 198 822.12
	DN1829 Isolating Valve Chambers (2 Off)	m^3	504	R 132.02	R 66 538.08
	Meter Chamber (2 Off)	m^3	504	R 132.02	R 66 538.08
	Scour Valve Chambers				
	a) Type 1 (32 Off)	m^3	1849	R 132.02	R 244 104.98
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	1100	R 20.70	R 22 770.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	660	R 243.80	R 160 908.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	2000	R 93.15	R 186 300.00
CARRIED FORWARD TO SUMMARY					**R 945 981.26**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches for DN2234 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	4-5m	m^3	418190	R 156.01	R 65 241 821.90
	5-6m	m^3	52850	R 171.47	R 9 062 189.50
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	49750	R 20.70	R 1 029 825.00
2)	Hard Rock (Provisional Quantity)	m^3	26195	R 243.80	R 6 386 341.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	9425	93.22	R 878 598.50
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	4715	R 81.32	R 383 423.80
8.3.2(a)	Excavate in all materials for trenches for DN1829 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	4-5m	m^3	109095	R 156.01	R 17 019 910.95
	5-6m	m^3	2760	R 171.47	R 473 257.20
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	11325	R 20.70	R 234 427.50
2)	Hard Rock (Provisional Quantity)	m^3	5735	R 243.80	R 1 398 193.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	2240	93.22	R 208 812.80
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	1120	R 81.32	R 91 078.40
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
				CARRIED FORWARD	**R 102 576 387.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 102 576 387.55**
	FINISHINGS				
	Topsoiling	m^2	979700	R 10.47	R 10 257 459.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	2703	R 97.75	R 264 218.25
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	110	R 162.15	R 17 836.50
	c) Concrete	m^2	1345	R 247.25	R 332 551.25
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	5	R 2 505.24	R 12 526.20
	CARRIED FORWARD TO SUMMARY				**R 113 460 978.75**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	1769	R 1 355.24	R 2 397 311.14
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	1769	R 15.99	R 28 285.03
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	250	R 413.97	R 103 492.50
CARRIED FORWARD TO SUMMARY					**R 2 529 088.67**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2234 IV Chambers (6 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	1065	R 272.90	R 290 638.50
8.2.2	Smooth to exposed face of Internal walls	m^2	960	R 406.79	R 390 518.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	210	R 143.73	R 30 183.30
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	6	R 381.55	R 2 289.30
	DN300 pipe through chamber walls	No.	12	R 476.94	R 5 723.28
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2234 pipe through chamber walls	No.	12	R 3 091.57	R 37 098.84
	DN1829 IV Chambers (2 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m^2	320	R 406.79	R 130 172.80
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	70	R 143.73	R 10 061.10
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	2	R 381.55	R 763.10
	DN300 pipe through chamber walls	No.	4	R 476.94	R 1 907.76
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN1829 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	DN2032 Meter Chamber (2 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m^2	320	R 406.79	R 130 172.80
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	70	R 143.73	R 10 061.10
				CARRIED FORWARD	**R 1 248 444.56**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 248 444.56**
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2032 pipe through chamber walls	No.	4	R 2 033.93	R 8 135.72
	DN200 Scour Chambers (32 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	1989	R 272.90	R 542 681.14
8.2.2	Smooth to exposed face of Internal walls	m^2	1509	R 406.79	R 613 671.77
8.2.2	Smooth to underside of roof slab	m^2	217	R 435.54	R 94 574.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	343	R 143.73	R 49 278.86
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	64	R 476.94	R 30 524.16
	DN200 air vents in roof slab	No.	64	R 476.94	R 30 524.16
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	32	R 1 586.47	R 50 767.04
	DN200 Air Valve Chamber Type 2 (26 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
	DN200 Air Valve Chamber Type 4 (26 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
8.3	**REINFORCEMENT**				
	DN2234 IV Chambers (6 Off)				
8.3.1	Mild Steel	t	1122.00	R 12 032.07	R 13 499 982.54
8.3.1	High Tensile Steel	t	44.85	R 12 032.07	R 539 638.34
	DN1829 IV Chambers (2 Off)				
8.3.1	Mild Steel	t	3.76	R 12 032.07	R 45 240.58
8.3.1	High Tensile Steel	t	15.00	R 12 032.07	R 180 481.05
	DN2032 Meter Chamber (2 Off)				
8.3.1	Mild Steel	t	3.76	R 12 032.07	R 45 240.58
8.3.1	High Tensile Steel	t	15.00	R 12 032.07	R 180 481.05
	DN200 Scour Chambers (32 Off)				
				CARRIED FORWARD	**R 17 241 592.06**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 17 241 592.06**
8.3.1	Mild Steel	t	16.69	R 12 032.07	R 200 763.68
8.3.1	High Tensile Steel	t	66.74	R 12 032.07	R 803 054.73
	DN200 Air Valve Chamber Type 2 (26 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	DN200 Air Valve Chamber Type 4 (26 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	Concrete encasement DN2234 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	0.25	R 12 032.07	R 3 008.02
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
	Concrete encasement DN1829 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2234 IV Chambers (6 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	285	R 125.27	R 35 701.95
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	128	R 1 955.23	R 249 291.83
	Walls	m^3	321	R 1 955.23	R 627 628.83
	DN1829 IV Chambers (2 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	94	R 125.27	R 11 775.38
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	44	R 1 955.23	R 86 030.12
	Walls	m^3	108	R 1 955.23	R 211 164.84
	DN2032 Meter Chamber (2 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	94	R 125.27	R 11 775.38
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	15.0	R 1 789.80	R 26 847.00
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	44 107	R 1 955.23	R 209 209.61
	DN200 Scour Chambers (32 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	571	R 125.27	R 71 582.86
				CARRIED FORWARD	**R 20 125 783.21**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 20 125 783.21**
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	263	R 1 955.23	R 513 946.17
	Walls	m^3	366	R 1 955.23	R 715 055.54
	Roof slab	m^3	45.7	R 1 955.23	R 89 381.94
	DN200 Air Valve Chamber Type 2 (26 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	DN200 Air Valve Chamber Type 4 (26 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	Concrete encasement DN2234 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
	Concrete encasement DN1829 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2234 IV Chambers (6 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	231	R 21.55	R 4 978.05
	To top of walls	m^2	60	R 21.55	R 1 293.00
	DN1829 IV Chambers (2 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	78	R 21.55	R 1 680.90
	To top of walls	m^2	20	R 21.55	R 431.00
	DN2032 Meter Chamber (2 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	78	R 21.55	R 1 680.90
	To top of pipe cradle	m^2	13.0	R 21.55	R 280.15
	To top of walls	m^2	20	R 21.55	R 431.00
	DN200 Scour Chambers (32 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	571	R 21.55	R 12 314.29
				CARRIED FORWARD	**R 21 939 712.60**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 21 939 712.60**
	To roof slabs	m^2	217	R 21.55	R 4 679.43
	To top of walls	m^2	149	R 21.55	R 3 201.71
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	120	R 33.92	R 4 070.40
	Polyurethane joint sealant (10mm x 20mm)	m	120	R 44.41	R 5 329.20
	Neoprene inserts for pipes at pipe supports - For DN2234	m^2	40	R 114.33	R 4 573.20
	Neoprene inserts for pipes at pipe supports - For DN1829	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	75.2	R 2 215.64	R 166 616.13
	Removable roof slabs in Meter Chamber	m^3	19.0	R 2 215.64	R 42 097.16
	Removable roof slabs in Air Valve-Type2	m^3	15.0	R 2 215.64	R 33 234.60
	Removable roof slabs in Air Valve Type 4	m^3	15.0	R 2 215.64	R 33 234.60
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2234 in IV Chamber	No.	12	R 6 618.09	R 79 417.08
	ii) DN1829 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
	iii) DN300 in IV Chamber	No.	16	R 2 873.22	R 45 971.52
	iv) DN200 in IV Chamber	No.	8	R 1 969.29	R 15 754.32
	v) DN2032 in Meter Chamber	No.	4	R 5 165.34	R 20 661.36
	vi) DN200 in Scour Chamber	No.	32	R 1 969.29	R 63 017.28
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	64	R 750.50	R 48 032.00
	Securex manhole cover in roof slab in chambers	No.	32	R 2 680.10	R 85 763.20
	CARRIED FORWARD TO SUMMARY				**R 22 624 124.75**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2234 * 14mm thick * grade X42 pipe	m	31773	R 13 030.15	R 414 006 999.52
	DN1829 * 10mm thick * grade X42 pipe	m	9576	R 7 626.00	R 73 026 576.00
	DN2820 * 16mm thick * grade X42 pipe	m	200	R 18 809.00	R 3 761 800.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2234 * 14mm thick * grade X42 pipe	m	31773	R 4 283.27	R 136 092 337.71
	DN1829 * 10mm thick * grade X42 pipe	m	9576	R 2 871.02	R 27 492 887.52
	DN2820 * 16mm thick * grade X42 pipe	m	200	R 6 825.08	R 1 365 016.00
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2234 * 14mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	70	R 16 821.17	R 1 177 481.90
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	50	R 28 306.41	R 1 415 320.50
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	24	R 37 221.31	R 893 311.44
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	10	R 37 221.31	R 372 213.10
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	4	R 47 567.79	R 190 271.16
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 54 530.52	R 218 122.08
	Bends for DN1829 * 10mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	40	R 11 275.02	R 451 000.69
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	20	R 18 973.43	R 379 468.66
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	12	R 24 948.97	R 299 387.69
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	6	R 24 948.97	R 149 693.85
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	6	R 31 884.09	R 191 304.55
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	8	R 36 551.12	R 292 408.96
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
				CARRIED FORWARD	**R 661 775 601.33**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 661 775 601.33**
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	26	R 84 748.30	R 2 203 455.80
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	26	R 140 890.51	R 3 663 153.26
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	32	R 30 216.41	R 966 925.12
	DN2234 Isolating Valve Assembly Complete	No.	6	R 2 485 438.22	R 14 912 629.30
	DN1829 Isolating Valve Assembly Complete	No.	2	R 2 083 001.89	R 4 166 003.78
	DN2032 Meter Chamber Assembly Complete	No.	2	R 3 309 911.55	R 6 619 823.10
	DN2820 Y-Piece with DN2234 branches.	No.	1	R 86 890.34	R 86 890.34
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
	Scour Valve Chamber				
	a) Type 1	No.	32	R 28 475.27	R 911 208.64
	Air Valve Chambers				
	a) Type 2	No.	26	R 61 874.57	R 1 608 738.82
	b) Type 4	No.	26	R 61 875.57	R 1 608 764.82
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	207	R 421.80	R 87 205.04
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2234 * 14mm thick * grade X42 pipe	No.	4	R 31 234.66	R 124 938.64
	DN1829 * 10mm thick * grade X42 pipe	No.	4	R 20 936.20	R 83 744.81
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	41349	R 56.91	R 2 353 171.59
				CARRIED FORWARD TO SUMMARY	**R 701 172 254.39**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) DN2234	m^3	175395	R 284.97	R 49 982 313.15
	i) DN1829	m^3	42625	R 284.97	R 12 146 846.25
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m^3	100	R 425.07	R 42 507.00
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	1000	R 15.99	R 15 990.00
CARRIED FORWARD TO SUMMARY					**R 62 288 808.40**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200LG	**SECTION 9 : PIPE JACKING**				
	DN3250 PIPE JACK 1 - BAYNESFIELD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	25	R 55 389.75	R 1 384 743.75
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 48 587.50	R 1 214 687.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	365	R 1 840.00	R 671 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	80	R 3 450.00	R 276 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 2 - BAYNESFIELD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
				CARRIED FORWARD	**R 6 280 644.85**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 6 280 644.85**
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	25	R 55 389.75	R 1 384 743.75
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 48 587.50	R 1 214 687.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	365	R 1 840.00	R 671 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	80	R 3 450.00	R 276 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 1 - R56				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 55 389.75	R 1 107 795.00
				CARRIED FORWARD	**R 12 581 127.20**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 12 581 127.20**
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 48 587.50	R 971 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	290	R 1 840.00	R 533 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	65	R 3 450.00	R 224 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 2 - R56				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 55 389.75	R 1 107 795.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 48 587.50	R 971 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	290	R 1 840.00	R 533 600.00
				CARRIED FORWARD	**R 18 495 985.80**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 18 495 985.80**
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	65	R 3 450.00	R 224 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 1 - R624				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 55 389.75	R 1 107 795.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 48 587.50	R 971 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	290	R 1 840.00	R 533 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
				CARRIED FORWARD	**R 22 931 244.40**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 22 931 244.40**
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	65	R 3 450.00	R 224 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 2 - R624				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 55 389.75	R 1 107 795.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 48 587.50	R 971 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	295	R 1 840.00	R 542 800.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	65	R 3 450.00	R 224 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
				CARRIED FORWARD	**R 27 698 690.50**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 27 698 690.50**
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3000 PIPE JACK 1 - R603				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 47 196.00	R 943 920.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 41 400.00	R 828 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	260	R 1 840.00	R 478 400.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	60	R 3 450.00	R 207 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3000 PIPE JACK 2 - R603				
				CARRIED FORWARD	**R 32 051 347.70**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 32 051 347.70**
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 47 196.00	R 943 920.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 41 400.00	R 828 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	260	R 1 840.00	R 478 400.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	60	R 3 450.00	R 207 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	90	R 3 450.00	R 310 500.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
8.2.1 PSLG 8.2.1	**DN3000 PIPE JACK 1 - UMLAAS ROAD RAIL Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
				CARRIED FORWARD	**R 37 176 213.80**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 37 176 213.80**
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	35	R 47 196.00	R 1 651 860.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	35	R 41 400.00	R 1 449 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	450	R 1 840.00	R 828 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	105	R 3 450.00	R 362 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	155	R 3 450.00	R 534 750.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3000 PIPE JACK 2 - UMLAAS ROAD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	35	R 47 196.00	R 1 651 860.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	35	R 41 400.00	R 1 449 000.00
				CARRIED FORWARD	**R 46 362 937.40**
				BROUGHT FORWARD	**R 46 362 937.40**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	450	R 1 840.00	R 828 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	105	R 3 450.00	R 362 250.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	155	R 3 450.00	R 534 750.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
CARRIED FORWARD TO SUMMARY					**R 48 250 898.50**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	LAND ACQUISITION	R 5 736 067.54
SECTION 2	CROP COMPENSATION - FORESTRY	R 7 908 000.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 15 683 364.18
SECTION 4	CROP COMPENSATION - MAIZE	R 3 696 000.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 2 782 500.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 804 273.34
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 1 765 500.00
SECTION 8	LAND RENTAL	R 5 581 536.63
TOTAL CARRIED TO BILL OF QUANTITIES 1 B		**R 45 957 241.69**

DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 1C - PHASE 1		
BOQ No.	**DESCRIPTION**	**AMOUNT**
1.C-R-PH1	DOUBLE UNEQUAL PIPELINE - RAW WATER	**R 218 617 038.06**
1.C-P-PH1	DOUBLE UNEQUAL PIPELINE - POTABLE WATER	**R 744 589 044.01**
1.C-L-PH1	LAND ACQUISITION AND CROP COMPENSATION	**R 41 935 124.28**
1.BR	PIPE BRIDGE	**R 44 228 054.00**
1.RD	SITE B2 ACCESS ROAD	**R 12 999 470.88**
1.WTW	SITE B2 WATER TREATMENT WORKS	**R 1 551 215 453.02**
1.RES	SITE B2 RESERVOIR	**R 194 287 465.26**
TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES		**R 2 807 871 649.50**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 50 450 085.71
SECTION 2	SITE CLEARANCE	R 1 858 876.87
SECTION 3	EARTHWORKS	R 286 049.16
SECTION 4	PIPE TRENCHES	R 22 319 946.22
SECTION 5	GABIONS AND PITCHING	R 728 777.35
SECTION 6	CONCRETE STRUCTURAL	R 2 297 684.83
SECTION 7	MEDIUM PRESSURE PIPELINES	R 127 731 291.22
SECTION 8	BEDDING (PIPES)	R 9 557 926.70
SECTION 9	CATHODIC PROTECTION & AC MITIGATION	R 3 386 400.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 1		**R 218 617 038.06**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	24.91	R 9 775.00	R 243 495.25
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.07	R 39 716.00	R 320 508.12
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	249100	R 3.22	R 802 102.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	106	R 58.65	R 6 216.90
	b) Gravel	m^2	5652	R 54.05	R 305 490.60
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	15	R 27.60	R 414.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence	m	200	R 126.00	R 25 200.00
	ii) All timber fence	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 1 858 876.87**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN2540 Isolating Valve Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	DN2337 Meter Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (7 Off)	m^3	404	R 132.02	R 53 336.08
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	230	R 20.70	R 4 761.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	280	R 243.80	R 68 264.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
CARRIED FORWARD TO SUMMARY					**R 286 049.16**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches, backfill with graded material, compact hydraulically/ mechanically to specified density and dispose of surplus/unsuitable material:				
	for DN2540 pipe				
	4-5 m	m^3	62465	R 156.01	R 9 745 164.65
	5-6 m	m^3	28505	R 171.47	R 4 887 752.35
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	24170	R 20.70	R 500 319.00
2)	Hard Rock (Provisional Quantity)	m^3	15075	R 243.80	R 3 675 285.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	1820	93.22	R 169 660.40
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	910	R 81.32	R 74 001.20
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 41 250.00	R 41 250.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 41 250.00	R 41 250.00
	FINISHINGS				
	Topsoiling	m^2	249100	R 10.47	R 2 608 077.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	5652	R 97.75	R 552 483.00
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	106	R 162.15	R 17 187.90
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	3	R 2 505.24	R 7 515.72
CARRIED FORWARD TO SUMMARY					**R 22 319 946.22**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	494	R 1 355.24	R 669 136.20
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	494	R 15.99	R 7 894.90
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	125	R 413.97	R 51 746.25
CARRIED FORWARD TO SUMMARY					**R 728 777.35**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2540 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	No.	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2540 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN2337 Meter Chamber (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2337 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (7 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	435	R 272.90	R 118 711.50
8.2.2	Smooth to exposed face of Internal walls	m^2	330	R 406.79	R 134 240.70
8.2.2	Smooth to underside of roof slab	m^2	50	R 435.54	R 21 777.00
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	75	R 143.73	R 10 779.75
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
				CARRIED FORWARD	**R 535 573.28**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 535 573.28**
	DN200 pipe through chamber wall	No.	28	R 476.94	R 13 354.32
	DN200 air vents in roof slab	No.	28	R 476.94	R 13 354.32
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	14	R 1 586.47	R 22 210.58
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
8.3	**REINFORCEMENT**				
	DN2540 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN2337 Meter Chamber (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (7 Off)				
8.3.1	Mild Steel	t	3.66	R 12 032.07	R 44 037.38
8.3.1	High Tensile Steel	t	14.65	R 12 032.07	R 176 269.83
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	Concrete encasement DN2540 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2540 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
				CARRIED FORWARD	**R 1 236 205.22**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 236 205.22**
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN2337 Meter Chamber (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	44	R 1 955.23	R 86 030.12
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN200 Scour Chambers (7 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	125	R 125.27	R 15 658.75
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	57	R 1 955.23	R 111 448.11
	Walls	m^3	81	R 1 955.23	R 158 373.63
	Roof slab	m^3	9.5	R 1 955.23	R 18 574.69
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	Concrete encasement DN2540 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2540 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN2337 Meter Chamber (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of pipe cradle	m^2	6.5	R 21.55	R 140.08
				CARRIED FORWARD	**R 2 137 068.69**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 137 068.69**
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (14 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	125	R 21.55	R 2 693.75
	To roof slabs	m^2	47	R 21.55	R 1 012.85
	To top of walls	m^2	32	R 21.55	R 689.60
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	80	R 33.92	R 2 713.60
	Polyurethane joint sealant (10mm x 20mm)	m	80	R 44.41	R 3 552.80
	Neoprene inserts for pipes at pipe supports - For DN2540	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Meter Chambers	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m^3	7.0	R 2 215.64	R 15 509.48
	Removable roof slabs in Air Valve Type 4	m^3	7.0	R 2 215.64	R 15 509.48
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2540 in DN2540 IV Chamber	No.	2	R 6 618.09	R 13 236.18
	ii) DN300 in DN2540 IV Chamber	No.	2	R 2 873.22	R 5 746.44
	iii) DN200 in DN2540 IV Chamber	No.	1	R 1 969.29	R 1 969.29
	vii) DN2337 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	ix) DN200 in Scour Chamber	No.	7	R 1 969.29	R 13 785.03
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	14	R 750.50	R 10 507.00
	Securex manhole cover in roof slab in chambers	No.	7	R 2 680.10	R 18 760.70
				CARRIED FORWARD TO SUMMARY	**R 2 297 684.83**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2540 * 14mm thick * grade X42 pipe	m	5234	R 14 826.00	R 77 602 990.50
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2540 * 14mm thick * grade X42 pipe	m	5234	R 5 537.03	R 28 982 199.28
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2540 * 14mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	25	R 21 744.89	R 543 622.28
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	22	R 36 591.98	R 805 023.63
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 48 116.35	R 288 698.13
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 48 116.35	R 144 349.06
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 61 491.36	R 61 491.36
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 70 492.14	R 140 984.28
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 84 748.30	R 508 489.80
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 140 890.51	R 845 343.06
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	7	R 30 216.41	R 211 514.87
	DN2540 Isolating Valve Assembly Complete	No.	2	R 4 553 644.51	R 9 107 289.02
	DN2337 Meter Chamber Assembly Complete	No.	2	R 3 579 143.67	R 7 158 287.34
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
				CARRIED FORWARD	**R 126 400 282.60**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 126 400 282.60**
	Scour Valve Chamber				
	a) Type 1	No.	7	R 28 475.27	R 199 326.89
	Air Valve Chambers				
	a) Type 2	No.	6	R 61 874.57	R 371 247.42
	b) Type 4	No.	6	R 61 875.57	R 371 253.42
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	25	R 421.80	R 10 545.00
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2540 * 14mm thick * grade X42 pipe	No.	2	R 40 377.36	R 80 754.72
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	5234	R 56.91	R 297 881.17
				CARRIED FORWARD TO SUMMARY	**R 127 731 291.22**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) for DN2540 pipe	m^3	33260	R 284.97	R 9 478 102.20
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m^3	50	R 425.07	R 21 253.50
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	500	R 15.99	R 7 995.00
CARRIED FORWARD TO SUMMARY					**R 9 557 926.70**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 171 828 240.92
SECTION 2	SITE CLEARANCE	R 4 880 257.37
SECTION 3	EARTHWORKS	R 469 171.48
SECTION 4	PIPE TRENCHES	R 78 671 767.18
SECTION 5	GABIONS AND PITCHING	R 1 254 314.96
SECTION 6	CONCRETE STRUCTURAL	R 5 635 297.20
SECTION 7	MEDIUM PRESSURE PIPELINES	R 406 739 160.29
SECTION 8	BEDDING (PIPES)	R 34 435 807.70
SECTION 9	PIPE JACKING	R 27 273 586.90
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 13 401 440.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 1		**R 744 589 044.01**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	97.97	R 9 775.00	R 957 656.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	5.22	R 39 716.00	R 207 317.52
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	979700	R 3.22	R 3 154 634.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	215	R 58.65	R 12 609.75
	b) Gravel	m^2	5035	R 54.05	R 272 141.75
	c) Concrete	m^2	2035	R 41.40	R 84 249.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	36	R 27.60	R 993.60
	b) Concrete	m	300	R 33.35	R 10 005.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence	m	200	R 126.00	R 25 200.00
	ii) All timber fence	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 4 880 257.37**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN2450 Isolating Valve Chamber (3 Off)	m^3	752	R 132.02	R 99 279.04
	DN2032 Isolating Valve Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	DN1930 Isolating Valve Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	DN2234 Meter Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (16 Off)	m^3	924	R 132.02	R 121 986.48
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	608	R 20.70	R 12 585.60
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	365	R 243.80	R 88 938.24
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	500	R 93.15	R 46 575.00
CARRIED FORWARD TO SUMMARY					**R 469 171.48**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches, backfill with graded material, compact hydraulically/ mechanically to specified density and dispose of surplus/unsuitable material:				
	for DN2450 pipe				
	4-5 m	m^3	207070	R 156.01	R 32 304 990.70
	5-6 m	m^3	56175	R 171.47	R 9 632 327.25
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	68620	R 20.70	R 1 420 434.00
2)	Hard Rock (Provisional Quantity)	m^3	42300	R 243.80	R 10 312 740.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	2635	93.22	R 245 634.70
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	5265	R 81.32	R 428 149.80
	DN2032 pipe				
	4-5 m	m^3	56115	R 156.01	R 8 754 501.15
	5 -6 m	m^3	7430	R 171.47	R 1 274 022.10
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	16260	R 20.70	R 336 582.00
2)	Hard Rock (Provisional Quantity)	m^3	9905	R 243.80	R 2 414 839.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	1275	93.22	R 118 855.50
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	640	R 81.32	R 52 044.80
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	50	R 35.08	R 1 754.00
				CARRIED FORWARD	**R 67 296 875.00**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 67 296 875.00**
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 41 250.00	R 41 250.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 41 250.00	R 41 250.00
	FINISHINGS				
	Topsoiling	m^2	979700	R 10.47	R 10 257 459.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	5035	R 97.75	R 492 171.25
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	215	R 162.15	R 34 862.25
	c) Concrete	m^3	2035	R 247.12	R 502 889.20
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	2	R 2 505.24	R 5 010.48
				CARRIED FORWARD TO SUMMARY	**R 78 671 767.18**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	877	R 1 355.24	R 1 188 545.48
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	877	R 15.99	R 14 023.23
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	125	R 413.97	R 51 746.25
CARRIED FORWARD TO SUMMARY					**R 1 254 314.96**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2450 IV Chambers (3 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	540	R 272.90	R 147 366.00
8.2.2	Smooth to exposed face of Internal walls	m^2	480	R 406.79	R 195 259.20
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	105	R 143.73	R 15 091.65
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	3	R 381.55	R 1 144.65
	DN300 pipe through chamber walls	No.	6	R 476.94	R 2 861.64
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2450 pipe through chamber walls	No.	6	R 3 091.57	R 18 549.42
	DN2032 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	No.	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2032 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN1930 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
				CARRIED FORWARD	**R 621 238.48**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 621 238.48**
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	No.	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN1930 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN2286 Meter Chamber (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2286 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (16 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	995	R 272.90	R 271 535.50
8.2.2	Smooth to exposed face of Internal walls	m^2	755	R 406.79	R 307 126.45
8.2.2	Smooth to underside of roof slab	m^2	115	R 435.54	R 50 087.10
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	170	R 143.73	R 24 434.10
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	32	R 476.94	R 15 262.08
	DN200 air vents in roof slab	No.	32	R 476.94	R 15 262.08
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
				CARRIED FORWARD	**R 1 440 801.72**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 440 801.72**
	DN550 manhole access in roof slab	No.	16	R 1 586.47	R 25 383.52
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	290	R 143.73	R 41 681.70
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	290	R 143.73	R 41 681.70
8.3	**REINFORCEMENT**				
	DN2540 IV Chambers (3 Off)				
8.3.1	Mild Steel	t	5.64	R 12 032.07	R 67 860.87
8.3.1	High Tensile Steel	t	22.50	R 12 032.07	R 270 721.58
	DN2032 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN1930 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN2286 Meter Chamber (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (16 Off)				
8.3.1	Mild Steel	t	8.39	R 12 032.07	R 100 949.07
8.3.1	High Tensile Steel	t	33.55	R 12 032.07	R 403 675.95
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	Concrete encasement DN2450 pipe at river crossings (Provisional Quantity)				
				CARRIED FORWARD	**R 2 753 958.85**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 753 958.85**
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
	Concrete encasement DN2032 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2450 IV Chambers (3 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	141	R 125.27	R 17 663.07
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	66	R 1 955.23	R 129 045.18
	Walls	m^3	162	R 1 955.23	R 316 747.26
	DN2032 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN1930 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN2286 Meter Chamber (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	44	R 1 955.23	R 86 030.12
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN200 Scour Chambers (16 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	285	R 125.27	R 35 696.94
				CARRIED FORWARD	**R 4 073 807.12**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 4 073 807.12**
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	130	R 1 955.23	R 254 179.90
	Walls	m^3	184	R 1 955.23	R 358 784.71
	Roof slab	m^3	22.0	R 1 955.23	R 43 015.06
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	Concrete encasement DN2450 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
	Concrete encasement DN2032 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2450 IV Chambers (3 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	117	R 21.55	R 2 521.35
	To top of walls	m^2	30	R 21.55	R 646.50
	DN2032 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN1930 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN2286 Meter Chamber (1 Off)				
				CARRIED FORWARD	**R 5 207 522.98**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 5 207 522.98**
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of pipe cradle	m^2	6.5	R 21.55	R 140.08
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (16 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	285	R 21.55	R 6 139.60
	To roof slabs	m^2	108	R 21.55	R 2 329.56
	To top of walls	m^2	74	R 21.55	R 1 583.93
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	80	R 33.92	R 2 713.60
	Polyurethane joint sealant (10mm x 20mm)	m	80	R 44.41	R 3 552.80
	Neoprene inserts for pipes at pipe supports - For DN2450	m^2	20	R 114.33	R 2 286.60
	Neoprene inserts for pipes at pipe supports - For DN2032	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	46.9	R 2 215.64	R 103 991.06
	Removable roof slabs in Meter Chambers	m^3	9.4	R 2 215.64	R 20 798.21
	Removable roof slabs in Air Valve-Type2 Chamber	m^3	15.2	R 2 215.64	R 33 699.88
	Removable roof slabs in Air Valve Type 4 Chamber	m^3	15.2	R 2 215.64	R 33 699.88
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2540 in IV Chamber	No.	6	R 6 618.09	R 39 708.54
	ii) DN300 in IV Chamber	No.	10	R 2 873.22	R 28 732.20
	iii) DN200 in IV Chamber	No.	5	R 1 969.29	R 9 846.45
	v) DN2032 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	vi) DN1930 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	vii) DN2286 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
				CARRIED FORWARD	**R 5 536 890.96**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 5 536 890.96**
	ix) DN200 in Scour Chamber	No.	16	R 1 969.29	R 31 508.64
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	32	R 750.50	R 24 016.00
	Securex manhole cover in roof slab in chambers	No.	16	R 2 680.10	R 42 881.60
				CARRIED FORWARD TO SUMMARY	**R 5 635 297.20**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2450 * 14mm thick * grade X42 pipe	m	15698	R 14 298.00	R 224 442 855.00
	DN2032 * 12mm thick * grade X42 pipe	m	4788	R 10 163.00	R 48 660 444.00
	DN2820 * 16mm thick * grade X42 pipe	m	200	R 18 809.00	R 3 761 800.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2450 * 14mm thick * grade X42 pipe	m	15698	R 5 151.60	R 80 867 241.00
	DN2032 * 12mm thick * grade X42 pipe	m	4788	R 3 543.70	R 16 967 235.60
	DN2820 * 16mm thick * grade X42 pipe	m	200	R 6 825.08	R 1 365 016.00
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2450 * 14mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	18	R 20 231.22	R 364 161.88
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	19	R 34 044.79	R 646 851.04
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	17	R 44 766.94	R 761 038.06
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	4	R 44 766.94	R 179 067.78
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 57 210.90	R 57 210.90
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 65 585.14	R 131 170.28
	Bends for DN2032 * 12mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	20	R 13 916.73	R 278 334.61
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	10	R 23 418.87	R 234 188.69
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 30 794.47	R 184 766.80
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 30 794.47	R 92 383.40
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	3	R 39 354.47	R 118 063.40
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 45 114.97	R 180 459.88
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
				CARRIED FORWARD	**R 379 292 288.32**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 379 292 288.32**
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 84 748.30	R 1 101 727.90
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 140 890.51	R 1 831 576.63
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	16	R 30 216.41	R 483 462.56
	DN2450 Isolating Valve Assembly Complete	No.	3	R 4 283 963.52	R 12 851 890.56
	DN2032 Isolating Valve Assembly Complete	No.	1	R 2 434 823.98	R 2 434 823.98
	DN1930 Isolating Valve Assembly Complete	No.	1	R 1 793 045.60	R 1 793 045.60
	DN2286 Meter Chamber Assembly Complete	No.	1	R 3 480 138.53	R 3 480 138.53
	DN2820 * DN2450 Reducer	No.	1	R 70 000.00	R 70 000.00
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
	Scour Valve Chamber				
	a) Type 1	No.	16	R 28 475.27	R 455 604.32
	Air Valve Chambers				
	a) Type 2	No.	13	R 61 874.57	R 804 369.41
	b) Type 4	No.	13	R 61 875.57	R 804 382.41
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	102	R 421.80	R 43 203.92
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2450 * 14mm thick * grade X42 pipe	No.	2	R 37 566.67	R 75 133.33
	DN2032 * 12mm thick * grade X42 pipe	No.	2	R 25 841.51	R 51 683.02
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	20486	R 56.91	R 1 165 829.81
				CARRIED FORWARD TO SUMMARY	**R 406 739 160.29**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) for DN2450 pipe	m^3	96845	R 284.97	R 27 597 919.65
	i) DN2032 pipe	m^3	23715	R 284.97	R 6 758 063.55
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m^3	50	R 425.07	R 21 253.50
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	500	R 15.99	R 7 995.00
CARRIED FORWARD TO SUMMARY					**R 34 435 807.70**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200LG	**SECTION 9 : PIPE JACKING**				
	DN3500 PIPE JACK 1 - BAYNESFIELD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PSLG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	25	R 64 239.00	R 1 843 593.75
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 56 350.00	R 1 408 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	435	R 1 840.00	R 800 400.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	87	R 3 450.00	R 300 150.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	125	R 3 450.00	R 431 250.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 311.20	R 12 622.40
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3500 PIPE JACK 1 - R56				
				CARRIED FORWARD	**R 6 047 496.15**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 6 047 496.15**
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 64 239.00	R 1 284 780.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 56 350.00	R 1 127 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	350	R 1 840.00	R 644 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	70	R 3 450.00	R 241 500.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	100	R 3 450.00	R 345 000.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 311.20	R 12 622.40
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3500 PIPE JACK 1 - R624				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
				CARRIED FORWARD	**R 12 045 628.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 12 045 628.55**
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 64 239.00	R 1 284 780.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 56 350.00	R 1 127 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	350	R 1 840.00	R 644 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	70	R 3 450.00	R 241 500.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	100	R 3 450.00	R 345 000.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 311.20	R 12 622.40
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 1 - R603				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
				CARRIED FORWARD	**R 16 952 985.95**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 16 952 985.95**
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 55 389.75	R 1 107 795.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 48 587.50	R 971 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	315	R 1 840.00	R 579 600.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	66	R 3 450.00	R 227 700.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	105	R 3 450.00	R 362 250.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3250 PIPE JACK 1 - UMLAAS ROAD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
				CARRIED FORWARD	**R 21 463 694.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 21 463 694.55**
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	35	R 55 389.75	R 1 938 641.25
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3250 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	35	R 48 587.50	R 1 700 562.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	545	R 1 840.00	R 1 002 800.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	115	R 3 450.00	R 396 750.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	175	R 3 450.00	R 603 750.00
PSLG 8.2.15, 5.11	Close DN3250 sleeve end with brick wall	No.	2	R 5 441.80	R 10 883.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	CARRIED FORWARD TO SUMMARY				**R 27 273 586.90**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	LAND ACQUISITION	R 5 736 067.54
SECTION 2	CROP COMPENSATION - FORESTRY	R 7 117 200.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 14 115 027.76
SECTION 4	CROP COMPENSATION - MAIZE	R 3 326 400.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 2 504 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 523 846.01
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 1 588 950.00
SECTION 8	LAND RENTAL	R 5 023 382.97
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 1		**R 41 935 124.28**

DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 1C - PHASE 2		
BOQ No.	**DESCRIPTION**	**AMOUNT**
1.C-R-PH2	DOUBLE UNEQUAL PIPELINE - RAW WATER	**R 152 162 552.55**
1.C-P-PH2	DOUBLE UNEQUAL PIPELINE - POTABLE WATER	**R 492 774 860.29**
1.C-L-PH2	LAND ACQUISITION AND CROP COMPENSATION	**R 33 966 442.08**
TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES		**R 678 903 854.92**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 35 114 435.20
SECTION 2	SITE CLEARANCE	R 1 858 876.87
SECTION 3	EARTHWORKS	R 251 917.16
SECTION 4	PIPE TRENCHES	R 17 408 509.65
SECTION 5	GABIONS AND PITCHING	R 728 777.35
SECTION 6	CONCRETE STRUCTURAL	R 2 217 834.22
SECTION 7	MEDIUM PRESSURE PIPELINES	R 87 030 464.19
SECTION 8	BEDDING (PIPES)	R 7 551 737.90
SECTION 9	CATHODIC PROTECTION & AC MITIGATION	R 0.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 2		**R 152 162 552.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	24.91	R 9 775.00	R 243 495.25
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.07	R 39 716.00	R 320 508.12
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	249100	R 3.22	R 802 102.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	106	R 58.65	R 6 216.90
	b) Gravel	m^2	5652	R 54.05	R 305 490.60
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	15	R 27.60	R 414.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence	m	200	R 126.00	R 25 200.00
	ii) All timber fence	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 1 858 876.87**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN2032 Isolating Valve Chambers (1 Off)	m^3	252	R 132.02	R 33 269.04
	DN1829 Meter Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (7 Off)	m^3	404	R 132.02	R 53 336.08
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	230	R 20.70	R 4 761.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	140	R 243.80	R 34 132.00
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
CARRIED FORWARD TO SUMMARY					**R 251 917.16**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(c) PSDB5.5	Excavate in all materials for trenches, backfill with graded material, compact hydraulically/ mechanically to specified density and dispose of surplus/unsuitable material:				
	for DN2032 pipe				
	4-5 m	m^3	65490	R 156.01	R 10 217 094.90
	5-6 m	m^3	4025	R 171.47	R 690 166.75
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	17580	R 20.70	R 363 906.00
2)	Hard Rock (Provisional Quantity)	m^3	10630	R 243.80	R 2 591 594.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	1395	93.22	R 130 041.90
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	700	R 81.32	R 56 924.00
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
	FINISHINGS				
	Topsoiling	m^2	249100	R 10.47	R 2 608 077.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	5652	R 97.75	R 552 483.00
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	106	R 162.15	R 17 187.90
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	5	R 2 505.24	R 12 526.20
CARRIED FORWARD TO SUMMARY					**R 17 408 509.65**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	494	R 1 355.24	R 669 136.20
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	494	R 15.99	R 7 894.90
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	125	R 413.97	R 51 746.25
CARRIED FORWARD TO SUMMARY					**R 728 777.35**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN2032 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	No.	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2032 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN1829 Meter Chamber (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2337 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
	DN200 Scour Chambers (7 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	435	R 272.90	R 118 711.50
8.2.2	Smooth to exposed face of Internal walls	m^2	330	R 406.79	R 134 240.70
8.2.2	Smooth to underside of roof slab	m^2	50	R 435.54	R 21 777.00
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	75	R 143.73	R 10 779.75
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	14	R 476.94	R 6 677.16
				CARRIED FORWARD	**R 542 250.44**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 542 250.44**
	DN200 air vents in roof slab	No.	14	R 476.94	R 6 677.16
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	7	R 1 586.47	R 11 105.29
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	135	R 143.73	R 19 403.55
8.3	**REINFORCEMENT**				
	DN2032 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN1829 Meter Chamber (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (7 Off)				
8.3.1	Mild Steel	t	3.66	R 12 032.07	R 44 037.38
8.3.1	High Tensile Steel	t	14.65	R 12 032.07	R 176 269.83
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.3.1	Mild Steel	t	0.09	R 12 032.07	R 1 082.89
8.3.1	High Tensile Steel	t	0.35	R 12 032.07	R 4 211.22
	Concrete encasement DN2032 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN2032 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
				CARRIED FORWARD	**R 1 254 760.67**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 254 760.67**
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN1829 Meter Chamber (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m^3	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	44	R 1 955.23	R 86 030.12
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN200 Scour Chambers (7 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	125	R 125.27	R 15 658.75
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	57	R 1 955.23	R 111 448.11
	Walls	m^3	81	R 1 955.23	R 158 373.63
	Roof slab	m^3	9.5	R 1 955.23	R 18 574.69
	DN200 Air Valve Chamber Type 2 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	DN200 Air Valve Chamber Type 4 (6 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	3.5	R 1 955.23	R 6 843.31
	Concrete encasement DN2032 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	75	R 2 215.64	R 166 173.00
8.4.4	**UNFORMED SURFACE FINISHES**				
	DN2032 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN1829 Meter Chamber (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of pipe cradle	m^2	6.5	R 21.55	R 140.08
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (7 Off)				
				CARRIED FORWARD	**R 2 057 433.58**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 057 433.58**
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	125	R 21.55	R 2 693.75
	To roof slabs	m^2	47	R 21.55	R 1 012.85
	To top of walls	m^2	32	R 21.55	R 689.60
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	80	R 33.92	R 2 713.60
	Polyurethane joint sealant (10mm x 20mm)	m	80	R 44.41	R 3 552.80
	Neoprene inserts for pipes at pipe supports - For DN2032	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Meter Chambers	m^3	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m^3	7.0	R 2 215.64	R 15 509.48
	Removable roof slabs in Air Valve Type 4	m^3	7.0	R 2 215.64	R 15 509.48
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	iv) DN2032 in DN2032 IV Chamber	No.	2	R 6 618.09	R 13 236.18
	v) DN300 in DN2032 IV Chamber	No.	2	R 2 873.22	R 5 746.44
	vi) DN200 in DN2032 IV Chamber	No.	1	R 1 969.29	R 1 969.29
	viii) DN1829 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	ix) DN200 in Scour Chamber	No.	7	R 1 969.29	R 13 785.03
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	14	R 750.50	R 10 507.00
	Securex manhole cover in roof slab in chambers	No.	7	R 2 680.10	R 18 760.70
				CARRIED FORWARD TO SUMMARY	**R 2 217 834.22**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2032 * 12mm thick * grade X42 pipe	m	5234	R 10 163.00	R 53 195 682.75
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2032 * 12mm thick * grade X42 pipe	m	5234	R 3 543.70	R 18 548 611.73
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN2032 * 12mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	25	R 13 916.73	R 347 918.26
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	22	R 23 418.87	R 515 215.12
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 30 794.47	R 184 766.80
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 30 794.47	R 92 383.40
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 39 354.47	R 39 354.47
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 45 114.97	R 90 229.94
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 84 748.30	R 508 489.80
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	6	R 140 890.51	R 845 343.06
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	7	R 30 216.41	R 211 514.87
	DN2032 Isolating Valve Assembly Complete	No.	2	R 2 434 823.98	R 4 869 647.96
	DN1829 Meter Chamber Assembly Complete	No.	2	R 3 139 684.56	R 6 279 369.12
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
				CARRIED FORWARD	**R 85 728 527.27**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 85 728 527.27**
	Scour Valve Chamber				
	a) Type 1	No.	7	R 28 475.27	R 199 326.89
	Air Valve Chambers				
	a) Type 2	No.	6	R 61 874.57	R 371 247.42
	b) Type 4	No.	6	R 61 875.57	R 371 253.42
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	25	R 421.80	R 10 545.00
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2032 * 12mm thick * grade X42 pipe	No.	2	R 25 841.51	R 51 683.02
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	5234	R 56.91	R 297 881.17
				CARRIED FORWARD TO SUMMARY	**R 87 030 464.19**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) for DN2032 pipe	m^3	26220	R 284.97	R 7 471 913.40
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m^3	50	R 425.07	R 21 253.50
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	500	R 15.99	R 7 995.00
CARRIED FORWARD TO SUMMARY					**R 7 551 737.90**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 113 717 275.45
SECTION 2	SITE CLEARANCE	R 4 880 257.37
SECTION 3	EARTHWORKS	R 522 013.98
SECTION 4	PIPE TRENCHES	R 60 537 717.63
SECTION 5	GABIONS AND PITCHING	R 1 254 301.25
SECTION 6	CONCRETE STRUCTURAL	R 4 706 680.57
SECTION 7	MEDIUM PRESSURE PIPELINES	R 258 712 751.19
SECTION 8	BEDDING (PIPES)	R 26 639 028.50
SECTION 9	PIPE JACKING	R 21 804 834.35
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 0.00
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 2		**R 492 774 860.29**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SECTION 2 : SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site over working corridor	ha	97.97	R 9 775.00	R 957 656.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	5.22	R 39 716.00	R 207 317.52
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m^2	979700	R 3.22	R 3 154 634.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m^2	215	R 58.65	R 12 609.75
	b) Gravel	m^2	5035	R 54.05	R 272 141.75
	c) Concrete	m^2	2035	R 41.40	R 84 249.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	36	R 27.60	R 993.60
	b) Concrete	m	300	R 33.35	R 10 005.00
8.2.5 PS 9.2 PSC 8.2.17	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All precast concrete fence	m	200	R 126.00	R 25 200.00
	ii) All timber fence	m	200	R 172.50	R 34 500.00
	iii) All galvanized weld mesh fence	m	200	R 97.75	R 19 550.00
	iv) All galvanized diamond mesh fence	m	200	R 207.00	R 41 400.00
	v) All electric fence	m	200	R 300.00	R 60 000.00
CARRIED FORWARD TO SUMMARY					**R 4 880 257.37**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 D	**SECTION 3 : EARTHWORKS**				
	EXCAVATION				
8.3.3(a) PSD 5.2.2.1	Restricted excavation in all materials and use for backfill and compact to specified densities or dispose as ordered for:				
	DN1930 Isolating Valve Chambers (3 Off)	m^3	756	R 132.02	R 99 807.12
	DN1524 Isolating Valve Chamber (1 Off)	m^3	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (16 Off)	m^3	924	R 132.02	R 121 986.48
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m^3	483	R 20.70	R 9 998.10
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m^3	290	R 243.80	R 70 653.24
	FINISHINGS				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	2000	R 93.15	R 186 300.00
CARRIED FORWARD TO SUMMARY					**R 522 013.98**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches, backfill with graded material, compact hydraulically/ mechanically to specified density and dispose of surplus/unsuitable material:				
	for DN1930 pipe				
	4-5 m	m^3	197405	R 156.01	R 30 797 154.05
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	49355	R 20.70	R 1 021 648.50
2)	Hard Rock (Provisional Quantity)	m^3	29615	R 243.80	R 7 220 137.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	3950	93.22	R 368 219.00
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	1975	R 81.32	R 160 607.00
	DN1524 pipe				
	3-4 m	m^3	41685	R 156.01	R 6 503 276.85
	4-5 m	m^3	5035	R 171.47	R 863 351.45
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m^3	11935	R 20.70	R 247 054.50
2)	Hard Rock (Provisional Quantity)	m^3	7260	R 243.80	R 1 769 988.00
	Extra-over items 8.3.2(a) for :				
PSDB3.7	Removal of suitable backfill material off site, store at temporary site, load and haul back to site.(Provisional Quantity)	m^3	935	93.22	R 87 160.70
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m^3	470	R 81.32	R 38 220.40
	SELECTED BACKFILL				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m^3	100	R 35.08	R 3 508.00
	EXISTING SERVICES				
8.3.5(a) PSDB 8.3.5	Protect, maintain, repair all services that intersect a trench	Prov Sum	1	R 82 500.00	R 82 500.00
8.3.5(b) PSDB8.3.5	Protect, maintain, repair all services that adjoin a trench	Prov Sum	1	R 82 500.00	R 82 500.00
	FINISHINGS				
	Topsoiling	m^2	979700	R 10.47	R 10 257 459.00
				CARRIED FORWARD	**R 59 502 784.45**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 59 502 784.45**
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m^2	5035	R 97.75	R 492 171.25
	b) Asphalt of 30 - 60mm thickness in roadway	m^2	215	R 162.15	R 34 862.25
	c) Concrete	m^3	2035	R 247.12	R 502 889.20
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems in accordance with drawing no, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No.	2	R 2 505.24	R 5 010.48
	CARRIED FORWARD TO SUMMARY				**R 60 537 717.63**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DK	**SECTION 5: GABIONS AND PITCHING**				
	GABIONS				
8.2.2 PSDK 3.1.2	Construct gabions using double twisted hexagonal mesh type 80 with 3.4mm OD frame wire and 2.7mm OD mesh wire to SANS 1580:2005:				
8.2.2	a) Reno mattresses of depth 0,3 m with diaphragms providing 2 m x 1 m cells. (Provisional Quantity)	m^2	877	R 1 355.24	R 1 188 531.93
8.2.4 PSDK 3.1.3	Geotextile (Type AG 200) placed where ground water seepage occurs:				
8.2.4	a) below reno mattresses (Provisional Quantity)	m^2	877	R 15.99	R 14 023.07
PSDK 3.2	**STONE PITCHING**				
	Supply all labour, plant and material and lay medium grouted pitching as indcated, including for all surface preparation and compaction (Provisional Quantity)	m^2	125	R 413.97	R 51 746.25
CARRIED FORWARD TO SUMMARY					**R 1 254 301.25**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 G	**SECTION 6 : CONCRETE STRUCTURAL**				
8.2 PSG 4.5, 7.2	**FORMWORK**				
	DN1930 IV Chambers (3 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	540	R 272.90	R 147 366.00
8.2.2	Smooth to exposed face of Internal walls	m^2	480	R 406.79	R 195 259.20
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	105	R 143.73	R 15 091.65
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	3	R 381.55	R 1 144.65
	DN300 pipe through chamber walls	No.	6	R 476.94	R 2 861.64
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN1930 pipe through chamber walls	No.	6	R 3 091.57	R 18 549.42
	DN1524 IV Chambers (1 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m^2	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	35	R 143.73	R 5 030.55
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber walls	No.	1	R 381.55	R 381.55
	DN300 pipe through chamber walls	No.	2	R 476.94	R 953.88
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN1524 pipe through chamber walls	No.	2	R 3 091.57	R 6 183.14
	DN200 Scour Chambers (16 Off)				
8.2.1	Rough to External walls above and below ground level	m^2	994	R 272.90	R 271 340.57
8.2.2	Smooth to exposed face of Internal walls	m^2	754	R 406.79	R 306 835.89
8.2.2	Smooth to underside of roof slab	m^2	109	R 435.54	R 47 287.20
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	171	R 143.73	R 24 639.43
				CARRIED FORWARD	**R 1 157 133.17**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 157 133.17**
8.2.6	Box out holes/form voids:				
8.2.6(a)	Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
	DN200 pipe through chamber wall	No.	32	R 476.94	R 15 262.08
	DN200 air vents in roof slab	No.	32	R 476.94	R 15 262.08
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	16	R 1 586.47	R 25 383.52
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
8.3	**REINFORCEMENT**				
	DN1930 IV Chambers (3 Off)				
8.3.1	Mild Steel	t	5.64	R 12 032.07	R 67 860.87
8.3.1	High Tensile Steel	t	22.50	R 12 032.07	R 270 721.58
	DN1524 IV Chambers (1 Off)				
8.3.1	Mild Steel	t	1.88	R 12 032.07	R 22 620.29
8.3.1	High Tensile Steel	t	7.50	R 12 032.07	R 90 240.53
	DN200 Scour Chambers (16 Off)				
8.3.1	Mild Steel	t	8.35	R 12 032.07	R 100 519.35
8.3.1	High Tensile Steel	t	33.43	R 12 032.07	R 402 214.91
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.3.1	Mild Steel	t	0.19	R 12 032.07	R 2 286.09
8.3.1	High Tensile Steel	t	0.75	R 12 032.07	R 9 024.05
	Concrete encasement DN1930 pipe at river crossings (Provisional Quantity)				
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
	Concrete encasement DN1524 pipe at river crossings (Provisional Quantity)				
				CARRIED FORWARD	**R 2 422 165.64**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 2 422 165.64**
8.3.1	Mild Steel	t	2.50	R 12 032.07	R 30 080.18
8.3.1	High Tensile Steel	t	10.00	R 12 032.07	R 120 320.70
8.4	**CONCRETE**				
	DN1930 IV Chambers (3 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	141	R 125.27	R 17 663.07
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	66	R 1 955.23	R 129 045.18
	Walls	m^3	162	R 1 955.23	R 316 747.26
	DN1524 IV Chambers (1 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	22	R 1 955.23	R 43 015.06
	Walls	m^3	54	R 1 955.23	R 105 582.42
	DN200 Scour Chambers (16 Off)				
8.4.2	10 MPa concrete 55mm thk for blinding	m^2	286	R 125.27	R 35 791.43
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m^3	129	R 1 955.23	R 252 503.99
	Walls	m^3	183	R 1 955.23	R 358 645.05
	Roof slab	m^3	21.7	R 1 955.23	R 42 456.42
	DN200 Air Valve Chamber Type 2 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	DN200 Air Valve Chamber Type 4 (13 Off)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m^3	7.5	R 1 955.23	R 14 664.23
	Concrete encasement DN1930 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	75	R 2 215.64	R 166 173.00
	Concrete encasement DN1524 pipe at river crossing (Provisional Quantity)				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m^3	100	R 2 215.64	R 221 564.00
8.4.4	**UNFORMED SURFACE FINISHES**				
				CARRIED FORWARD	**R 4 296 969.53**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 4 296 969.53**
	DN1930 IV Chambers (3 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	117	R 21.55	R 2 521.35
	To top of walls	m^2	30	R 21.55	R 646.50
	DN1524 IV Chambers (1 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	39	R 21.55	R 840.45
	To top of walls	m^2	10	R 21.55	R 215.50
	DN200 Scour Chambers (16 Off)				
8.4.4(a)	Wood-floated				
	To floor slabs	m^2	286	R 21.55	R 6 157.14
	To roof slabs	m^2	108	R 21.55	R 2 329.86
	To top of walls	m^2	73	R 21.55	R 1 583.62
	MISCELLANEOUS				
	Bitumen impregnated soft board	m	80	R 33.92	R 2 713.60
	Polyurethane joint sealant (10mm x 20mm)	m	80	R 44.41	R 3 552.80
	Neoprene inserts for pipes at pipe supports - For DN1930	m^2	20	R 114.33	R 2 286.60
	Neoprene inserts for pipes at pipe supports - For DN1524	m^2	20	R 114.33	R 2 286.60
PSG 8.4.5	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:				
	Removable roof slabs in IV chambers	m^3	37.5	R 2 215.64	R 83 192.85
	Removable roof slabs in Air Valve-Type2	m^3	15.2	R 2 215.64	R 33 677.73
	Removable roof slabs in Air Valve Type 4	m^3	15.2	R 2 215.64	R 33 677.73
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	ii) DN300 in IV Chamber	No.	18	R 2 873.22	R 51 717.96
	iii) DN200 in IV Chamber	No.	9	R 1 969.29	R 17 723.61
	iv) DN1930 in IV Chamber	No.	8	R 6 618.09	R 52 944.72
	vi) DN1524 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	ix) DN200 in Scour Chamber	No.	16	R 1 969.29	R 31 508.64
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	32	R 750.50	R 24 016.00
	Securex manhole cover in roof slab in chambers	No.	16	R 2 680.10	R 42 881.60
	CARRIED FORWARD TO SUMMARY				**R 4 706 680.57**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 7 : MEDIUM PRESSURE PIPELINES**				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN1930 * 12mm thick * grade X42 pipe	m	15698	R 9 649.00	R 151 465 177.50
	DN1524 * 10mm thick * grade X42 pipe	m	4788	R 6 347.00	R 30 389 436.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN1930 * 12mm thick * grade X42 pipe	m	15698	R 3 196.86	R 50 182 709.85
	DN1524 * 10mm thick * grade X42 pipe	m	4788	R 1 993.33	R 9 544 064.04
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Bends for DN1930 * 12mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	18	R 12 554.64	R 225 983.60
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	19	R 21 126.77	R 401 408.65
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	17	R 27 780.49	R 472 268.33
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	4	R 27 780.49	R 111 121.96
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 35 502.69	R 35 502.69
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 40 699.39	R 81 398.78
	Bends for DN1524 * 10mm thick * grade X42 pipe:				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	20	R 7 828.16	R 156 563.22
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	10	R 13 173.11	R 131 731.14
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	6	R 17 321.89	R 103 931.33
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 17 321.89	R 51 965.66
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	3	R 22 136.89	R 66 410.66
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 25 377.17	R 101 508.68
	SPECIAL ASSEMBLIES				
8.2.3	Supply, fabricate, handle and install the following assemblies:				
PSL 5.1.7	DN200 Air Valve Assembly - Type 2, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 84 748.30	R 1 101 727.90
				CARRIED FORWARD	**R 244 622 910.00**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 244 622 910.00**
	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	13	R 140 890.51	R 1 831 576.63
PSL 5.1.8	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	16	R 30 216.41	R 483 462.56
	DN1930 Isolating Valve Assembly Complete	No.	3	R 2 260 891.73	R 6 782 675.19
	DN1524 Isolating Valve Assembly Complete	No.	1	R 1 643 040.65	R 1 643 040.65
8.2.13	**VALVE CHAMBER AND MANHOLES**				
	Note : The following rates are to include for the installation of all GRP access ladders, safety cages, step irons, sealing joints, air vents, handrails, access manholes & frames, GRP landings & plastic gratings. All in situ and pre cast concrete elements,shuttering, surface finishing, curing of concrete and ancilliaries to be included and rate supplied to be for full functional unit				
	Supply and install units COMPLETE with related items for the construction of chambers for:				
	Scour Valve Chamber				
	a) Type 1	No.	16	R 28 475.27	R 455 604.32
	Air Valve Chambers				
	a) Type 2	No.	13	R 61 874.57	R 804 369.41
	b) Type 4	No.	13	R 61 875.57	R 804 382.41
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	102	R 421.80	R 43 203.92
PSL 7.3	**HYDRAULIC TESTING**				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN1930 * 12mm thick * grade X42 pipe	No.	2	R 23 312.30	R 46 624.60
	DN1524 * 10mm thick * grade X42 pipe	No.	2	R 14 535.85	R 29 071.70
PSL 7.3 & PSL 8.2.19	End cap, filling and testing of pipeline within sections specified by the Engineer	m	20486	R 56.91	R 1 165 829.81
				CARRIED FORWARD TO SUMMARY	**R 258 712 751.19**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 8 : BEDDING (PIPES)**				
	Bedding material				
	Supply of selected **granular** material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) for DN1930 pipe	m^3	75345	R 284.97	R 21 471 064.65
	i) DN1524 pipe	m^3	17855	R 284.97	R 5 088 139.35
	Selected Backfill				
	Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO:				
	i) from commercial sources (Provisional Quantity)	m^3	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m^3	50	R 425.07	R 21 253.50
PSLB 5.1.2.1 PSLB 8.2.6	Stone Bedding for pipe, supplied, placed and compacted, from a commercial source.(Provisional Quantity)	m^3	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m^2	500	R 15.99	R 7 995.00
CARRIED FORWARD TO SUMMARY					**R 26 639 028.50**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200LG	**SECTION 9 : PIPE JACKING**				
	DN3000 PIPE JACK 2 - BAYNESFIELD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	25	R 47 196.00	R 1 179 900.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 41 400.00	R 1 035 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	325	R 1 840.00	R 598 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	75	R 3 450.00	R 258 750.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	105	R 3 450.00	R 362 250.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3000 PIPE JACK 2 - R56				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
				CARRIED FORWARD	**R 5 788 128.60**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 5 788 128.60**
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 47 196.00	R 943 920.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 41 400.00	R 828 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	260	R 1 840.00	R 478 400.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	60	R 3 450.00	R 207 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	85	R 3 450.00	R 293 250.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN3000 PIPE JACK 2 - R624				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 47 196.00	R 943 920.00
PSLG 8.2.3	**Jacking of Pipes:**				
				CARRIED FORWARD	**R 10 745 439.70**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 10 745 439.70**
8.2.3 PSLG 5.4.3	DN3000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 41 400.00	R 828 000.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	260	R 1 840.00	R 478 400.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	60	R 3 450.00	R 207 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	85	R 3 450.00	R 293 250.00
PSLG 8.2.15, 5.11	Close DN3000 sleeve end with brick wall	No.	2	R 4 636.80	R 9 273.60
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN2750 PIPE JACK 2 - R603				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN2750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	20	R 39 657.75	R 793 155.00
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN2750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 34 787.50	R 695 750.00
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	225	R 1 840.00	R 414 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
				CARRIED FORWARD	**R 15 734 998.30**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 15 734 998.30**
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	55	R 3 450.00	R 189 750.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	85	R 3 450.00	R 293 250.00
PSLG 8.2.15, 5.11	Close DN2750 sleeve end with brick wall	No.	2	R 3 896.20	R 7 792.40
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	DN2750 PIPE JACK 2 - UMLAAS ROAD RAIL				
8.2.1 PSLG 8.2.1	**Jacking establishment:**				
8.2.1(a)	**Fixed Charges**	Sum	1	R 402 500.00	R 402 500.00
8.2.2(b)	Time Related: State time: …….. Weeks	Sum	1	R 690 000.00	R 690 000.00
PS LG 5.2.3.2	Initial survey of ground and structures at jacking fronts	Sum	1	R 1 725.00	R 1 725.00
PS LG 5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	**Supply of Pipes to be Jacked:**				
8.2.2 PSLG 3	DN2750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes to be delivered to the required location"	m	35	R 39 657.75	R 1 388 021.25
PSLG 8.2.3	**Jacking of Pipes:**				
8.2.3 PSLG 5.4.3	DN2750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	35	R 34 787.50	R 1 217 562.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	400	R 1 840.00	R 736 000.00
8.2.5	Extra-over item 8.2.4 for unforseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	**Stabilization of unstable areas or grouting of voids where ordered by the Engineer:**				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation (Provisional Quantity)	Sum	1	R 5 750.00	R 5 750.00
8.2.9(b)	Operation of Equipment (Provisional Quantity)	Day	10	R 575.00	R 5 750.00
8.2.9(c)	Materials Used (Provisional Quantity)	m3	20	R 2 875.00	R 57 500.00
				CARRIED FORWARD	**R 20 887 104.45**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 20 887 104.45**
8.2.10	Standing time for pipe jacking gang and jacking equipment (Provisional Quantity)	hr	45	R 1 265.00	R 56 925.00
PSLG 5.7	Grouting of sleeve	m3	100	R 3 450.00	R 345 000.00
PSLG 8.2.11	Hand excavation and backfilling of trench to expose services	m3	15	R 287.50	R 4 312.50
PSLG 5.10	Grouting in of steel pipe inside sleeve	m3	145	R 3 450.00	R 500 250.00
PSLG 8.2.15, 5.11	Close DN2750 sleeve end with brick wall	No.	2	R 3 896.20	R 7 792.40
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
				CARRIED FORWARD TO SUMMARY	**R 21 804 834.35**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	LAND ACQUISITION	R 0.00
SECTION 2	CROP COMPENSATION - FORESTRY	R 7 117 200.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 14 115 027.76
SECTION 4	CROP COMPENSATION - MAIZE	R 3 326 400.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 2 504 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 523 846.01
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 1 588 950.00
SECTION 8	LAND RENTAL	R 2 790 768.32
TOTAL CARRIED TO BILL OF QUANTITIES 1 C - PHASE 2		**R 33 966 442.08**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 10 206 474.00
SECTION 2	SITE ESTABLISHMENT - PILING	R 120 000.00
SECTION 3	STRUCTURAL STEEL	R 8 400 000.00
SECTION 4	CONCRETE	R 6 000 000.00
SECTION 5	REINFORCEMENT	R 4 400 000.00
SECTION 6	FINISHING CONCRETE	R 8 580.00
SECTION 7	FORMWORK	R 351 000.00
SECTION 8	PILING	R 192 000.00
SECTION 9	CABLES	R 14 550 000.00
TOTAL CARRIED TO BILL OF QUANTITIES 1		**R 44 228 054.00**

SUMMARY

SECTION	DESCRIPTION	AMOUNT (RANDS)
SECTION 1	PRELIMINARY AND GENERAL	R 2 999 877.89
SECTION 2	SITE CLEARANCE	R 658 624.98
SECTION 3	EARTHWORKS (ROADS. SUBGRADE)	R 593 742.55
SECTION 4	SUBBASE	R 1 931 940.24
SECTION 5	BASE	R 1 326 617.43
SECTION 6	ASPHALT, BASE AND SURFACING	R 2 349 357.96
SECTION 7	CONCRETE KERBING AND CHANNELLING	R 1 434 774.09
SECTION 8	ANCILLARY ROAD WORKS	R 1 704 535.74
TOTAL CARRIED TO BILL OF QUANTITIES 1		**R 12 999 470.88**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	**SITE CLEARANCE**				
	CLEAR SITE				
8.2.1	Clear and grub site	ha	4.66	R 9 775.00	R 45 551.50
8.2.3	Remove and grub large trees and tree stumps regardless of girth	ha	0.5	R 39 716.00	R 19 858.00
8.2.10	Remove topsoil to nominal depth 150mm, stockpile and maintain	m2	48656	R 3.22	R 156 672.32
PSC 8.2.12	Remove existing gravel layerworks to stockpile and maintain (for use as selected layers) as instructed by the Engineer				
	i) Unstabilised gravel and crushed stone layerworks to roads	m3	4068	R 48.18	R 195 996.24
	ii) Stabilised gravel layerworks to roads	m3	582	R 48.18	R 28 040.76
	Remove existing road asphalt surfacing (25 -45mm thickness)	m2	8 856	R 10.11	R 89 534.16
	FENCING				
8.2.5	Dismantle existing fencing, move to storage and later reinstate as directed by the Engineer:				
	i) All galvanized weld mesh fence.(Provisional Quantity)	m	1000	R 48.99	R 48 990.00
	ii) All galvanized diamond mesh fence.(Provisional Quantity)	m	1000	R 48.99	R 48 990.00
	iii) All electric fence (Provisional Quantity)	m	400	R 62.48	R 24 992.00
CARRIED FORWARD TO SUMMARY					**R 658 624.98**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DM	**EARTHWORKS (ROADS. SUBGRADE)**				
	TREATMENT OF ROAD-BED				
8.3.3(a)	Road-bed preparation rip and recompact insitu material to :				
	i) Minimum 90% of Mod. AASHTO density	m^3	3200	R 43.42	R 138 944.00
	EARTHWORKS				
8.3.4(a)	Cut to fill (G10 quality material), from stockpile in item 1.5.1				
	i) Compact to 90% mod. AASHTO density	m^3	1165	R 43.42	R 50 584.30
8.3.5	Selected Natural Gravel Subgrade (G7 quality material), compacted to 93% Mod AASHTO Density				
	i) From commercial source	m^3	2045	R 34.69	R 70 941.05
	ii) From stockpile in item 1.5.1	m3	1165	R 96.33	R 112 224.45
8.3.5	Selected Natural Gravel Subgrade (G9 quality material), compacted to 93% Mod AASHTO Density				
	i) From commercial source	m3	2130	R 34.69	R 73 889.70
	ii) From stockpile in item 1.5.1	m3	1165	R 96.33	R 112 224.45
8.3.13(a)	**SURFACE FINISHES**				
8.3.13(a)	Topsoiling measured under PSD				
8.3.15	Catchwater mounds and channels	m3	30	R 103.82	R 3 114.60
	MISCELLANEOUS				
PSDM 8.3.17	Construction of new-to-existing road joint	m	1000	R 31.82	R 31 820.00
CARRIED FORWARD TO SUMMARY					**R 593 742.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS1200ME	**SUBBASE**				
	Construct Selected Natural Subbase (G5 quality material), 200mm thick for Asphalt Roads compacted to 95% Mod AASHTO density.				
8.3.2	From stockpile in item 1.5.1 and 1.5.2	m³	585	R 330.44	R 193 305.94
8.3.3	From commercial source	m³	595	R 200.00	R 119 000.00
8.3.5 (a)	Extra over for screening of G5 material from stockpile in item 1.5.1 and 1.5.2 and disposing of the screened-out material for:				
	200mm thick for Asphalt Roads	m³	585	R 268.78	R 157 236.30
8.3.5 (d)	Extra over for stabilization of G5 material with road lime to meet B2 quality specification for:				
	200mm thick for Asphalt Roads	m³	595	R 193.58	R 115 180.10
	Construct Selected Natural Subbase (G6 quality material), 150mm thick for Asphalt Roads compacted to 95% Mod AASHTO density.				
8.3.2	From stockpile in item 1.5.1 and 1.5.2	m³	585	R 251.12	R 146 903.74
8.3.3	From commercial source	m³	2395	R 170.00	R 407 150.00
8.3.5 (a)	Extra over for screening of G6 material from stockpile in item 1.5.1 and 1.5.2 and disposing of the screened-out material for:				
	150mm thick for Asphalt Roads	m³	585	R 193.58	R 113 244.30
8.3.5 (d)	Extra over item for stabilizion of G6 material with road lime to meet C1 quality specification				
	150mm thick for Asphalt Roads	m³	2395	R 268.78	R 643 728.10
8.3.8	Stabilizing Agent				
	a) Road Lime	t	10	R 2 579.06	R 25 790.55
	b) PBFC (CEM 111/A)	t	5	R 2 080.24	R 10 401.21
CARRIED FORWARD TO SUMMARY					**R 1 931 940.24**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200MF	**BASE**				
8.3.3 (b)	Construct 26.5mm Graded Crushed Stone Base with material from commercial source, (G2 quality material to TRH 14 compliance) compacted to 102% Mod AASHTO density				
	i) 150mm thick for Asphalt Roads	m3	2590	R 512.21	R 1 326 617.43
CARRIED FORWARD TO SUMMARY					**R 1 326 617.43**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200MH	**ASPHALT, BASE AND SURFACING**				
	ASPHALT				
8.5.1	Prime Coat:				
	Prime coat using MC 30 bitumen (or similar approved) at 0.7 litres/m2	m2	16790	R 15.95	R 267 800.50
8.5.5	Variations in quantities of prime:				
	i) Mc 30	litre(l)	11755	R 17.20	R 202 156.61
8.5.3	Tack Coat:				
	Spray surface using 30% stable grade emulsion at 0.3 litres/m2	m2	16790	R 8.01	R 134 403.95
8.5.5	Variations in quantities of emulsion:				
	i) 30% stable grade emulsion	litre	5040	R 15.26	R 76 910.40
PSMH 8.5.4	Asphalt Surfacing:				
	Continuously medium graded asphalt surfacing using 60/70 Pen.grade bitumen:				
	i) 30mm to roads	m2	16790	R 99.35	R 1 668 086.50
CARRIED FORWARD TO SUMMARY					**R 2 349 357.96**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 MK	**CONCRETE KERBING AND CHANNELLING**				
	KERB				
	Extruded Asphalt kerb	m	500	R 227.31	R 113 655.00
8.2.1	Fig 6 kerb and cast insitu 25Mpa offset laid straight or curved equal to or exceeding 20m radius	m	4610	R 270.76	R 1 248 215.13
8.2.1	Fig 6 kerb and cast insitu 25Mpa offset, laid on curves less than 20m radius	m	125	R 306.88	R 38 359.38
8.2.6	**ANCILLARIES**				
	Cast in-situ transitions:				
8.2.6.2	i) Concrete, specified strength 25MPa	m3	15	R 1 662.88	R 24 943.24
8.2.6.2	ii) Formwork, Class 1 finish, exposed face only	m2	30	R 320.05	R 9 601.35
CARRIED FORWARD TO SUMMARY					**R 1 434 774.09**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200MM	**ANCILLARY ROAD WORKS**				
	GUARDRAILS				
8.2.1	Supply and erect galvanized steel guardrails on timber posts, backfilled with material available from site	m	2000	R 489.84	R 979 680.00
8.2.2	Extra-over Item7.1.1 for horizontally curved guardrails factory-bent to a radius of less than 150m	m	50	R 46.78	R 2 339.13
8.2.3	End Units:				
	a) End wings	No	4	R 436.82	R 1 747.28
8.2.4	Additional guardrail posts	No	10	R 351.76	R 3 517.55
	PERMANENT TRAFFIC SIGNS				
8.3.1	Sign faces with painted background. Symbols, characters, legend, and borders in Engineering grade retro-reflective material with signboards constructed from aluminium sheet (2mm thick) of area:				
	i) up to 2m2	m2	5	R 2 250.94	R 11 254.70
8.3.3	Sign Supports:				
8.3.4	Excavation and backfilling for sign supports and backfilling with concrete	m3	10	R 273.51	R 2 735.13
	ROAD MARKINGS				
PSMM 8.4.1	Retro-reflective paint applied at nominal rate of 0,42 l/m2 (including glass beads, setting out and pre-marking)				
	a) White lines (broken or unbroken) (width 100 mm)	m	2335	R 4.97	R 11 604.95
	b) White lines (broken or unbroken) (width 200mm)	m	4665	R 6.11	R 28 503.15
	c) Yellow lines (broken or unbroken) (width 100mm)	m	4665	R 9.71	R 45 297.15
	d) White characters and symbols	m2	20	R 4.97	R 99.40
	e) Traffic island markings (any colour)	m2	20	R 6.11	R 122.20
8.4.2	Variation rates of application:				
	a) White paint	litre	490	R 39.97	R 19 585.30
	b) Yellow paint	litre	200	R 39.97	R 7 994.00
	c) Glass beads	kg	10	R 39.97	R 399.70
8.4.3	**ROAD STUDS**				
	a) Supply and install Lynkor "Lynx" road studs with anchor shanks and 23/23 glass element reflectors:				
	(i) red/red	No	120	R 159.88	R 19 185.60
	MISCELLANEOUS				
8.4.4	Setting out and premarking of lines (excluding traffic island markings, characters, and symbols)	m	2335	R 1.50	R 3 502.50
				CARRIED FORWARD	**R 1 137 567.74**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
				BROUGHT FORWARD	**R 1 137 567.74**
	ACCOMODATION OF TRAFFIC				
PSMM 8.9.1	Accomodation of traffic	Sum	1	R 200 000.00	R 200 000.00
	BARRICADING				
	Supply, install, maintain, remove and relocate:				
	i) Barrier Fence	m	2500	R 68.55	R 171 375.00
	ii) Rigid Barricades for preventing access	m	500	R 53.33	R 26 665.00
	iii) Armco type barriers	m	200	R 543.72	R 108 744.00
	iv) New Jersey type barriers	m	200	R 300.92	R 60 184.00
	CARRIED FORWARD TO SUMMARY				**R 1 704 535.74**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 357 972 796.85
SECTION 2	BULK EARTHWORKS	R 118 498 432.37
SECTION 3	CIVIL WORKS (EXCL BUILDINGS)	R 436 902 862.00
SECTION 4	BUILDINGS	R 79 822 720.00
SECTION 5	M&E EQUIPMENT	R 510 145 436.00
SECTION 6	11kV BULK POWER SUPPLY	R 47 873 205.80
TOTAL CARRIED TO BILL OF QUANTITIES 1		**R 1 551 215 453.02**

SUMMARY

SECTION	DESCRIPTION	TOTAL
SECTION 1	PRELIMINARY AND GENERAL	R 44 835 568.91
SECTION 2	SITE CLEARANCE (MEASURED IN WTW BOQ)	
SECTION 3	EARTHWORKS (MEASURED IN WTW BOQ)	
SECTION 4	PIPE TRENCHES (3.5 X 50ML)	R 545 602.52
SECTION 5	CONCRETE STRUCTURAL (3.5 X 50ML)	R 138 941 180.19
SECTION 6	MEDIUM PRESSURE PIPELINES (3.5 X 50ML)	R 9 343 848.18
SECTION 7	BEDDING (PIPES) (3.5 X 50ML)	R 621 265.47
TOTAL CARRIED TO BILL OF QUANTITIES 1		**R 194 287 465.26**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 DB	**SECTION 4 : PIPE TRENCHES**				
	EXCAVATION				
8.3.2(a)	Excavate in all materials for trenches, backfill and compact or dispose of surplus/unsuitable material up to a freehaul distance of 10km for:				
	DN1000mm pipe				
	2,5 to 3,0m	m3	4503	R 156.01	R 702 435.03
	DN 2200mm pipe				
	over 3,0m	m3	664	R 156.01	R 103 512.64
	DN 2500mm pipe				
	over 3,0m	m3	3820	R 171.47	R 654 929.67
	DN 2700mm pipe				
	over 3,0m	m3	816	R 171.47	R 139 833.79
8.3.2(b) PSDB 8.3.2	Extra-over items for :				
1)	Intermediate Material (Provisional Quantity)	m3	2451	R 20.70	R 50 725.35
2)	Hard Rock (Provisional Quantity)	m3	980	R 243.80	R 238 924.00
PSD 5.2.5.2 PSD 8.3.6	Long overhaul:				
	Type 1 (over 10km) (Provisional Quantity)	m3.km	4500	R 6.73	R 30 285.00
	FINISHINGS				
SABS 1200D, 8.3.10	Topsoiling measured under PSD				
PSDB 5.1.2.2	Installation of permanent subsoil drainage systems, inclusive of gabion, geofabric, pipe, stone and other materials for completion as directed by the Engineer (Provisional Quantity)	No	2	R 2 505.24	R 5 010.48
TOTAL CARRIED TO SUMMARY					**R 1 925 655.94**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200G	**SECTION 5 : CONCRETE STRUCTURAL**				
8.1.3	**CONCRETE**				
8.4.2	**Blinding layer in grade 15/19 concrete:**				
	75mm thick blinding to:				
	Reservoir Base	m2	5945	R 125.27	R 744 730.15
	Scour Chamber Base	m2	60	R 125.27	R 7 516.20
	Control Valve Chamber Base	m2	9	R 125.27	R 1 127.43
	Mass concrete in grade 15/19concrete:				
	Pipe bedding cradle to peripheral drain	m3	15	R 1 927.23	R 28 908.45
	Outlet pipework encasing	m3	200	R 1 927.23	R 385 446.00
	Benching in manholes and screeding in Inlet, Outlet Chamber floors and reservoir roof	m3	20	R 1 927.23	R 38 544.60
8.4.3	**Strength concrete: Grade 25/19**				
	Upstand beam to roof slab	m3	21	R 1 955.23	R 41 059.83
	Control valve chamber base	m3	2.7	R 1 747.04	R 4 717.01
	Control valve chamber walls	m3	10.8	R 1 955.23	R 21 116.48
	Outlet, Scour and Overflow chamber base slab	m3	15	R 1 747.04	R 26 205.60
	Outlet, Scour and Overflow chamber walls	m3	63	R 1 955.23	R 123 179.49
	Precast concrete roof slabs over control valve chamber	m3	2.07	R 1 955.23	R 4 047.33
	Precast concrete roof slabs over outlet/scour chamber	m3	8	R 1 955.23	R 15 641.84
	Precast concrete roof slabs over overflow shaft	m3	1	R 1 955.23	R 1 955.23
8.4.3	**Strength concrete: Grade 35/19**				
	Reservoir Wall Bases	m3	810	R 2 279.39	R 1 846 305.90
	Reservoir Floor Slab Panels	m3	635	R 2 279.39	R 1 447 412.65
	Reservoir Walls	m3	1650	R 2 279.39	R 3 760 993.50
	Reservoir Columns, pedestals and column heads	m3	175	R 4 558.78	R 797 786.50
	Reservoir Roof Slab	m3	1387	R 4 558.78	R 6 323 027.86
	Provide no-fines concrete (1:9 cement stone 19mm) to underfloor drains around slotted pipe (measured elsewhere)	m3	115	R 1 431.11	R 164 577.65
	FORMWORK - excl that for construction joints				
Total carried forward					**R 15 784 299.70**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 15 784 299.70**
	Smooth to walls below ground				
	Inclined plane of external reservoir wall	m2	3000	R 764.98	R 2 294 940.00
	Vertical plane to external reservoir base (500mm thick)	m2	150	R 543.72	R 81 558.00
	Outlet, scour and overflow chamber walls	m2	240	R 543.72	R 130 492.80
	Control valve chamber walls	m2	72	R 543.72	R 39 147.84
	Upstand wall to reservoir perimeter	m2	270	R 543.72	R 146 804.40
	Soffit of pre-cast roof slabs	m2	70	R 606.05	R 42 423.50
	Special off form to internal reservoir surfaces (refer class 3a Smooth Finish)				
	Vertical plane of internal reservoir walls	m2	3000	R 893.32	R 2 679 960.00
	350mm dia. Columns in reservoir	m2	1375	R 322.71	R 443 726.25
	1200mm dia. X 465mm deep column heads, inclined at 45deg to the horizontal	m2	210	R 587.54	R 123 383.40
	1000mm dia. X 250mm high pedestal with 100mm high kicker for 350mm dia. column	No	130	R 843.44	R 109 647.20
	Decking for roof slab	m2	5544	R 1 459.60	R 8 092 022.40
	Vertical narrow widths up to 300mm wide to:				
	Reservoir walls - 100mm kicker	m	300	R 64.75	R 19 425.00
	Control valve chamber bases floor slab	m	12	R 64.75	R 777.00
	Outlet chamber bases floor slab	m	32	R 64.75	R 2 072.00
	Box out holes/form voids				
	300mm dia through reservoir roof for ultrasonic depth meter	No	1	R 1 220.36	R 1 220.36
	Form access opening through reservoir roof	No	2	R 1 220.36	R 2 440.72
	Form opening through reservoir roof for submersible pump installation	No.	1	R 1 220.36	R 1 220.36
	REINFORCEMENT				
	Mild steel bars	t	25	R 12 031.07	R 300 776.75
	High Tensile steel bars	t	675	R 12 031.07	R 8 120 972.25
	UNFORMED SURFACE FINISHES				
	Steel-float finish				
	All internal floors, upper surface of reservoir roof, all footings and pre-cast roof slabs over chambers	m2	11315	R 21.55	R 243 838.25
	JOINTS				
	Total carried forward				**R 38 661 148.18**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 38 661 148.18**
	Construct construction joints for: (rate to include for the supply and fixing of the waterstop where provided, provision of the split stop ends to accommodate the water stop and perforated stop ends where necessary for continuous reinforcing)				
	Horizontal base/wall construction joint at base of reservoir wall as per detail 5 (Rate to be inclusive of supply and installing 100mm wide bandage type sealant - "Sikadur Combiflex 1mm thick" or similar approved)	m	300	R 90.53	R 27 159.00
	Horizontal construction joint in floor slab (with continuous reinforcing). (Rate to be inclusive of supply and installing 100mm wide bandage type sealant - "Sikadur Combiflex 1mm thick" or similar approved) and 150mm wide uPVC waterstop ("Expandite Supercast Rearguard or similar approved)	m	1248	R 329.90	R 411 715.20
	Vertical construction in tapered wall base (with continuous reinforcement) as per detail . (Rate to be inclusive of supply and installing 100mm wide bandage type sealant ("Sikadur Combiflex 1mm thick" or similar approved) and 150mm wide dumb-bell waterstop ("Expandite Waterfoil or similar approved)	m	300	R 401.95	R 120 585.00
	Vertical wall joint (with continuous reinforcement) as per detail. (Rate to be inclusive of supply and installing 100mm wide bandage type sealant ("Sikadur Combiflex 1mm thick" or similar approved) and 150mm wide uPVC waterstop ("Expandite Supercast Rearguard or similar approved)	m	420	R 401.95	R 168 819.00
	Roof slab construction joint (with continuous reinforcement) as per detail. Rate to include for supply and installation of 100mm wide self adhesive aluminium backed sealing strip ("Bostik Ditsit" or similar approved) on top and 2 coats of "Sikatop 107" or similar approved, below.	m	300	R 237.51	R 71 253.00
	Horizontal roof sliding joint on top of wall as per detail. Rate to include for two layers of tempered masonite.	m	300	R 27.77	R 8 331.00
	Seal between precast concrete roof slabs and walls with bitumastic sealant ("Bituseal Joiint Putty" or similar approved)	m	70	R 37.87	R 2 650.90
	Plug 75mm dia. Lifting holes with bitumastic sealant ("Bituseal Joint Putty" or similar approved). Rate to be inclusive of wooden plugs	No	6	R 138.87	R 833.22
	Supply all material and labour and apply 2 coats of "Vandex Super", 100mm wide at construction joint between floor and pedestal and column kicker and column.	m	552	R 82.23	R 45 390.96
	Total carried forward				**R 39 517 885.46**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 39 517 885.46**
	Miscellaneous				
	Supply labour and form 2100mm dia. By 500mm radius bellmouth in concrete for outlet	No	1	R 1 545.79	R 1 545.79
	Supply labour and form 600mm dia. By 100mm radius bellmouth in concrete for scour	No	1	R 1 545.79	R 1 545.79
	Allow for collection of chemicals from the council's stores, washing and sterizing as per specifications	No	1	R 9 775.00	R 9 775.00
	Allow for ponding and watertightness testing of the roof	No	1	R 23 000.00	R 23 000.00
	Allow for hydraulic testing of the reservoir as specified.	No	1	R 78 775.00	R 78 775.00
	Curing of Concrete				
	Supply all materials, plant, labour and cure concrete with curing compound				
	Reservoir floor slab and wall bases	m2	5940	R 13.57	R 80 605.80
	Reservoir walls	m2	6000	R 13.57	R 81 420.00
	Top surface of reservoir roof slab	m2	5544	R 13.57	R 75 232.08
	Soffit of reservoir roof slab	m2	5544	R 13.57	R 75 232.08
	Reservoir columns, pedestal and column head	No	130	R 13.57	R 1 764.10
	Provisional Sums				
	Provisional sum for concrete cube testing by nominated laboratory	Prov Sum	1	R 40 000.00	R 40 000.00
	Provisional sum for durability testing by nominated laboratory	Prov Sum	1	R 40 000.00	R 40 000.00
	Extra over item for Contractor's charges …….% x R80000	%	80000		R 8 000.00
	Miscellaneous steelwork				
	Supply and install, including all nuts, bolts, washers, anchors, etc., the following elements Grade 316 stainless steel:				
	Access ladders as per typical detail for:				
	Reservoir inlet and overflow weir (6500mm long)	No	2	R 19 780.00	R 39 560.00
	Reservoir outlet chamber (4500mm long)	No	1	R 15 927.00	R 15 927.00
	Inlet pipe clamps as detailed for inlet pipework to inside of reservoir	No	3	R 7 475.00	R 22 425.00
	Vertical, Top mounted "Wecrolok" hot dip galvanised Handrail as per detail. (Provisional Quantity)	m	100	R 546.25	R 54 625.00
	Total carried forward				**R 40 167 318.10**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 40 167 318.10**
	Brass benchmark plaque and stainless steel reference bolt as detailed	No	1	R 4 025.00	R 4 025.00
	Hot Dip Galvanised				
	Supply and install, including all nuts, bolts, washers, anchors, etc., the following elements in hot dip galvanised steel 300W:				
	100mm dia. 6500mm long air vent in outlet chamber	No	1	R 10 925.00	R 10 925.00
	Air vents in control valve chamber and scour chamber	No	3	R 2 282.75	R 6 848.25
	900mm x 900mm Lockable manhole covers and frames	No	3	R 3 208.50	R 9 625.50
	Sundries				
	Supply all materials, plant and labour and repair 65mm dia. X 100mm deep test core holes usng a repair mortar ("Sikatop 615HB" or similar approved)	No	80	R 537.05	R 42 964.00
	Supply and fix into concrete "Calcamite" or similar approved step irons. (Provisional Quantity)	No	50	R 256.45	R 12 822.50
	PROTECTION WORKS				
	Supply and install circular concrete lockable manhole covers (500mm dia. opening) in various valve chambers on site	No	10	R 3 208.50	R 32 085.00
	SITE DRAINAGE				
	Supply and lay "Kaymat U14" or similar approved geotextile including all laps, cutting and waste:				
	To surround to reservoir peripheral drain	m2	720	R 14.95	R 10 764.00
	Supply and place clean, crushed, washed igneous stone:				
	25mm nom. size in reservoir peripheral drain	m3	70	R 431.25	R 30 187.50
	25mm nom. size on reservoir roof in 150mm layers (Provisional Quantity)	m3	835	R 431.25	R 360 093.75
	Supply and lay to fall as indicated, the following drain pipes, including all couplings, cuttings and waste (trenching measured elsewhere)				
	100mm nom. dia. Rigid uPVC (Heavy Duty) slotted drainage pipes ("Cordrain Pushfit" or similar)	m	1200	R 88.55	R 106 260.00
	100mm nom. dia. Rigid uPVC (Heavy Duty) drainage pipes	m	200	R 88.55	R 17 710.00
	150mm nom. dia. Rigid uPVC (Heavy Duty) slotted drainage pipes ("Cordrain Pushfit" or similar)	m	300	R 104.65	R 31 395.00
	Total carried forward				**R 40 843 023.60**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 40 843 023.60**
	150mm nom. dia. Rigid uPVC (Heavy Duty) drainage pipes	m	100	R 104.65	R 10 465.00
	100mm nom. dia. PVC 90 deg. bends	No	2	R 167.90	R 335.80
	100mm nom. dia. PVC 45 deg. bends	No	20	R 167.90	R 3 358.00
	100mm nom. dia. PVC 22.5 deg. bends	No	4	R 167.90	R 671.60
	150mm nom. dia. PVC 90 deg. bends	No	14	R 359.95	R 5 039.30
	150mm nom. dia. PVC 45 deg. bends	No	6	R 359.95	R 2 159.70
	TOTAL CARRIED TO SUMMARY				**R 40 865 053.00**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 L	**SECTION 6 : MEDIUM PRESSURE PIPELINES**				
PSL 8.2.1	**Supply**				
	DN1000 * 16mm thick * grade X42 pipe	m	740	R 6 184.63	R 4 576 626.20
	DN2200 * 16mm thick * grade X42 pipe	m	48	R 12 905.00	R 612 987.50
	DN2500 * 16mm thick * grade X42 pipe	m	230	R 15 610.00	R 3 590 300.00
	DN2700 * 16mm thick * grade X42 pipe	m	45	R 16 425.00	R 739 125.00
PSL 8.2.1	**Lay, bed, joint and test pipes for diameter:**				
	DN1000 * 16mm thick * grade X42 pipe	m	740	R 10 000.00	R 7 400 000.00
	DN2200 * 16mm thick * grade X42 pipe	m	48	R 19 914.27	R 945 927.83
	DN2500 * 16mm thick * grade X42 pipe	m	230	R 24 697.40	R 5 680 402.00
	DN2700 * 16mm thick * grade X42 pipe	m	45	R 29 994.85	R 1 349 768.25
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	DN1000 * 16mm thick * grade X42 pipe				
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	14	R 11 278.74	R 152 262.99
	DN2200 * 16mm thick * grade X42 pipe				
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	1	R 52 883.31	R 52 883.31
	DN2500 * 16mm thick * grade X42 pipe				
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 65 585.14	R 131 170.28
	DN2700 * 18mm thick * grade X42 pipe				
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	1	R 79 652.76	R 79 652.76
	Supply and install, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	Butterfly Valve - DN1000	No.	24	R 217 879.00	R 5 229 096.00
	DN1000 Equal Tee	No.	22	R 43 470.00	R 956 340.00
	DN1000 90 deg long radius bend	No.	8	R 37 662.50	R 301 300.00
	Reducing Tee DN2200 x DN1000	No.	4	R 50 715.00	R 202 860.00
	Reducing Tee DN2400 x DN1000	No.	1	R 69 028.75	R 69 028.75
Total carried forward					**R 32 069 730.86**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 32 069 730.86**
	Reducing Tee DN2700 x DN1000	No.	1	R 83 835.00	R 83 835.00
	Reducer DN2200 to DN1000	No.	1	R 28 692.50	R 28 692.50
	Reducer DN2400 to DN1000	No.	2	R 39 053.68	R 78 107.36
	Reducer DN2400 to DN2100	No.	1	R 39 053.68	R 39 053.68
	Reducer DN2700 to DN2400	No.	1	R 47 430.46	R 47 430.46
8.2.5	**OUTLET/SCOUR CHAMBER (PIPE TO BE TAPE WRAPPED AND MORTAR LINED)**				
	2100mm dia bellmouth	No.	1	R 22 310.00	R 22 310.00
	Item 1 - 2100mm dia. X 90 deg. gussetted bend	No.	1	R 48 070.00	R 48 070.00
	Item 2 - 2100mm dia. X 3400mm long spool piece, FOE	No.	1	R 58 765.00	R 58 765.00
	Item 4 - 2200mm dia. X 710mm long spool piece, FBE	No.	1	R 58 765.00	R 58 765.00
	Item 5 - 2200mm dia. Insulating flange	No.	1	R 15 881.50	R 15 881.50
	Item 7 - 600mm dia. X 90 deg. gussetted bend	No.	1	R 14 662.50	R 14 662.50
	Item 7a - 600mm dia. X 600mm long spool piece	No.	1	R 5 721.25	R 5 721.25
	Item 8 - 600mm dia x 5000mm long spool piece, FOE	No.	1	R 35 431.50	R 35 431.50
	Item 10 - 600mm dia. X 90 deg. long radius bend, FBE	No.	1	R 26 125.70	R 26 125.70
	Item 11 - 600mm dia. X 650mm long spool piece, FOE	No.	1	R 10 752.50	R 10 752.50
	Item 12 - 200mm dia air valve	No.	1	R 20 962.89	R 20 962.89
	Item 13 - 200mm ball-o-stop valve	No.	1	R 5 808.19	R 5 808.19
	Item 14 - 200mm dia. 500mm long spool piece	No.	1	R 3 415.50	R 3 415.50
	Item 15 - 200mm dia wafer butterfly valve	No.	1	R 3 826.16	R 3 826.16
	INLET CHAMBER (PIPES TO BE COATED AND LINED WITH SFE EPOXY)				
	Item 1 - 1000mm dia. X 800mm long spool piece, FBE with 20mm thick puddle flange	No.	RO	R 35 282.00	R 35 282.00
	Item 2 - 1000mm dia. X 90 deg. long radius bend, FBE	No.	1	R 47 288.00	R 47 288.00
	Item 3 - 1000mm dia. X 600mm long spool piece, FOE	No.	1	R 26 461.00	R 26 461.00
	Item 4 - 1000mm dia. X 45 deg. gussetted bend	No.	1	R 26 657.00	R 26 657.00
	Total carried forward				**R 32 813 035.55**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
	Total brought forward				**R 32 813 035.55**
	Item 5 - 1000mm dia. X 90 deg. long radius bend with 150mm long spool piece welded, FOE	No.	1	R 39 962.50	R 39 962.50
	Item 6 - 1000mm dia x 425mm long spool piece, FOE	No.	1	R 21 988.00	R 21 988.00
	Item 7 - 1000mm dia. X 90 deg. long radius bend, FBE	No.	1	R 47 288.00	R 47 288.00
	Item 8 - 1000mm dia. Insulating flange	No.	1	R 10 938.00	R 10 938.00
	Item 9 - 1000mm dia control valve	No	1	R 11 062.89	R 11 062.89
	Item 10 - 200mm dia air valve	No.	1	R 20 962.89	R 20 962.89
	Item 11 - 200mm ball-o-stop valve	No.	1	R 5 808.19	R 5 808.19
	Item 12 - 200mm dia. 500mm long spool piece	No.	1	R 3 415.50	R 3 415.50
	Item 13 - 200mm dia wafer butterfly valve	No.	1	R 3 826.16	R 3 826.16
	TOTAL CARRIED TO SUMMARY				**R 32 978 287.68**

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	**SECTION 7 : BEDDING (PIPES)**				
	FROM COMMERCIAL SOURCES				
	FOR DN1000 PIPE				
	Bedding material Supply of selected **granular** material for 300mm bedding **cradle** below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown	m^3	1663	R 284.97	R 473 905.11
	Selected Backfill Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO	m^3	2240	R 284.97	R 638 190.32
	FOR DN2200 PIPE				
	Bedding material Supply of selected **granular** material for 300mm bedding **cradle** below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown	m^3	261	R 284.97	R 74 234.69
	Selected Backfill Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO	m^3	235	R 284.97	R 66 967.95
	FOR DN2500 PIPE				
	Bedding material Supply of selected **granular** material for 300mm bedding **cradle** below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown	m^3	1476	R 284.97	R 420 615.72
	Selected Backfill Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO	m^3	1260	R 284.97	R 358 919.72
	FOR DN2700 PIPE				
	Bedding material Supply of selected **granular** material for 300mm bedding **cradle** below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown	m^3	301	R 284.97	R 85 633.49
	Selected Backfill Selected **fill** material including for screening or other treatment,to achieve grading suitable to comply with the bedding material specification compacted to 97% MOD AASHTO	m^3	261	R 284.97	R 74 234.69
TOTAL CARRIED TO SUMMARY					**R 2 192 701.67**