

108/114/12/R4-4

**UMKHOMAZI WATER PROJECT**  
**MODULE 3 – POTABLE WATER MODULE**

**Detailed Feasibility Study**  
**Pipeline Design Report - Volume 4**  
**(BOQ Option M1)**

**Revision 1**

**October 2015**



**Planning Services**  
**Engineering & Scientific Services**  
**Umgeni Water**

Prepared By:

***Knight Piésold***  
**CONSULTING**

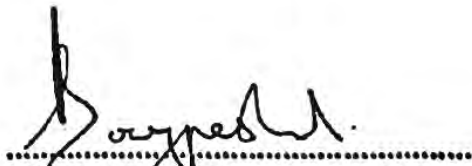
171 Rodger Sishi Road, Westville, 3630

**uMkhomazi Water Project**

**Detailed Feasibility Study – Pipeline Design Report –  
Volume 4 (BOQ Option M1)**

*Report No. 108/114/12/R4-4*

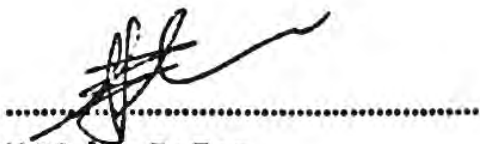
**Prepared by Knight Piésold Consulting**



**A Doorgapershad, Pr Eng**

**Study Leader: Knight Piésold Consulting**

**Approved for Umgeni Water Planning Services by:**



**K Meier, Pr Eng**

**Manager: Planning Services**

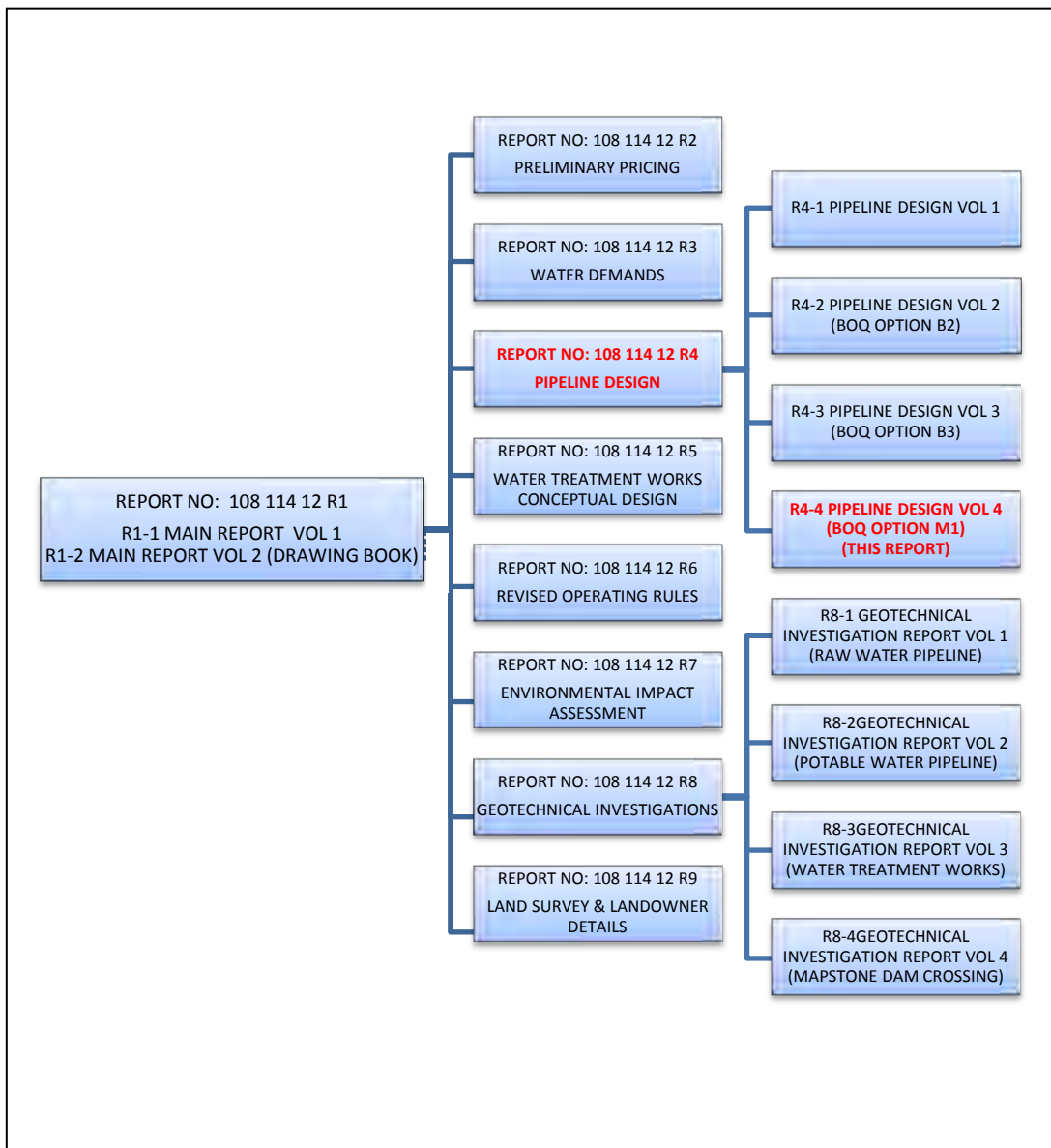
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# UMKHOMAZI WATER PROJECT

## MODULE 3 – POTABLE WATER MODULE

### Structure of Suite of Reports



# DOCUMENT CONTROL SHEET

**CLIENT:** Umgeni Water

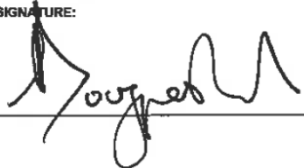
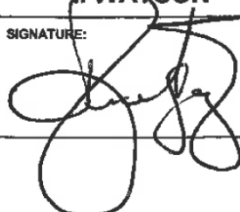

**PROJECT:** uMkhomazi Water Project, Potable Water Module

**PROJECT ASSIGNMENT:** uMkhomazi Water Project P/A No: 30300413/01

**TITLE:** Detailed Feasibility Study, Pipeline Design Report - Volume 4 (BOQ Option M1), Revision 1

**REVISION HISTORY:**

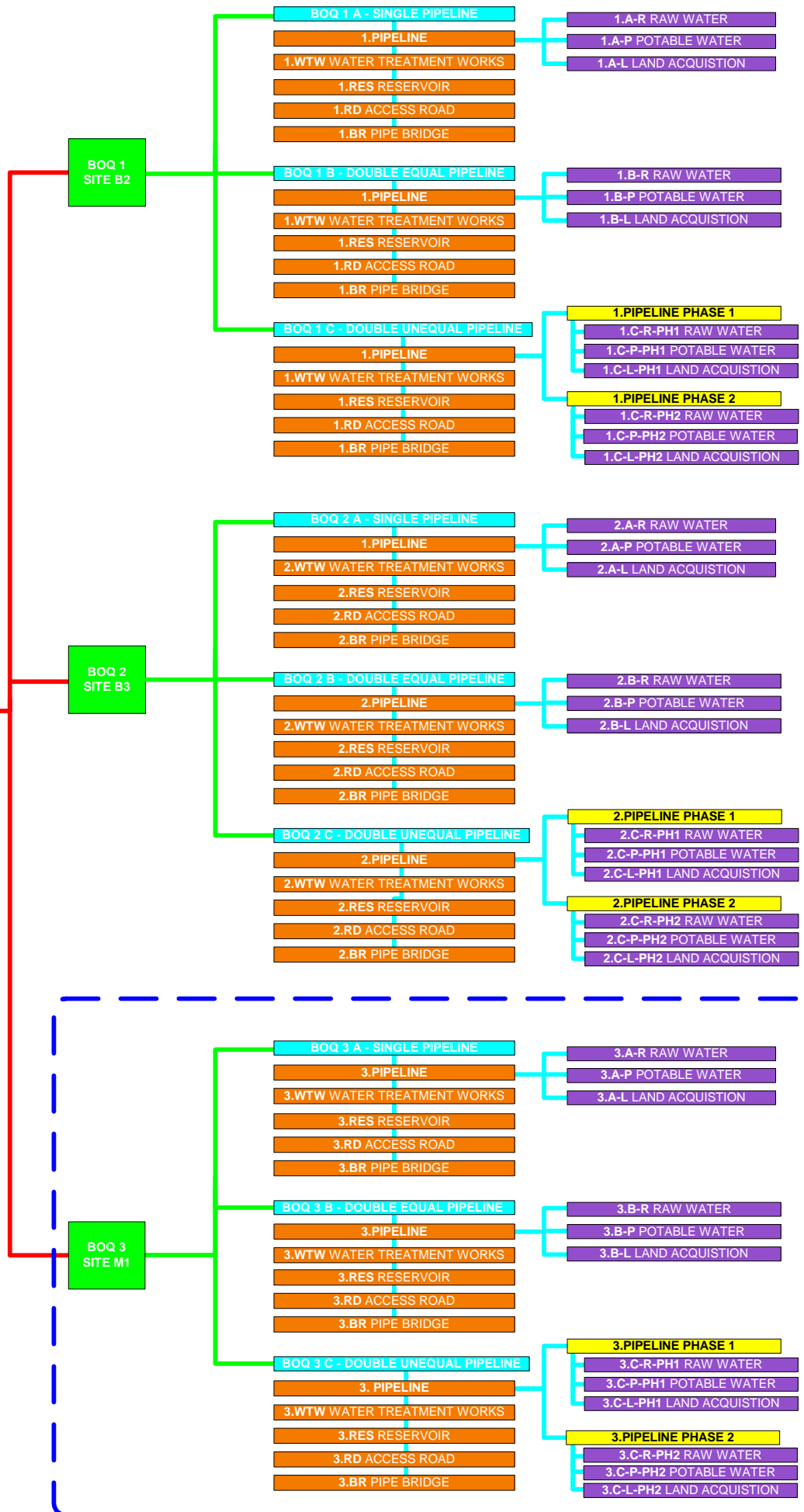
DATE:	REV. NO.:	DESCRIPTION:	REVISED BY:
31 AUG 2014	A	INTERNAL REVIEW	A. DOORGAPERSHAD
31 OCT 2014	B	CLIENT REVIEW	A. DOORGAPERSHAD
31 OCT 2015	1	CLIENT APPROVAL	A. DOORGAPERSHAD

DESCRIPTION:	PREPARED BY:	REVIEWED BY:	APPROVED BY:
REVISION: 1	NAME: A. DOORGAPERSHAD	NAME: J. 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



**SUMMARY OF BILL OF QUANTITIES**

<b>OPTION A - SINGLE PIPELINE</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>TOTAL</b>	<b>R 3 074 333 878.33</b>	<b>R 3 290 358 501.89</b>	<b>R 3 369 437 245.47</b>

<b>OPTION B - DOUBLE EQUAL PIPELINE</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>TOTAL</b>	<b>R 3 446 882 973.23</b>	<b>R 3 715 720 132.53</b>	<b>R 3 801 149 980.36</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 1</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>TOTAL</b>	<b>R 2 807 871 649.50</b>	<b>R 2 942 790 540.06</b>	<b>R 3 013 629 806.95</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 2</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>TOTAL</b>	<b>R 678 903 854.92</b>	<b>R 712 972 608.40</b>	<b>R 875 159 603.98</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - COMBINED</b>			
<b>TOTAL</b>	<b>R 3 486 775 504.42</b>	<b>R 3 655 763 148.47</b>	<b>R 3 888 789 410.93</b>

**SUMMARY OF BILL OF QUANTITIES**

<b>OPTION A - SINGLE PIPELINE</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>DETAILED SUMMARY</b>	<b>1A</b>	<b>2A</b>	<b>3A</b>

<b>OPTION B - DOUBLE EQUAL PIPELINE</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>DETAILED SUMMARY</b>	<b>1B</b>	<b>2B</b>	<b>3B</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 1</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>DETAILED SUMMARY</b>	<b>1C-PH1</b>	<b>2C-PH1</b>	<b>3C-PH1</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - PHASE 2</b>			
<b>COSTS COMPONENTS</b>	<b>WTW OPTION 1 - SITE B2</b>	<b>WTW OPTION 2 - SITE B3</b>	<b>WTW OPTION 3 - SITE M1</b>
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
<b>DETAILED SUMMARY</b>	<b>1C-PH2</b>	<b>2C-PH2</b>	<b>3C-PH2</b>

<b>OPTION C - DOUBLE UNEQUAL PIPELINE - COMBINED</b>			
<b>DETAILED SUMMARY</b>	<b>1C</b>	<b>2C</b>	<b>3C</b>

<b>DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 3A</b>		
<b>BOQ No.</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
3.A-R	SINGLE PIPELINE - RAW WATER	<b>R 877 323 974.06</b>
3.A-P	SINGLE PIPELINE - POTABLE WATER	<b>R 645 876 139.68</b>
3.A-L	LAND ACQUISITION AND CROP COMPENSATION	<b>R 37 993 347.64</b>
3.BR	PIPE BRIDGE	<b>R 44 228 054.00</b>
3.RD	SITE M1 ACCESS ROAD	<b>R 7 673 300.04</b>
3.WTW	SITE M1 WATER TREATMENT WORKS	<b>R 1 562 054 964.77</b>
3.RES	SITE M1 RESERVOIR	<b>R 194 287 465.26</b>
<b>TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES</b>		<b>R 3 369 437 245.47</b>



**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 202 459 378.63
SECTION 2	SITE CLEARANCE	R 3 465 814.21
SECTION 3	EARTHWORKS	R 376 496.43
SECTION 4	PIPE TRENCHES	R 83 259 608.95
SECTION 5	GABIONS AND PITCHING	R 1 252 446.12
SECTION 6	CONCRETE STRUCTURAL	R 3 640 258.86
SECTION 7	MEDIUM PRESSURE PIPELINES	R 527 963 844.84
SECTION 8	BEDDING (PIPES)	R 34 044 006.85
SECTION 9	PIPE JACKING	R 19 805 399.18
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 1 056 720.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 A</b>		<b>R 877 323 974.06</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	65.20	R 9 775.00	R 637 330.00
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	7.56	R 39 716.00	R 300 252.96
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	652000	R 3.22	R 2 099 440.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	170	R 58.65	R 9 970.50
	b) Gravel	m <sup>2</sup>	4245	R 54.05	R 229 442.25
	c) Concrete	m <sup>2</sup>	160	R 41.40	R 6 624.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	40	R 27.60	R 1 104.00
	b) Concrete	m	30	R 33.35	R 1 000.50
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 465 814.21</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 <sup>3</sup>	502	R 132.02	R 66 274.04
	Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (14 Off)	m <sup>3</sup>	805	R 132.02	R 106 276.10
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	390	R 20.70	R 8 073.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	235	R 295.55	R 69 454.25
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 376 496.43</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
8.3.2(a)	Excavate in all materials for trenches for DN3000 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	5 -6 m	m <sup>3</sup>	328830	R 171.47	R 56 384 480.10
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	98650	R 20.70	R 2 042 055.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	67525	R 243.80	R 16 462 595.00
	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 <sup>3</sup>	6580	93.22	R 613 387.60
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	3290	R 81.32	R 267 542.80
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	652000	R 10.47	R 6 826 440.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	4245	R 97.75	R 414 948.75
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	170	R 162.15	R 27 565.50
	c) Concrete	m <sup>2</sup>	160	R 247.25	R 39 560.00
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 83 259 608.95</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	838	R 1 355.24	R 1 135 555.60
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 <sup>2</sup>	838	R 15.99	R 13 398.02
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	250	R 413.97	R 103 492.50
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 1 252 446.12</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN3000 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	355	R 272.90	R 96 879.50
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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				
	DN3000 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	<b>DN2800 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN200 Scour Chambers (14 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	870	R 272.90	R 237 423.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	660	R 406.79	R 268 481.40
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	95	R 435.54	R 41 376.30
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
<b>CARRIED FORWARD</b>					<b>R 957 651.87</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 957 651.87</b>
	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
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
<b>8.3</b>	<b>REINFORCEMENT</b>				
	<b>DN3000 IV Chambers (2 Off)</b>				
8.3.1	Mild Steel	t	3.74	R 12 032.07	R 44 999.94
8.3.1	High Tensile Steel	t	14.95	R 12 032.07	R 179 879.45
	<b>DN2800 Meter Chamber (1 Off)</b>				
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
	<b>DN200 Scour Chambers (14 Off)</b>				
8.3.1	Mild Steel	t	7.30	R 12 032.07	R 87 834.11
8.3.1	High Tensile Steel	t	29.20	R 12 032.07	R 351 336.44
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
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
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
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
	<b>Concrete encasement DN3000 pipe at river crossings (Provisional Quantity)</b>				
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
<b>8.4</b>	<b>CONCRETE</b>				
	<b>DN3000 IV Chambers (2 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	95	R 125.27	R 11 900.65
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	43	R 1 955.23	R 83 097.28
	Walls	m <sup>3</sup>	107	R 1 955.23	R 209 209.61
<b>CARRIED FORWARD</b>					<b>R 2 329 282.33</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 2 329 282.33</b>
	<b>DN2800 Meter Chamber (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	54	R 1 955.23	R 104 604.81
	<b>DN200 Scour Chambers (14 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	250	R 125.27	R 31 317.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	115	R 1 955.23	R 224 851.45
	Walls	m <sup>3</sup>	160	R 1 955.23	R 312 836.80
	Roof slab	m <sup>3</sup>	20.0	R 1 955.23	R 39 104.60
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>Concrete encasement DN3000 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN3000 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	77	R 21.55	R 1 659.35
	To top of walls	m <sup>2</sup>	20	R 21.55	R 431.00
	<b>DN2800 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08
	To top of walls	m <sup>2</sup>	10	R 21.55	R 215.50
	<b>DN200 Scour Chambers (14 Off)</b>				
8.4.4(a)	Wood-floated				
<b>CARRIED FORWARD</b>					<b>R 3 358 491.79</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 358 491.79</b>
	To floor slabs	m <sup>2</sup>	250	R 21.55	R 5 387.50
	To roof slabs	m <sup>2</sup>	95	R 21.55	R 2 047.25
	To top of walls	m <sup>2</sup>	65	R 21.55	R 1 400.75
	<b>MISCELLANEOUS</b>				
	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 <sup>2</sup>	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 <sup>3</sup>	18.8	R 2 215.64	R 41 654.03
	Removable roof slabs in Meter Chamber	m <sup>3</sup>	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	15.0	R 2 215.64	R 33 234.60
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	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) DN3000 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) DN2800 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 640 258.86</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN3000 * 20mm thick * grade X42 pipe	m	15283	R 25 239.00	R 385 721 327.25
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN3000 * 20mm thick * grade X42 pipe	m	15283	R 7 879.43	R 120 419 358.83
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN3000 * 20mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	35	R 30 943.90	R 1 083 036.53
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	25	R 52 071.94	R 1 301 798.53
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	12	R 68 471.61	R 821 659.32
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	5	R 68 471.61	R 342 358.05
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	2	R 87 504.80	R 175 009.61
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 100 313.30	R 200 626.61
	<b>SPECIAL ASSEMBLIES</b>				
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
	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.	14	R 30 216.41	R 423 029.74
	DN3000 Isolating Valve Assembly Complete	No.	1	R 7 377 867.43	R 7 377 867.43
	DN2800 Meter Chamber Assembly Complete	No.	1	R 4 140 172.80	R 4 140 172.80
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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:				
<b>CARRIED FORWARD</b>					<b>R 524 939 549.23</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 524 939 549.23</b>
	Scour Valve Chamber				
	a) Type 1	No.	14	R 28 475.27	R 398 653.78
	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.	76	R 421.80	R 32 231.32
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN3000 * 20mm 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	15282.75	R 56.91	R 869 741.30
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 527 963 844.84</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b> Supply of selected <b>granular</b> 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 <sup>3</sup>	118905	R 284.97	R 33 884 357.85
	<b>Selected Backfill</b> Selected <b>fill</b> 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 <sup>3</sup>	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m <sup>3</sup>	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 <sup>3</sup>	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	1000	R 15.99	R 15 990.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 34 044 006.85</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN4000 PIPE JACK BAYNESFIELD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	25	R 92 504.16	R 2 312 604.00
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN4000 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 81 144.00	R 2 028 600.00
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	135	R 3 450.00	R 465 750.00
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
	<b>DN4000 PIPE JACK R56</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 8 525 360.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 8 525 360.26</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	77	R 3 450.00	R 265 650.00
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	107	R 3 450.00	R 369 150.00
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
	<b>DN4000 PIPE JACK R624</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
<b>CARRIED FORWARD</b>					<b>R 14 716 172.22</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 14 716 172.22</b>
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	77	R 3 450.00	R 265 650.00
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	107	R 3 450.00	R 369 150.00
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 19 805 399.18</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 149 048 339.93
SECTION 2	SITE CLEARANCE	R 2 596 483.70
SECTION 3	EARTHWORKS	R 372 403.81
SECTION 4	PIPE TRENCHES	R 65 756 409.60
SECTION 5	GABIONS AND PITCHING	R 861 782.69
SECTION 6	CONCRETE STRUCTURAL	R 3 746 541.04
SECTION 7	MEDIUM PRESSURE PIPELINES	R 374 807 071.92
SECTION 8	BEDDING (PIPES)	R 26 811 468.25
SECTION 9	PIPE JACKING	R 14 031 158.75
SECTION 10	CATHODIC PROTECTION AND AC MITIGATION	R 7 844 480.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 A</b>		<b>R 645 876 139.68</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	51.66	R 9 775.00	R 504 976.50
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	1.85	R 39 716.00	R 73 474.60
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	516600	R 3.22	R 1 663 452.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	135	R 58.65	R 7 917.75
	b) Gravel	m <sup>2</sup>	1585	R 54.05	R 85 669.25
	c) Concrete	m <sup>2</sup>	1675	R 41.40	R 69 345.00
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 596 483.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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:				
	DN3330 Isolating Valve Chambers (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	DN2450 Isolating Valve Chambers (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (9 Off)	m <sup>3</sup>	520	R 132.02	R 68 650.40
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	390	R 20.70	R 8 073.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	235	R 295.55	R 69 454.25
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 372 403.81</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
8.3.2(a)	Excavate in all materials for trenches for DN3330 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	5 -6 m	m <sup>3</sup>	178425	R 171.47	R 30 594 534.75
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	53530	R 20.70	R 1 108 071.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	38435	R 243.80	R 9 370 453.00
	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 <sup>3</sup>	3570	93.22	R 332 795.40
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	1785	R 81.32	R 145 156.20
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 <sup>3</sup>	64565	R 156.01	R 10 072 785.65
	5 -6 m	m <sup>3</sup>	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 <sup>3</sup>	24630	R 20.70	R 509 841.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	825	R 81.32	R 67 089.00
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	516600	R 10.47	R 5 408 802.00
<b>CARRIED FORWARD</b>					<b>R 65 152 915.65</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 65 152 915.65</b>
PSDB 5.1.2.2	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	1585	R 97.75	R 154 933.75
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	135	R 162.15	R 21 890.25
	c) Concrete	m <sup>2</sup>	1675	R 247.25	R 414 143.75
	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 65 756 409.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	553	R 1 355.24	R 749 447.72
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 <sup>2</sup>	553	R 15.99	R 8 842.47
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	250	R 413.97	R 103 492.50
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 861 782.69</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN3330 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	355	R 272.90	R 96 879.50
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	320	R 406.79	R 130 172.80
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	95	R 143.73	R 13 654.35
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				
	DN3330 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	<b>DN2540 IV Chambers (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN3030 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
<b>CARRIED FORWARD</b>					<b>R 501 740.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 501 740.26</b>
8.2.6	Box out holes/form voids: Large, circular, diameter greater than 1,0m, depth 0m to 0,5m DN3030 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
<b>DN200 Scour Chambers (9 Off)</b>					
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	560	R 272.90	R 152 824.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	425	R 406.79	R 172 885.75
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	65	R 435.54	R 28 310.10
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 200mm wide	m	100	R 143.73	R 14 373.00
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.	18	R 476.94	R 8 584.92
	DN200 air vents in roof slab	No.	18	R 476.94	R 8 584.92
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m DN550 manhole access in roof slab	No.	9	R 1 586.47	R 14 278.23
<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	176	R 143.73	R 25 296.48
<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	176	R 143.73	R 25 296.48
<b>8.3</b>	<b>REINFORCEMENT</b>				
<b>DN3330 IV Chambers (2 Off)</b>					
8.3.1	Mild Steel	t	3.74	R 12 032.07	R 44 999.94
8.3.1	High Tensile Steel	t	14.95	R 12 032.07	R 179 879.45
<b>DN2540 IV Chambers (1 Off)</b>					
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
<b>DN3030 Meter Chamber (1 Off)</b>					
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
<b>DN200 Scour Chambers (8 Off)</b>					
<b>CARRIED FORWARD</b>					<b>R 1 406 843.02</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 406 843.02</b>
8.3.1	Mild Steel	t	4.73	R 12 032.07	R 56 911.69
8.3.1	High Tensile Steel	t	18.90	R 12 032.07	R 227 406.12
<b>DN200 Air Valve Chamber Type 2 (9 Off)</b>					
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
<b>DN200 Air Valve Chamber Type 4 (9 Off)</b>					
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
<b>Concrete encasement DN3330 pipe at river crossings (Provisional Quantity)</b>					
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
<b>Concrete encasement DN2540 pipe at river crossings (Provisional Quantity)</b>					
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
<b>8.4</b>	<b>CONCRETE</b>				
<b>DN3330 IV Chambers (2 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 775.38
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	43	R 1 955.23	R 83 097.28
	Walls	m <sup>3</sup>	107	R 1 955.23	R 209 209.61
<b>DN2540 IV Chambers (1 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 42 037.45
	Walls	m <sup>3</sup>	54	R 1 955.23	R 104 604.81
<b>DN3030 Meter Chamber (1 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	54	R 1 955.23	R 104 604.81
<b>DN200 Scour Chambers (8 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	160	R 125.27	R 20 043.20
<b>CARRIED FORWARD</b>					<b>R 2 650 709.45</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 2 650 709.45</b>
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	74	R 1 955.23	R 143 709.41
	Walls	m <sup>3</sup>	104	R 1 955.23	R 202 366.31
	Roof slab	m <sup>3</sup>	12.5	R 1 955.23	R 24 440.38
	<b>DN200 Air Valve Chamber Type 2 (9 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>DN200 Air Valve Chamber Type 4 (9 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>Concrete encasement DN3330 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
	<b>Concrete encasement DN2540 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN3330 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	77	R 21.55	R 1 659.35
	To top of walls	m <sup>2</sup>	19	R 21.55	R 409.45
	<b>DN2540 IV Chambers (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
	To top of walls	m <sup>2</sup>	10	R 21.55	R 204.73
	<b>DN3030 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08
	To top of walls	m <sup>2</sup>	10	R 21.55	R 215.50
	<b>DN200 Scour Chambers (8 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	160	R 21.55	R 3 448.00
<b>CARRIED FORWARD</b>					<b>R 3 491 642.29</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 491 642.29</b>
	To roof slabs	m <sup>2</sup>	61	R 21.55	R 1 310.24
	To top of walls	m <sup>2</sup>	41	R 21.55	R 883.55
	<b>MISCELLANEOUS</b>				
	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 DN3330	m <sup>2</sup>	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 <sup>3</sup>	28.2	R 2 215.64	R 62 414.58
	Removable roof slabs in Meter Chamber	m <sup>3</sup>	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	9.4	R 2 215.64	R 20 716.23
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	9.4	R 2 215.64	R 20 716.23
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN3330 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
	ii) DN2450 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	ii) DN300 in IV Chamber	No.	6	R 2 873.22	R 17 239.32
	iii) DN200 in IV Chamber	No.	3	R 1 969.29	R 5 907.87
	iv) DN3030 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	v) DN200 in Scour Chamber	No.	8	R 1 969.29	R 15 754.32
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	16	R 750.50	R 12 008.00
	Securex manhole cover in roof slab in chambers	No.	8	R 2 680.10	R 21 440.80
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 746 541.04</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN3330 * 18mm thick * grade X42 pipe	m	7329	R 24 994.00	R 183 181 026.00
	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				
	DN3330 * 18mm thick * grade X42 pipe	m	7329	R 9 516.96	R 69 749 799.84
	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:				
	<b>Bends for DN3330 * 18mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	15	R 37 374.75	R 560 621.22
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	12	R 62 893.68	R 754 724.11
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	11	R 82 701.57	R 909 717.26
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 82 701.57	R 248 104.71
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	1	R 105 690.29	R 105 690.29
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 121 160.69	R 242 321.38
	<b>Bends for DN2540 * 12mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	20	R 21 744.89	R 434 897.82
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	10	R 36 591.98	R 365 919.83
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.	3	R 61 491.36	R 184 474.07
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 70 492.14	R 281 968.57
	<b>SPECIAL ASSEMBLIES</b>				
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.	5	R 84 748.30	R 423 741.50
<b>CARRIED FORWARD</b>					<b>R 345 281 137.43</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 345 281 137.43</b>
PSL 5.1.8	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	5	R 140 890.51	R 704 452.55
	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	5	R 30 216.41	R 151 082.05
	DN3330 Isolating Valve Assembly Complete	No.	2	R 8 732 471.51	R 17 464 943.02
	DN2540 Isolating Valve Assembly Complete	No.	1	R 4 533 829.62	R 4 533 829.62
	DN3030 Meter Chamber Assembly Complete	No.	1	R 4 395 386.05	R 4 395 386.05
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancilliaris 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.	8	R 28 475.27	R 227 802.16
	Air Valve Chambers				
	a) Type 2	No.	9	R 61 874.57	R 556 871.13
	b) Type 4	No.	9	R 61 875.57	R 556 880.13
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	61	R 421.80	R 25 554.75
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN3330 * 18mm thick * grade X42 pipe	No.	2	R 69 399.92	R 138 799.84
	DN2540 * 12mm 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	12117	R 56.91	R 689 578.47
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 374 807 071.92</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b>				
	Supply of selected <b>granular</b> material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) DN3330	m <sup>3</sup>	63445	R 284.97	R 18 079 921.65
	i) DN2450	m <sup>3</sup>	30080	R 284.97	R 8 571 897.60
	<b>Selected Backfill</b>				
	Selected <b>fill</b> 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 <sup>3</sup>	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m <sup>3</sup>	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 <sup>3</sup>	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	1000	R 15.99	R 15 990.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 26 811 468.25</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3750 PIPE JACK R603</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
	<b>DN3750 PIPE JACK UMLAAS RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 6 535 095.00</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 6 535 095.00</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 14 031 158.75</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	LAND ACQUISITION	R 4 241 192.61
SECTION 2	CROP COMPENSATION - FORESTRY	R 4 320 000.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 17 746 964.73
SECTION 4	CROP COMPENSATION - MAIZE	R 0.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 1 559 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 495 080.67
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 2 236 140.00
SECTION 8	LAND RENTAL	R 5 394 719.64
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 A</b>		<b>R 37 993 347.64</b>



<b>DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 3B</b>		
<b>BOQ No.</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
3.B-R	DOUBLE EQUAL PIPELINE - RAW WATER	<b>R 1 174 701 879.72</b>
3.B-P	DOUBLE EQUAL PIPELINE - POTABLE WATER	<b>R 775 046 998.60</b>
3.B-L	LAND ACQUISITION AND CROP COMPENSATION	<b>R 43 157 317.96</b>
3.BR	PIPE BRIDGE	<b>R 44 228 054.00</b>
3.RD	SITE M1 ACCESS ROAD	<b>R 7 673 300.04</b>
3.WTW	SITE M1 WATER TREATMENT WORKS	<b>R 1 562 054 964.77</b>
3.RES	SITE M1 RESERVOIR	<b>R 194 287 465.26</b>
<b>TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES</b>		<b>R 3 801 149 980.36</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 271 085 049.17
SECTION 2	SITE CLEARANCE	R 3 959 031.90
SECTION 3	EARTHWORKS	R 659 842.86
SECTION 4	PIPE TRENCHES	R 90 256 611.20
SECTION 5	GABIONS AND PITCHING	R 2 135 655.36
SECTION 6	CONCRETE STRUCTURAL	R 15 748 475.65
SECTION 7	MEDIUM PRESSURE PIPELINES	R 705 529 721.69
SECTION 8	BEDDING (PIPES)	R 49 348 320.70
SECTION 9	PIPE JACKING	R 34 922 451.20
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 1 056 720.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 B</b>		<b>R 1 174 701 879.72</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	72.45	R 9 775.00	R 708 198.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.4	R 39 716.00	R 333 614.40
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	724500	R 3.22	R 2 332 890.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	280	R 58.65	R 16 422.00
	b) Gravel	m <sup>2</sup>	6965	R 54.05	R 376 458.25
	c) Concrete	m <sup>2</sup>	210	R 41.40	R 8 694.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	40	R 27.60	R 1 104.00
	b) Concrete	m	30	R 33.35	R 1 000.50
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 959 031.90</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 (4 Off )	m <sup>3</sup>	1004	R 132.02	R 132 548.08
	Meter Chamber (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	Scour Valve Chambers				
	a) Type 1 (28 Off)	m <sup>3</sup>	1610	R 132.02	R 212 552.20
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	780	R 20.70	R 16 146.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	470	R 295.55	R 138 908.50
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 659 842.86</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
8.3.2(a)	Excavate in all materials for trenches for DN2286 pipe, backfill with graded material, compact hydraulically/mechanically to specified density and dispose of surplus/unsuitable material:				
	4-5m	m <sup>3</sup>	412395	R 156.01	R 64 337 743.95
	5-6m	m <sup>3</sup>	51520	R 171.47	R 8 834 134.40
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	48970	R 20.70	R 1 013 679.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	25775	R 243.80	R 6 283 945.00
	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 <sup>3</sup>	9280	93.22	R 865 081.60
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	4640	R 81.32	R 377 324.80
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	724500	R 10.47	R 7 585 515.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	6965	R 97.75	R 680 828.75
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	280	R 162.15	R 45 402.00
	c) Concrete	m <sup>2</sup>	210	R 247.25	R 51 922.50
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 90 256 611.20</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	1482	R 1 355.24	R 2 008 465.68
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 <sup>2</sup>	1482	R 15.99	R 23 697.18
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	250	R 413.97	R 103 492.50
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 135 655.36</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2286 IV Chambers (4 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	710	R 272.90	R 193 759.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	640	R 406.79	R 260 345.60
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	140	R 143.73	R 20 122.20
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.	4	R 381.55	R 1 526.20
	DN300 pipe through chamber walls	No.	8	R 476.94	R 3 815.52
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2286 pipe through chamber walls	No.	8	R 3 091.57	R 24 732.56
	<b>DN2032 Meter Chamber (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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				
	DN2032 pipe through chamber walls	No.	4	R 2 033.93	R 8 135.72
	<b>DN200 Scour Chambers (28 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	1740	R 272.90	R 474 846.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	1320	R 406.79	R 536 962.80
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	190	R 435.54	R 82 752.60
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	300	R 143.73	R 43 119.00
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.	56	R 476.94	R 26 708.64
<b>CARRIED FORWARD</b>					<b>R 1 915 303.74</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 915 303.74</b>
	DN200 air vents in roof slab Large, circular, diameter greater than 1,0m, depth 0m to 0,5m	No.	56	R 476.94	R 26 708.64
	DN550 manhole access in roof slab	No.	28	R 1 586.47	R 44 421.16
	<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	570	R 143.73	R 81 926.10
	<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	570	R 143.73	R 81 926.10
<b>8.3</b>	<b>REINFORCEMENT</b>				
	<b>DN2286 IV Chambers (4 Off)</b>				
8.3.1	Mild Steel	t	748.00	R 12 032.07	R 8 999 988.36
8.3.1	High Tensile Steel	t	29.90	R 12 032.07	R 359 758.89
	<b>DN2032 Meter Chamber (2 Off)</b>				
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
	<b>DN200 Scour Chambers (28 Off)</b>				
8.3.1	Mild Steel	t	14.60	R 12 032.07	R 175 668.22
8.3.1	High Tensile Steel	t	58.40	R 12 032.07	R 702 672.89
	<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>				
8.3.1	Mild Steel	t	0.38	R 12 032.07	R 4 572.19
8.3.1	High Tensile Steel	t	1.50	R 12 032.07	R 18 048.11
	<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>				
8.3.1	Mild Steel	t	0.38	R 12 032.07	R 4 572.19
8.3.1	High Tensile Steel	t	1.50	R 12 032.07	R 18 048.11
	<b>Concrete encasement DN2286 pipe at river crossings (Provisional Quantity)</b>				
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
<b>8.4</b>	<b>CONCRETE</b>				
	<b>DN2286 IV Chambers (4 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	190	R 125.27	R 23 801.30
8.4.3	Concrete, Grade 25MPa/19mm for: Base	m <sup>3</sup>	85	R 1 955.23	R 166 194.55
<b>CARRIED FORWARD</b>					<b>R 12 972 660.89</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 12 972 660.89</b>
	Walls	m <sup>3</sup>	214	R 1 955.23	R 418 419.22
	<b>DN2032 Meter Chamber (2 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 775.38
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	15.0	R 1 789.80	R 26 847.00
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	44	R 1 955.23	R 86 021.32
	Walls	m <sup>3</sup>	107	R 1 955.23	R 209 209.61
	<b>DN200 Scour Chambers (28 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	500	R 125.27	R 62 635.00
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	230	R 1 955.23	R 449 702.90
	Walls	m <sup>3</sup>	320	R 1 955.23	R 625 673.60
	Roof slab	m <sup>3</sup>	40.0	R 1 955.23	R 78 209.20
	<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	15.0	R 1 955.23	R 29 328.45
	<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	15.0	R 1 955.23	R 29 328.45
	<b>Concrete encasement DN2286 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN2286 IV Chambers (4 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	154	R 21.55	R 3 318.70
	To top of walls	m <sup>2</sup>	40	R 21.55	R 862.00
	<b>DN2032 Meter Chamber (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	78	R 21.55	R 1 680.90
	To top of pipe cradle	m <sup>2</sup>	13.0	R 21.55	R 280.15
	To top of walls	m <sup>2</sup>	20	R 21.55	R 431.00
	<b>DN200 Scour Chambers (28 Off)</b>				
<b>CARRIED FORWARD</b>					<b>R 15 184 941.51</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 15 184 941.51</b>
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	500	R 21.55	R 10 775.00
	To roof slabs	m <sup>2</sup>	190	R 21.55	R 4 094.50
	To top of walls	m <sup>2</sup>	130	R 21.55	R 2 801.50
	<b>MISCELLANEOUS</b>				
	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 DN2286	m <sup>2</sup>	40	R 114.33	R 4 573.20
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 <sup>3</sup>	37.6	R 2 215.64	R 83 308.06
	Removable roof slabs in Meter Chamber	m <sup>3</sup>	19.0	R 2 215.64	R 42 097.16
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	30.0	R 2 215.64	R 66 469.20
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	30.0	R 2 215.64	R 66 469.20
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	i) DN2286 in IV Chamber	No.	8	R 6 618.09	R 52 944.72
	ii) DN300 in IV Chamber	No.	8	R 2 873.22	R 22 985.76
	iii) DN200 in IV Chamber	No.	4	R 1 969.29	R 7 877.16
	iv) DN2032 in Meter Chamber	No.	4	R 5 165.34	R 20 661.36
	v) DN200 in Scour Chamber	No.	28	R 1 969.29	R 55 140.12
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	56	R 750.50	R 42 028.00
	Secorex manhole cover in roof slab in chambers	No.	28	R 2 680.10	R 75 042.80
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 15 748 475.65</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2286 * 18mm thick * grade X42 pipe	m	30566	R 17 115.00	R 523 128 532.50
	DN3030 * 20mm thick * grade X42 pipe	m	200	R 25 239.00	R 5 047 800.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2286 * 18mm thick * grade X42 pipe	m	30566	R 4 485.00	R 137 086 267.50
	DN3030 * 20mm thick * grade X42 pipe	m	200	R 7 879.43	R 1 575 886.00
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN2286 * 18mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	70	R 17 613.36	R 1 232 935.32
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	50	R 29 639.51	R 1 481 975.31
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	24	R 38 974.25	R 935 381.93
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	10	R 38 974.25	R 389 742.47
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	4	R 49 808.00	R 199 231.99
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 57 098.63	R 228 394.54
	<b>SPECIAL ASSEMBLIES</b>				
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.	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.	28	R 30 216.41	R 846 059.48
	DN2286 Isolating Valve Assembly Complete	No.	4	R 2 606 324.40	R 10 425 297.60
	DN2032 Meter Chamber Assembly Complete	No.	2	R 3 309 911.55	R 6 619 823.10
	DN3030 Y-Piece with DN2286 branches.	No.	1	R 4 395 386.05	R 4 395 386.05
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b> 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 ancillaries to be included and rate supplied to be for full functional unit				
<b>CARRIED FORWARD</b>					<b>R 699 459 322.86</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 699 459 322.86</b>
	Supply and install units COMPLETE with related items for the construction of chambers for:				
	Scour Valve Chamber				
	a) Type 1	No.	28	R 28 475.27	R 797 307.56
	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.	153	R 421.80	R 64 462.64
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2286 * 18mm thick * grade X42 pipe	No.	4	R 34 181.25	R 136 724.99
	DN3030 * 20mm 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	30566	R 56.91	R 1 739 482.61
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 705 529 721.69</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b> Supply of selected <b>granular</b> 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 <sup>3</sup>	172610	R 284.97	R 49 188 671.70
	<b>Selected Backfill</b> Selected <b>fill</b> 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 <sup>3</sup>	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT) Refer to 5379/500/G01	m <sup>3</sup>	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 <sup>3</sup>	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	1000	R 15.99	R 15 990.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 49 348 320.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3500 PIPE JACK 1 - BAYNESFIELD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 57 971.50	R 1 449 287.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	455	R 1 840.00	R 837 200.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	110	R 3 450.00	R 379 500.00
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	135	R 3 450.00	R 465 750.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	<b>DN3500 PIPE JACK 2 - BAYNESFIELD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 7 331 546.87</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 7 331 546.87</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 57 971.50	R 1 449 287.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	455	R 1 840.00	R 837 200.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	110	R 3 450.00	R 379 500.00
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	135	R 3 450.00	R 465 750.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	<b>DN3500 PIPE JACK 1 - R56</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
<b>CARRIED FORWARD</b>					<b>R 13 575 136.23</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 13 575 136.23</b>
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 57 971.50	R 1 159 430.00
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	85	R 3 450.00	R 293 250.00
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	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
<b>DN3500 PIPE JACK 2 - R56</b>					
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 57 971.50	R 1 159 430.00
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
<b>CARRIED FORWARD</b>					<b>R 22 880 849.35</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 22 880 849.35</b>
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	85	R 3 450.00	R 293 250.00
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	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
	<b>DN3500 PIPE JACK 1 - R624</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 57 971.50	R 1 159 430.00
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
<b>CARRIED FORWARD</b>					<b>R 28 617 863.71</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 28 617 863.71</b>
PSLG 5.7	Grouting of sleeve	m3	85	R 3 450.00	R 293 250.00
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	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
<b>DN3500 PIPE JACK 2 - R624</b>					
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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 66 087.51	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3500 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	20	R 57 971.50	R 1 159 430.00
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	85	R 3 450.00	R 293 250.00
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	110	R 3 450.00	R 379 500.00
PSLG 8.2.15, 5.11	Close DN3500 sleeve end with brick wall	No.	2	R 6 492.81	R 12 985.62
PSLG 8.2.16, 5.12	Supply and install marker posts	No.	2	R 1 725.00	R 3 450.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 34 922 451.20</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 178 856 999.68
SECTION 2	SITE CLEARANCE	R 2 827 977.70
SECTION 3	EARTHWORKS	R 829 482.58
SECTION 4	PIPE TRENCHES	R 70 406 673.25
SECTION 5	GABIONS AND PITCHING	R 1 433 585.60
SECTION 6	CONCRETE STRUCTURAL	R 7 886 110.77
SECTION 7	MEDIUM PRESSURE PIPELINES	R 445 881 439.03
SECTION 8	BEDDING (PIPES)	R 38 852 875.60
SECTION 9	PIPE JACKING	R 20 227 374.40
SECTION 10	CATHODIC PROTECTION AND AC MITIGATION	R 7 844 480.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 B</b>		<b>R 775 046 998.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	57.41	R 9 775.00	R 561 182.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	2.05	R 39 716.00	R 81 417.80
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	574100	R 3.22	R 1 848 602.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	110	R 58.65	R 6 451.50
	b) Gravel	m <sup>2</sup>	1465	R 54.05	R 79 183.25
	c) Concrete	m <sup>2</sup>	1437	R 41.40	R 59 491.80
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 827 977.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 Chambers (4 Off )	m <sup>3</sup>	1005	R 132.02	R 132 680.10
	DN1829 Isolating Valve Chambers (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	Meter Chamber (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	Scour Valve Chambers				
	a) Type 1 (18 Off)	m <sup>3</sup>	1616	R 132.02	R 213 344.32
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	1290	R 20.70	R 26 703.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	780	R 295.55	R 230 529.00
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	1000	R 93.15	R 93 150.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 829 482.58</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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:				
	4-5m	m <sup>3</sup>	224955	R 156.01	R 35 095 229.55
	5-6m	m <sup>3</sup>	26615	R 171.47	R 4 563 674.05
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	26490	R 20.70	R 548 343.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	13910	R 243.80	R 3 391 258.00
	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 <sup>3</sup>	5035	93.22	R 469 362.70
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	2520	R 81.32	R 204 926.40
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:				
	4-5 m	m <sup>3</sup>	109095	R 156.01	R 17 019 910.95
	5 -6 m	m <sup>3</sup>	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 <sup>3</sup>	11325	R 20.70	R 234 427.50
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	1120	R 81.32	R 91 078.40
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
<b>CARRIED FORWARD</b>					<b>R 63 866 981.55</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 63 866 981.55</b>
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	574100	R 10.47	R 6 010 827.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	1465	R 97.75	R 143 203.75
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	110	R 162.15	R 17 836.50
	c) Concrete	m <sup>2</sup>	1437	R 247.25	R 355 298.25
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 70 406 673.25</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	970	R 1 355.24	R 1 314 582.80
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 <sup>2</sup>	970	R 15.99	R 15 510.30
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	250	R 413.97	R 103 492.50
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 1 433 585.60</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2540 IV Chambers (4 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	710	R 272.90	R 193 759.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	640	R 406.79	R 260 345.60
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	140	R 143.73	R 20 122.20
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.	4	R 381.55	R 1 526.20
	DN300 pipe through chamber walls	No.	8	R 476.94	R 3 815.52
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN2540 pipe through chamber walls	No.	8	R 3 091.57	R 24 732.56
	<b>DN1829 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN2337 Meter Chamber (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
<b>CARRIED FORWARD</b>					<b>R 996 294.02</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 996 294.02</b>
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.	4	R 2 033.93	R 8 135.72
<b>DN200 Scour Chambers (28 Off)</b>					
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	1740	R 272.90	R 474 846.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	1320	R 406.79	R 536 962.80
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	190	R 435.54	R 82 752.60
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 200mm wide	m	300	R 143.73	R 43 119.00
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.	56	R 476.94	R 26 708.64
	DN200 air vents in roof slab	No.	56	R 476.94	R 26 708.64
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m DN550 manhole access in roof slab	No.	28	R 1 586.47	R 44 421.16
<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	285	R 143.73	R 40 963.05
<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	285	R 143.73	R 40 963.05
<b>8.3</b>	<b>REINFORCEMENT</b>				
<b>DN2540 IV Chambers (4 Off)</b>					
8.3.1	Mild Steel	t	7.45	R 12 032.07	R 89 638.92
8.3.1	High Tensile Steel	t	29.90	R 12 032.07	R 359 758.89
<b>DN1829 IV Chambers (2 Off)</b>					
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
<b>DN2337 Meter Chamber (2 Off)</b>					
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
<b>DN200 Scour Chambers (28 Off)</b>					
<b>CARRIED FORWARD</b>					<b>R 3 222 715.76</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 222 715.76</b>
8.3.1	Mild Steel	t	14.60	R 12 032.07	R 175 668.22
8.3.1	High Tensile Steel	t	58.40	R 12 032.07	R 702 672.89
<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>					
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
<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>					
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
<b>Concrete encasement DN2540 pipe at river crossings (Provisional Quantity)</b>					
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
<b>Concrete encasement DN1829 pipe at river crossings (Provisional Quantity)</b>					
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
<b>8.4</b>	<b>CONCRETE</b>				
<b>DN2540 IV Chambers (4 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	190	R 125.27	R 23 801.30
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	85	R 1 955.23	R 166 194.55
	Walls	m <sup>3</sup>	214	R 1 955.23	R 418 419.22
<b>DN1829 IV Chambers (2 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 775.38
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	44	R 1 955.23	R 86 030.12
	Walls	m <sup>3</sup>	108	R 1 955.23	R 211 164.84
<b>DN2337 Meter Chamber (2 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 775.38
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	15.0	R 1 789.80	R 26 847.00
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	44	R 1 955.23	R 209 209.61
<b>DN200 Scour Chambers (28 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	500	R 125.27	R 62 635.00
<b>CARRIED FORWARD</b>					<b>R 5 668 274.22</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 5 668 274.22</b>
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	230	R 1 955.23	R 449 702.90
	Walls	m <sup>3</sup>	320	R 1 955.23	R 625 673.60
	Roof slab	m <sup>3</sup>	38.5	R 1 955.23	R 75 276.36
	<b>DN200 Air Valve Chamber Type 2 (26 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>DN200 Air Valve Chamber Type 4 (26 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>Concrete encasement DN2540 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
	<b>Concrete encasement DN1829 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN2540 IV Chambers (4 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	154	R 21.55	R 3 318.70
	To top of walls	m <sup>2</sup>	40	R 21.55	R 862.00
	<b>DN1829 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	78	R 21.55	R 1 680.90
	To top of walls	m <sup>2</sup>	20	R 21.55	R 431.00
	<b>DN2337 Meter Chamber (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	78	R 21.55	R 1 680.90
	To top of pipe cradle	m <sup>2</sup>	13.0	R 21.55	R 280.15
	To top of walls	m <sup>2</sup>	20	R 21.55	R 431.00
	<b>DN200 Scour Chambers (28 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	500	R 21.55	R 10 775.00
<b>CARRIED FORWARD</b>					<b>R 7 310 843.17</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 7 310 843.17</b>
	To roof slabs	m <sup>2</sup>	190	R 21.55	R 4 094.50
	To top of walls	m <sup>2</sup>	130	R 21.55	R 2 801.50
	<b>MISCELLANEOUS</b>				
	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 DN2540	m <sup>2</sup>	40	R 114.33	R 4 573.20
	Neoprene inserts for pipes at pipe supports - For DN1829	m <sup>2</sup>	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 <sup>3</sup>	56.4	R 2 215.64	R 124 962.10
	Removable roof slabs in Meter Chamber	m <sup>3</sup>	19.0	R 2 215.64	R 42 097.16
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	15.0	R 2 215.64	R 33 234.60
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	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) DN2540 in IV Chamber	No.	8	R 6 618.09	R 52 944.72
	ii) DN1829 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
	iii) DN300 in IV Chamber	No.	12	R 2 873.22	R 34 478.64
	iv) DN200 in IV Chamber	No.	6	R 1 969.29	R 11 815.74
	v) DN2337 in Meter Chamber	No.	4	R 5 165.34	R 20 661.36
	vi) DN200 in Scour Chamber	No.	28	R 1 969.29	R 55 140.12
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	56	R 750.50	R 42 028.00
	Securex manhole cover in roof slab in chambers	No.	28	R 2 680.10	R 75 042.80
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 7 886 110.77</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2540 * 14mm thick * grade X42 pipe	m	14653	R 14 826.00	R 217 241 671.50
	DN1829 * 10mm thick * grade X42 pipe	m	9576	R 7 626.00	R 73 026 576.00
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	14653	R 5 537.03	R 81 132 716.33
	DN1829 * 10mm thick * grade X42 pipe	m	9576	R 2 871.02	R 27 492 887.52
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN2540 * 14mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	30	R 21 744.89	R 652 346.73
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	24	R 36 591.98	R 878 207.59
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	22	R 48 116.35	R 1 058 559.80
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	6	R 48 116.35	R 288 698.13
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	2	R 61 491.36	R 122 982.71
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	4	R 70 492.14	R 281 968.57
	<b>Bends for DN1829 * 10mm thick * grade X42 pipe:</b>				
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
	<b>SPECIAL ASSEMBLIES</b>				
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.	26	R 84 748.30	R 2 203 455.80
<b>CARRIED FORWARD</b>					<b>R 406 143 335.08</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 406 143 335.08</b>
PSL 5.1.8	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	26	R 140 890.51	R 3 663 153.26
	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	28	R 30 216.41	R 846 059.48
	DN2540 Isolating Valve Assembly Complete	No.	4	R 4 553 644.51	R 18 214 578.04
	DN1829 Isolating Valve Assembly Complete	No.	2	R 2 083 001.89	R 4 166 003.78
	DN2337 Meter Chamber Assembly Complete	No.	2	R 3 579 143.67	R 7 158 287.34
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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.	28	R 28 475.27	R 797 307.56
	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.	121	R 421.80	R 51 098.43
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2540 * 14mm thick * grade X42 pipe	No.	4	R 40 377.36	R 161 509.44
	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	24228.75	R 56.91	R 1 378 858.16
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 445 881 439.03</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b>				
	Supply of selected <b>granular</b> material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) DN2540	m <sup>3</sup>	93155	R 284.97	R 26 546 380.35
	i) DN1829	m <sup>3</sup>	42625	R 284.97	R 12 146 846.25
	<b>Selected Backfill</b>				
	Selected <b>fill</b> 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 <sup>3</sup>	100	R 284.97	R 28 497.00
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m <sup>3</sup>	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 <sup>3</sup>	100	R 726.55	R 72 655.00
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	1000	R 15.99	R 15 990.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 38 852 875.60</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3000 PIPE JACK 1 - R603</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
	<b>DN3000 PIPE JACK 2 - R603</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 5 120 323.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 5 120 323.60</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
<b>DN3000 PIPE JACK 1 - UMLAAS ROAD RAIL</b>					
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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
<b>CARRIED FORWARD</b>					<b>R 10 804 549.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 10 804 549.70</b>
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
<b>DN3000 PIPE JACK 2 - UMLAAS ROAD RAIL</b>					
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
<b>CARRIED FORWARD</b>					<b>R 19 187 413.30</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 19 187 413.30</b>
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 20 227 374.40</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	LAND ACQUISITION	R 5 654 923.48
SECTION 2	CROP COMPENSATION - FORESTRY	R 4 800 000.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 19 718 849.70
SECTION 4	CROP COMPENSATION - MAIZE	R 0.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 1 732 500.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 772 311.85
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 2 484 600.00
SECTION 8	LAND RENTAL	R 5 994 132.94
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 B</b>		<b>R 43 157 317.96</b>

## 3C-PH1

<b>DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 3C - PHASE 1</b>		
<b>BOQ No.</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
3.C-R-PH1	DOUBLE UNEQUAL PIPELINE - RAW WATER	<b>R 678 688 674.69</b>
3.C-P-PH1	DOUBLE UNEQUAL PIPELINE - POTABLE WATER	<b>R 487 290 269.67</b>
3.C-L-PH1	LAND ACQUISITION AND CROP COMPENSATION	<b>R 39 407 078.51</b>
3.BR	PIPE BRIDGE	<b>R 44 228 054.00</b>
3.RD	SITE M1 ACCESS ROAD	<b>R 7 673 300.04</b>
3.WTW	SITE M1 WATER TREATMENT WORKS	<b>R 1 562 054 964.77</b>
3.RES	SITE M1 RESERVOIR	<b>R 194 287 465.26</b>
<b>TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES</b>		<b>R 3 013 629 806.95</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 156 620 463.39
SECTION 2	SITE CLEARANCE	R 3 774 188.95
SECTION 3	EARTHWORKS	R 504 189.90
SECTION 4	PIPE TRENCHES	R 63 518 728.22
SECTION 5	GABIONS AND PITCHING	R 1 067 827.68
SECTION 6	CONCRETE STRUCTURAL	R 4 124 600.16
SECTION 7	MEDIUM PRESSURE PIPELINES	R 401 370 327.84
SECTION 8	BEDDING (PIPES)	R 27 647 822.30
SECTION 9	PIPE JACKING	R 19 003 806.25
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 1 056 720.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 1</b>		<b>R 678 688 674.69</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	72.45	R 9 775.00	R 708 198.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.4	R 39 716.00	R 333 614.40
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	724500	R 3.22	R 2 332 890.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	150	R 58.65	R 8 797.50
	b) Gravel	m <sup>2</sup>	3736	R 54.05	R 201 930.80
	c) Concrete	m <sup>2</sup>	145	R 41.40	R 6 003.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	40	R 27.60	R 1 104.00
	b) Concrete	m	30	R 33.35	R 1 000.50
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 774 188.95</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	DN2032 Isolating Valve Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	DN2337 Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (14 Off)	m <sup>3</sup>	1612	R 132.02	R 212 816.24
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	400	R 20.70	R 8 280.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	350	R 295.55	R 103 442.50
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	500	R 93.15	R 46 575.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 504 189.90</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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 <sup>3</sup>	181700	R 156.01	R 28 347 017.00
	5-6 m	m <sup>3</sup>	82910	R 171.47	R 14 216 577.70
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	70300	R 20.70	R 1 455 210.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	43840	R 243.80	R 10 688 192.00
	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 <sup>3</sup>	5295	93.22	R 493 599.90
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	2650	R 81.32	R 215 498.00
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	50	R 35.08	R 1 754.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	724500	R 10.47	R 7 585 515.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	3736	R 97.75	R 365 194.00
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	150	R 162.15	R 24 322.50
	c) Concrete	m <sup>3</sup>	145	R 247.12	R 35 832.40
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 63 518 728.22</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	741	R 1 355.24	R 1 004 232.84
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 <sup>2</sup>	741	R 15.99	R 11 848.59
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	125	R 413.97	R 51 746.25
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 1 067 827.68</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2540 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	360	R 272.90	R 98 244.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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				
	DN2540 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	<b>DN2032 IV Chambers (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN2337 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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:				
<b>CARRIED FORWARD</b>					<b>R 499 511.51</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 499 511.51</b>
	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
	<b>DN200 Scour Chambers (14 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	870	R 272.90	R 237 423.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	660	R 406.79	R 268 481.40
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	95	R 435.54	R 41 376.30
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
	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
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
	<b>DN200 Air Valve Chamber Type 4 (13 Off) Refer to Drawing No.</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	285	R 143.73	R 40 963.05
<b>8.3</b>	<b>REINFORCEMENT</b>				
	<b>DN2540 IV Chambers (2 Off)</b>				
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
	<b>DN2032 IV Chambers (1 Off)</b>				
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
	<b>DN2337 Meter Chamber (1 Off)</b>				
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
	<b>DN200 Scour Chambers (14 Off)</b>				
<b>CARRIED FORWARD</b>					<b>R 1 654 708.16</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 654 708.16</b>
8.3.1	Mild Steel	t	7.31	R 12 032.07	R 87 954.43
8.3.1	High Tensile Steel	t	29.25	R 12 032.07	R 351 938.05
<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>					
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
<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>					
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
<b>Concrete encasement DN2540 pipe at river crossings (Provisional Quantity)</b>					
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
<b>8.4</b>	<b>CONCRETE</b>				
<b>DN2540 IV Chambers (2 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 775.38
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	44	R 1 955.23	R 86 030.12
	Walls	m <sup>3</sup>	108	R 1 955.23	R 211 164.84
<b>DN2032 IV Chambers (1 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	54	R 1 955.23	R 105 582.42
<b>DN2337 Meter Chamber (1 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	44	R 1 955.23	R 86 030.12
	Walls	m <sup>3</sup>	54	R 1 955.23	R 105 582.42
<b>DN200 Scour Chambers (14 Off)</b>					
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	250	R 125.27	R 31 317.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	113	R 1 955.23	R 220 940.99
<b>CARRIED FORWARD</b>					<b>R 3 194 259.53</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 194 259.53</b>
	Walls	m <sup>3</sup>	161	R 1 955.23	R 313 814.42
	Roof slab	m <sup>3</sup>	19.0	R 1 955.23	R 37 149.37
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>Concrete encasement DN2540 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
	<b>8.4.4 UNFORMED SURFACE FINISHES</b>				
	<b>DN2540 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	78	R 21.55	R 1 680.90
	To top of walls	m <sup>2</sup>	20	R 21.55	R 431.00
	<b>DN2032 IV Chambers (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 840.45
	To top of walls	m <sup>2</sup>	10	R 21.55	R 215.50
	<b>DN2337 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 840.45
	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08
	To top of walls	m <sup>2</sup>	10	R 21.55	R 215.50
	<b>DN200 Scour Chambers (14 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	250	R 21.55	R 5 387.50
	To roof slabs	m <sup>2</sup>	95	R 21.55	R 2 038.63
	To top of walls	m <sup>2</sup>	64	R 21.55	R 1 385.67
	<b>MISCELLANEOUS</b>				
	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 DN2540	m <sup>2</sup>	20	R 114.33	R 2 286.60
<b>CARRIED FORWARD</b>					<b>R 3 814 711.24</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 814 711.24</b>
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 <sup>3</sup>	28.1	R 2 215.64	R 62 193.01
	Removable roof slabs in Meter Chambers	m <sup>3</sup>	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	15.2	R 2 215.64	R 33 677.73
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	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				
	i) DN2540 in DN2540 IV Chamber	No.	4	R 6 618.09	R 26 472.36
	ii) DN300 in DN2540 IV Chamber	No.	4	R 2 873.22	R 11 492.88
	iii) DN200 in DN2540 IV Chamber	No.	2	R 1 969.29	R 3 938.58
	iv) DN2320 in DN2320 IV Chamber	No.	2	R 6 618.09	R 13 236.18
	v) DN300 in DN2320 IV Chamber	No.	2	R 2 873.22	R 5 746.44
	vi) DN200 in DN2320 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.	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
	Securax manhole cover in roof slab in chambers	No.	14	R 2 680.10	R 37 521.40
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 4 124 600.16</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2540 * 18mm thick * grade X42 pipe	m	15073	R 19 032.00	R 286 864 578.00
	DN3030 * 20mm thick * grade X42 pipe	m	200	R 25 239.00	R 5 047 800.00
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2540 * 18mm thick * grade X42 pipe	m	15073	R 5 537.03	R 83 458 268.93
	DN3030 * 20mm thick * grade X42 pipe	m	200	R 7 879.43	R 1 575 886.00
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN2540 * 18mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	34	R 21 744.89	R 739 326.30
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	23	R 36 591.98	R 841 615.61
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	12	R 48 116.35	R 577 396.26
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	5	R 48 116.35	R 240 581.77
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	2	R 61 491.36	R 122 982.71
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 70 492.14	R 140 984.28
	<b>SPECIAL ASSEMBLIES</b>				
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
	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.	14	R 30 216.41	R 423 029.74
	DN2540 Isolating Valve Assembly Complete	No.	2	R 4 593 179.70	R 9 186 359.40
	DN2032 Isolating Valve Assembly Complete	No.	1	R 2 466 414.30	R 2 466 414.30
	DN2337 Meter Chamber Assembly Complete	No.	1	R 3 579 143.67	R 3 579 143.67
	DN3030 * DN2540 Reducer	No.	1	R 80 000.00	R 80 000.00
<b>CARRIED FORWARD</b>					<b>R 398 277 671.50</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 398 277 671.50</b>
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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.	14	R 28 475.27	R 398 653.78
	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.	75	R 421.80	R 31 788.43
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2540 * 18mm thick * grade X42 pipe	No.	2	R 40 377.36	R 80 754.72
	DN3030 * 20mm 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	15072.75	R 56.91	R 857 790.20
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 401 370 327.84</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b> Supply of selected <b>granular</b> 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 <sup>3</sup>	96740	R 284.97	R 27 567 997.80
	<b>Selected Backfill</b> Selected <b>fill</b> 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 <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	500	R 15.99	R 7 995.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 27 647 822.30</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3750 PIPE JACK 1 - BAYNESFIELD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	25	R 73 743.75	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 64 687.50	R 1 617 187.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	505	R 1 840.00	R 929 200.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	150	R 3 450.00	R 517 500.00
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
	<b>DN3750 PIPE JACK 1 - R56</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 7 663 676.25</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 7 663 676.25</b>
PS LG5.2.3.1, 8.2.19	Conduct monitoring surveys	No.	7	R 402.50	R 2 817.50
PSLG 8.2.2	<b>Supply of Pipes to be Jacked:</b>				
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	25	R 73 743.75	R 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
8.2.3 PSLG 5.4.3	DN3750 x 2440mm long, ROCLA IN-THE-WALL" Class 100D RC pipes	m	25	R 64 687.50	R 1 617 187.50
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	505	R 1 840.00	R 929 200.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	150	R 3 450.00	R 517 500.00
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
	<b>DN3750 PIPE JACK 1 - R624</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
<b>CARRIED FORWARD</b>					<b>R 16 079 538.75</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 16 079 538.75</b>
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
8.2.4 PSLG 4.3, 5.1.4	Excavation for Jacking in all materials	m3	401	R 1 840.00	R 737 840.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	90	R 3 450.00	R 310 500.00
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	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 19 003 806.25</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 112 451 600.69
SECTION 2	SITE CLEARANCE	R 2 433 894.53
SECTION 3	EARTHWORKS	R 323 585.97
SECTION 4	PIPE TRENCHES	R 48 301 616.85
SECTION 5	GABIONS AND PITCHING	R 719 535.26
SECTION 6	CONCRETE STRUCTURAL	R 2 240 347.57
SECTION 7	MEDIUM PRESSURE PIPELINES	R 279 805 740.16
SECTION 8	BEDDING (PIPES)	R 21 754 642.70
SECTION 9	PIPE JACKING	R 11 414 825.95
SECTION 10	CATHODIC PROTECTION AND AC MITIGATION	R 7 844 480.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 1</b>		<b>R 487 290 269.67</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	51.66	R 9 775.00	R 504 976.50
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	1.025	R 39 716.00	R 40 708.90
8.2.10	Remove topsoil to nominal depth of 150mm, stockpile and maintain.	m <sup>2</sup>	516600	R 3.22	R 1 663 452.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	107	R 58.65	R 6 275.55
	b) Gravel	m <sup>2</sup>	1491.5	R 54.05	R 80 615.58
	c) Concrete	m <sup>2</sup>	1015.5	R 41.40	R 42 041.70
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	18	R 27.60	R 496.80
	b) Concrete	m	150	R 33.35	R 5 002.50
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	100	R 126.00	R 12 600.00
	ii) All timber fence.	m	100	R 172.50	R 17 250.00
	iii) All galvanized weld mesh fence.	m	100	R 97.75	R 9 775.00
	iv) All galvanized diamond mesh fence.	m	100	R 207.00	R 20 700.00
	v) All electric fence	m	100	R 300.00	R 30 000.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 433 894.53</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 Chamber (2 Off)	m <sup>3</sup>	502	R 132.02	R 66 274.04
	DN2032 Isolating Valve Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	DN2540 Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (9 Off)	m <sup>3</sup>	520	R 132.02	R 68 650.40
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	382	R 20.70	R 7 897.05
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	229	R 295.55	R 67 651.40
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	500	R 93.15	R 46 575.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 323 585.97</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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:				
	<b>for DN2820 pipe</b>				
	4-5 m	m <sup>3</sup>	113745	R 156.01	R 17 745 357.45
	5-6 m	m <sup>3</sup>	28605	R 171.47	R 4 904 899.35
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	37020	R 20.70	R 766 314.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	22785	R 243.80	R 5 554 983.00
	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 <sup>3</sup>	2850	93.22	R 265 677.00
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	1425	R 81.32	R 115 881.00
	<b>DN2032 pipe</b>				
	4-5 m	m <sup>3</sup>	56115	R 156.01	R 8 754 501.15
	5 -6 m	m <sup>3</sup>	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 <sup>3</sup>	16260	R 20.70	R 336 582.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	640	R 81.32	R 52 044.80
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	50	R 35.08	R 1 754.00
	<b>EXISTING SERVICES</b>				
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
<b>CARRIED FORWARD</b>					<b>R 42 470 710.35</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 42 470 710.35</b>
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	516600	R 10.47	R 5 408 802.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	1491.5	R 97.75	R 145 794.13
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	107	R 162.15	R 17 350.05
	c) Concrete	m <sup>3</sup>	1017.5	R 247.12	R 251 444.60
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 48 301 616.85</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	487	R 1 355.24	R 660 001.88
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 <sup>2</sup>	487	R 15.99	R 7 787.13
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	125	R 413.97	R 51 746.25
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 719 535.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2820 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	355	R 272.90	R 96 879.50
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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		4		
	DN2820 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	<b>DN2032 IV Chambers (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN2540 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	160	R 406.79	R 65 086.40
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
<b>CARRIED FORWARD</b>					<b>R 493 116.46</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 493 116.46</b>
8.2.6	200mm wide Box out holes/form voids: Large, circular, diameter greater than 1,0m, depth 0m to 0,5m	m	35	R 143.73	R 5 030.55
	DN2540 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
<b>DN200 Scour Chambers (9 Off)</b>					
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	560	R 272.90	R 152 824.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	425	R 406.79	R 172 885.75
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	65	R 435.54	R 28 310.10
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	200mm wide	m	100	R 143.73	R 14 373.00
8.2.6	Box out holes/form voids: Small, circular, up to 0,35 m dia., depth 0 m to 0,5 metres				
8.2.6(a)	DN200 pipe through chamber wall	No.	18	R 476.94	R 8 584.92
	DN200 air vents in roof slab	No.	18	R 476.94	R 8 584.92
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m				
	DN550 manhole access in roof slab	No.	9	R 1 586.47	R 14 278.23
<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	90	R 143.73	R 12 935.70
<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide				
	150mm wide	m	90	R 143.73	R 12 935.70
<b>8.3</b>	<b>REINFORCEMENT</b>				
<b>DN2820 IV Chambers (2 Off)</b>					
8.3.1	Mild Steel	t	3.74	R 12 032.07	R 44 999.94
8.3.1	High Tensile Steel	t	14.95	R 12 032.07	R 179 879.45
<b>DN2032 IV Chambers (1 Off)</b>					
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
<b>CARRIED FORWARD</b>					<b>R 1 265 667.39</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 265 667.39</b>
	<b>DN2540 Meter Chamber (1 Off)</b>				
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
	<b>DN200 Scour Chambers (9 Off)</b>				
8.3.1	Mild Steel	t	4.75	R 12 032.07	R 57 152.33
8.3.1	High Tensile Steel	t	19.00	R 12 032.07	R 228 609.33
	<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>				
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
	<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>				
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
	<b>Concrete encasement DN2820 pipe at river crossings (Provisional Quantity)</b>				
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
	<b>Concrete encasement DN2032 pipe at river crossings (Provisional Quantity)</b>				
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
<b>8.4</b>	<b>CONCRETE</b>				
	<b>DN2820 IV Chambers (2 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 777.89
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	43	R 1 955.23	R 83 097.28
	Walls	m <sup>3</sup>	107	R 1 955.23	R 209 209.61
	<b>DN2032 IV Chambers (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	54	R 1 955.23	R 105 582.42
	<b>DN2540 Meter Chamber (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
<b>CARRIED FORWARD</b>					<b>R 1 179 042.27</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 179 042.27</b>
8.4.3	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 42 037.45
	Walls	m <sup>3</sup>	54	R 1 955.23	R 104 604.81
	<b>DN200 Scour Chambers (9 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	161	R 125.27	R 20 105.84
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	74	R 1 955.23	R 144 687.02
	Walls	m <sup>3</sup>	104	R 1 955.23	R 202 366.31
	Roof slab	m <sup>3</sup>	12.5	R 1 955.23	R 24 440.38
	<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>Concrete encasement DN2820 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	50	R 2 215.64	R 110 782.00
	<b>Concrete encasement DN2032 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	50	R 2 215.64	R 110 782.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN2820 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	77	R 21.55	R 1 659.35
	To top of walls	m <sup>2</sup>	19	R 21.55	R 409.45
	<b>DN2032 IV Chambers (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
	To top of walls	m <sup>2</sup>	10	R 21.55	R 204.73
	<b>DN2540 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
<b>CARRIED FORWARD</b>					<b>R 1 975 756.73</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	
<b>BROUGHT FORWARD</b>					<b>R 1 975 756.73</b>	
8.4.4(a)	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08	
	To top of walls	m <sup>2</sup>	10	R 21.55	R 204.73	
	<b>DN200 Scour Chambers (9 Off)</b>					
	Wood-floated					
	To floor slabs	m <sup>2</sup>	161	R 21.55	R 3 458.78	
	To roof slabs	m <sup>2</sup>	61	R 21.55	R 1 314.55	
	To top of walls	m <sup>2</sup>	42	R 21.55	R 894.33	
	<b>MISCELLANEOUS</b>					
	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	
PSG 8.4.5	Neoprene inserts for pipes at pipe supports - For DN2820	m <sup>2</sup>	10	R 114.33	R 1 143.30	
	Neoprene inserts for pipes at pipe supports - For DN2032	m <sup>2</sup>	10	R 114.33	R 1 143.30	
	Concrete complete with formwork, reinforcing, surface finishing, holes, vents if applicable and joints, for:					
	Removable roof slabs in IV chambers	m <sup>3</sup>	28.2	R 2 215.64	R 62 392.42	
	Removable roof slabs in Meter Chambers	m <sup>3</sup>	9.4	R 2 215.64	R 20 793.78	
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	9.4	R 2 215.64	R 20 716.23	
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	9.4	R 2 215.64	R 20 716.23	
	PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
		i) DN2820 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
		iii) DN2540 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
iv) DN2032 in IV Chamber		No.	2	R 6 618.09	R 13 236.18	
vi) DN300 in IV Chamber		No.	6	R 2 873.22	R 17 239.32	
vii) DN200 in IV Chamber		No.	3	R 1 969.29	R 5 907.87	
PSG 8.10	ix) DN200 in Scour Chamber	No.	9	R 1 969.29	R 17 723.61	
	Casting of pipes/specials through walls or slabs					
	Air vents in roof slab in chambers	No.	18	R 750.50	R 13 509.00	
	Securex manhole cover in roof slab in chambers	No.	9	R 2 680.10	R 24 120.90	
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 240 347.57</b>	

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2820 * 16mm thick * grade X42 pipe	m	7325	R 18 809.00	R 137 772 163.20
	DN2032 * 12mm thick * grade X42 pipe	m	4788	R 10 163.00	R 48 660 444.00
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	7325	R 6 825.08	R 49 992 345.98
	DN2032 * 12mm thick * grade X42 pipe	m	4788	R 3 543.70	R 16 967 235.60
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN2820 * 16mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	15	R 26 803.28	R 402 049.20
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	12	R 45 104.17	R 541 250.04
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	11	R 59 309.40	R 652 403.40
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 59 309.40	R 177 928.20
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
	<b>Bends for DN2032 * 12mm thick * grade X42 pipe:</b>				
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
	<b>SPECIAL ASSEMBLIES</b>				
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.	8	R 84 748.30	R 677 986.40
<b>CARRIED FORWARD</b>					<b>R 257 181 579.24</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 257 181 579.24</b>
PSL 5.1.8	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	8	R 140 890.51	R 1 127 124.08
	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	9	R 30 216.41	R 271 947.69
	DN2820 Isolating Valve Assembly Complete	No.	2	R 6 443 761.69	R 12 887 523.38
	DN2032 Isolating Valve Assembly Complete	No.	1	R 2 434 823.98	R 2 434 823.98
	DN2540 Meter Chamber Assembly Complete	No.	1	R 3 790 354.64	R 3 790 354.64
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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.	9	R 28 475.27	R 256 277.43
	Air Valve Chambers				
	a) Type 2	No.	8	R 61 874.57	R 494 996.56
	b) Type 4	No.	8	R 61 875.57	R 495 004.56
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	61	R 421.80	R 25 545.90
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	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
	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	12113	R 56.91	R 689 339.45
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 279 805 740.16</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b>				
	Supply of selected <b>granular</b> 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 pipe	m <sup>3</sup>	52345	R 284.97	R 14 916 754.65
	i) DN2032 pipe	m <sup>3</sup>	23715	R 284.97	R 6 758 063.55
	<b>Selected Backfill</b>				
	Selected <b>fill</b> 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 <sup>3</sup>	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m <sup>3</sup>	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 <sup>3</sup>	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	500	R 15.99	R 7 995.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 21 754 642.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3250 PIPE JACK 1 - R603</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
	<b>DN3250 PIPE JACK 1 - UMLAAS ROAD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 5 604 933.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 5 604 933.60</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 11 414 825.95</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	LAND ACQUISITION	R 5 654 923.48
SECTION 2	CROP COMPENSATION - FORESTRY	R 4 320 000.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 17 746 964.73
SECTION 4	CROP COMPENSATION - MAIZE	R 0.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 1 559 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 495 080.67
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 2 236 140.00
SECTION 8	LAND RENTAL	R 5 394 719.64
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 1</b>		<b>R 39 407 078.51</b>

## 3C-PH2

<b>DETAILED SUMMARY FOR COST COMPONENTS TO OPTION 3C - PHASE 2</b>		
<b>BOQ No.</b>	<b>DESCRIPTION</b>	<b>AMOUNT</b>
3.C-R-PH2	DOUBLE UNEQUAL PIPELINE - RAW WATER	<b>R 481 919 415.23</b>
3.C-P-PH2	DOUBLE UNEQUAL PIPELINE - POTABLE WATER	<b>R 361 885 686.88</b>
3.C-L-PH2	LAND ACQUISITION AND CROP COMPENSATION	<b>R 31 354 501.86</b>
<b>TOTAL CARRIED FORWARD TO SUMMARY OF BILL OF QUANTITIES</b>		<b>R 875 159 603.98</b>



**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 111 212 172.75
SECTION 2	SITE CLEARANCE	R 3 774 188.95
SECTION 3	EARTHWORKS	R 330 317.49
SECTION 4	PIPE TRENCHES	R 49 052 568.17
SECTION 5	GABIONS AND PITCHING	R 1 067 827.68
SECTION 6	CONCRETE STRUCTURAL	R 4 061 995.32
SECTION 7	MEDIUM PRESSURE PIPELINES	R 275 985 196.43
SECTION 8	BEDDING (PIPES)	R 21 814 486.40
SECTION 9	PIPE JACKING	R 14 620 662.05
SECTION 10	CATHODIC PROTECTION & AC MITIGATION	R 0.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 2</b>		<b>R 481 919 415.23</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	72.45	R 9 775.00	R 708 198.75
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	8.4	R 39 716.00	R 333 614.40
8.2.10	Remove topsoil to nominal depth of 150mm and stockpile and maintain.	m <sup>2</sup>	724500	R 3.22	R 2 332 890.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	150	R 58.65	R 8 797.50
	b) Gravel	m <sup>2</sup>	3736	R 54.05	R 201 930.80
	c) Concrete	m <sup>2</sup>	145	R 41.40	R 6 003.00
PSC 8.2.14	Saw cutting of existing surface:				
	a) Asphalt	m	40	R 27.60	R 1 104.00
	b) Concrete	m	30	R 33.35	R 1 000.50
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 774 188.95</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 (2 Off)	m <sup>3</sup>	504	R 132.02	R 66 538.08
	DN1829 Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (14 Off)	m <sup>3</sup>	806	R 132.02	R 106 408.12
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	390	R 20.70	R 8 073.00
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	235	R 295.55	R 69 454.25
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	500	R 93.15	R 46 575.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 330 317.49</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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:  <b>for DN2032 pipe</b>				
	4-5 m	m <sup>3</sup>	190495	R 156.01	R 29 719 124.95
	5-6 m	m <sup>3</sup>	11710	R 171.47	R 2 007 913.70
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	51140	R 20.70	R 1 058 598.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	30920	R 243.80	R 7 538 296.00
	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 <sup>3</sup>	4045	93.22	R 377 074.90
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	2025	R 81.32	R 164 673.00
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
	Topsoiling	m <sup>2</sup>	724500	R 10.47	R 7 585 515.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	3736	R 97.75	R 365 194.00
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	150	R 162.15	R 24 322.50
	c) Concrete	m <sup>3</sup>	145	R 247.12	R 35 832.40
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 49 052 568.17</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	741	R 1 355.24	R 1 004 232.84
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 <sup>2</sup>	741	R 15.99	R 11 848.59
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	125	R 413.97	R 51 746.25
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 1 067 827.68</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2032 IV Chambers (3 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	540	R 272.90	R 147 366.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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				
	DN2032 pipe through chamber walls	No.	6	R 3 091.57	R 18 549.42
	<b>DN1829 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN200 Scour Chambers (14 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	870	R 272.90	R 237 423.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	660	R 406.79	R 268 481.40
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	95	R 435.54	R 41 376.30
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
<b>CARRIED FORWARD</b>					<b>R 1 085 773.89</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 085 773.89</b>
	DN200 air vents in roof slab Large, circular, diameter greater than 1,0m, depth 0m to 0,5m	No.	28	R 476.94	R 13 354.32
	DN550 manhole access in roof slab	No.	14	R 1 586.47	R 22 210.58
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	285	R 143.73	R 40 963.05
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide 150mm wide	m	285	R 143.73	R 40 963.05
<b>8.3</b>	<b>REINFORCEMENT</b>				
	<b>DN2032 IV Chambers (3 Off)</b>				
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
	<b>DN1829 Meter Chamber (1 Off)</b>				
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
	<b>DN200 Scour Chambers (14 Off)</b>				
8.3.1	Mild Steel	t	7.31	R 12 032.07	R 87 954.43
8.3.1	High Tensile Steel	t	29.25	R 12 032.07	R 351 938.05
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
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
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
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
	<b>Concrete encasement DN2032 pipe at river crossings (Provisional Quantity)</b>				
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
<b>8.4</b>	<b>CONCRETE</b>				
	<b>DN2032 IV Chambers (3 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	141	R 125.27	R 17 663.07
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	66	R 1 955.23	R 129 045.18
	Walls	m <sup>3</sup>	162	R 1 955.23	R 316 747.26
<b>CARRIED FORWARD</b>					<b>R 2 731 077.31</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 2 731 077.31</b>
	<b>DN1829 Meter Chamber (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	44	R 1 955.23	R 86 030.12
	Walls	m <sup>3</sup>	54	R 1 955.23	R 105 582.42
	<b>DN200 Scour Chambers (14 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	250	R 125.27	R 31 317.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	113	R 1 955.23	R 220 940.99
	Walls	m <sup>3</sup>	161	R 1 955.23	R 313 814.42
	Roof slab	m <sup>3</sup>	19.0	R 1 955.23	R 37 149.37
	<b>DN200 Air Valve Chamber Type 2 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>DN200 Air Valve Chamber Type 4 (13 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	7.5	R 1 955.23	R 14 664.23
	<b>Concrete encasement DN2032 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	75	R 2 215.64	R 166 173.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN2032 IV Chambers (3 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	117	R 21.55	R 2 521.35
	To top of walls	m <sup>2</sup>	30	R 21.55	R 646.50
	<b>DN1829 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 840.45
	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08
	To top of walls	m <sup>2</sup>	10	R 21.55	R 215.50
<b>CARRIED FORWARD</b>					<b>R 3 745 088.64</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 745 088.64</b>
	<b>DN200 Scour Chambers (14 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	250	R 21.55	R 5 387.50
	To roof slabs	m <sup>2</sup>	95	R 21.55	R 2 038.63
	To top of walls	m <sup>2</sup>	64	R 21.55	R 1 385.67
	<b>MISCELLANEOUS</b>				
	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 <sup>2</sup>	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 <sup>3</sup>	23.4	R 2 215.64	R 51 845.98
	Removable roof slabs in Meter Chambers	m <sup>3</sup>	9.5	R 2 215.64	R 21 048.58
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	15.2	R 2 215.64	R 33 677.73
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	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				
	iv) DN2032 in DN2032 IV Chamber	No.	6	R 6 618.09	R 39 708.54
	v) DN300 in DN2032 IV Chamber	No.	6	R 2 873.22	R 17 239.32
	vi) DN200 in DN2032 IV Chamber	No.	3	R 1 969.29	R 5 907.87
	viii) DN1829 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	ix) 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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 4 061 995.32</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2032 * 16mm thick * grade X42 pipe	m	15073	R 13 523.00	R 203 828 798.25
PSL 8.2.1	Lay, bed and joint pipes, inclusive of internal epoxy lining repair, external coating repair and NDT testing				
	DN2032 * 16mm thick * grade X42 pipe	m	15073	R 3 543.70	R 53 413 304.18
	Manufacturing of Simple and Compound Bends, inclusive of reinstatement of testing, external coating and internal lining reinstatement, transportation and handling:				
	<b>Bends for DN2032 * 16mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	34	R 13 916.73	R 473 168.83
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	23	R 23 418.87	R 538 633.99
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	12	R 30 794.47	R 369 533.60
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	5	R 30 794.47	R 153 972.33
8.2.3 & PSL 3.4.4.1	61 to 75 deg	No.	2	R 39 354.47	R 78 708.93
8.2.3 & PSL 3.4.4.1	76 to 90 deg	No.	2	R 45 114.97	R 90 229.94
	<b>SPECIAL ASSEMBLIES</b>				
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
	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.	14	R 30 216.41	R 423 029.74
	DN2032 Isolating Valve Assembly Complete	No.	3	R 2 466 414.30	R 7 399 242.90
	DN1829 Meter Chamber Assembly Complete	No.	1	R 3 139 684.56	R 3 139 684.56
	DN3030 * DN2540 Reducer	No.	1	R 80 000.00	R 80 000.00
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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:				
<b>CARRIED FORWARD</b>					<b>R 272 921 611.79</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 272 921 611.79</b>
	Scour Valve Chamber				
	a) Type 1	No.	14	R 28 475.27	R 398 653.78
	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.	75	R 421.80	R 31 788.43
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2032 * 16mm thick * grade X42 pipe	No.	2	R 25 841.51	R 51 683.02
	#REF!	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	15073	R 56.91	R 857 790.20
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 275 985 196.43</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 LB</b>	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b>				
	Supply of selected <b>granular</b> 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 <sup>3</sup>	76270	R 284.97	R 21 734 661.90
	<b>Selected Backfill</b>				
	Selected <b>fill</b> 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 <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	500	R 15.99	R 7 995.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 21 814 486.40</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN3250 PIPE JACK 2 - BAYNESFIELD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
PS LG4.3.4.3	Strapping of railway lines	Prov Sum	1	R 50 000.00	R 50 000.00
PSLG 8.2.2	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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	410	R 1 840.00	R 754 400.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	125	R 3 450.00	R 431 250.00
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
	<b>DN3250 PIPE JACK 2 - R56</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 6 551 444.85</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 6 551 444.85</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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	<b>Jacking of Pipes:</b>				
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	325	R 1 840.00	R 598 000.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	81	R 3 450.00	R 279 450.00
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
	<b>DN3250 PIPE JACK 2 - R624</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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	<b>Supply of Pipes to be Jacked:</b>				
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
<b>CARRIED FORWARD</b>					<b>R 12 244 640.95</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 12 244 640.95</b>
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
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	325	R 1 840.00	R 598 000.00
8.2.5	Extra-over item 8.2.4 for unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
8.2.9(a)	Provision and establishment of equipment on site, and removal on completion of operation	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	81	R 3 450.00	R 279 450.00
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 14 620 662.05</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 83 512 081.59
SECTION 2	SITE CLEARANCE	R 2 699 360.55
SECTION 3	EARTHWORKS	R 311 740.39
SECTION 4	PIPE TRENCHES	R 41 064 781.20
SECTION 5	GABIONS AND PITCHING	R 719 535.26
SECTION 6	CONCRETE STRUCTURAL	R 3 734 637.99
SECTION 7	MEDIUM PRESSURE PIPELINES	R 202 370 698.25
SECTION 8	BEDDING (PIPES)	R 17 927 495.60
SECTION 9	PIPE JACKING	R 9 545 356.05
SECTION 10	CATHODIC PROTECTION AND AC MITIGATION	R 0.00
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 2</b>		<b>R 361 885 686.88</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 C</b>	<b>SECTION 2 : SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site over working corridor	ha	51.66	R 9 775.00	R 504 976.50
8.2.2	Remove and grub large trees and tree stumps regardless of girth	ha	2.05	R 39 716.00	R 81 417.80
8.2.10	Remove topsoil to nominal depth of 150mm, stockpile and maintain.	m <sup>2</sup>	516600	R 3.22	R 1 663 452.00
PSC 8.2.11	Remove existing road and driveways and spoil, for:				
	a) Asphalt	m <sup>2</sup>	214	R 58.65	R 12 551.10
	b) Gravel	m <sup>2</sup>	2983	R 54.05	R 161 231.15
	c) Concrete	m <sup>2</sup>	2031	R 41.40	R 84 083.40
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 2 699 360.55</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 D</b>	<b>SECTION 3 : EARTHWORKS</b>				
	<b>EXCAVATION</b>				
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 Chambers (2 Off)	m <sup>3</sup>	502	R 132.02	R 66 274.04
	DN1524 Isolating Valve Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	DN2234 Meter Chamber (1 Off)	m <sup>3</sup>	252	R 132.02	R 33 269.04
	Scour Valve Chambers				
	a) Type 1 (9 Off)	m <sup>3</sup>	520	R 132.02	R 68 650.40
8.3.2.(b)	Extra-over item 8.3.3 for excavation in:				
8.3.3.(b).1	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	382	R 20.70	R 7 897.05
8.3.3.(b).2	Hard Rock (Provisional Quantity)	m <sup>3</sup>	229	R 243.80	R 55 805.82
	<b>FINISHINGS</b>				
PSD 8.3.14 PSD 5.1.1.1	Barricading				
	i) Barrier Fence	m	500	R 93.15	R 46 575.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 311 740.39</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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:				
	<b>for DN2450 pipe</b>				
	4-5 m	m <sup>3</sup>	95740	R 156.01	R 14 936 397.40
	5-6 m	m <sup>3</sup>	25975	R 171.47	R 4 453 933.25
8.3.2(b)	Extra-over items 8.3.2(a) for :				
1)	Intermediate Material (Provisional Quantity)	m <sup>3</sup>	31730	R 20.70	R 656 811.00
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	19560	R 243.80	R 4 768 728.00
	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 <sup>3</sup>	2395	93.22	R 223 261.90
8.3.2(c) PSDB5.5	Excavate and dispose of unsuitable material from trench bottom (Provisional Quantity)	m <sup>3</sup>	1200	R 81.32	R 97 584.00
	<b>DN1524 pipe</b>				
	3-4 m	m <sup>3</sup>	41685	R 156.01	R 6 503 276.85
	4-5 m	m <sup>3</sup>	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 <sup>3</sup>	11935	R 20.70	R 247 054.50
2)	Hard Rock (Provisional Quantity)	m <sup>3</sup>	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 <sup>3</sup>	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 <sup>3</sup>	470	R 81.32	R 38 220.40
	<b>SELECTED BACKFILL</b>				
8.3.3.3	Compaction in road reserves to 97% MOD AASHTO (Provisional Quantity)	m <sup>3</sup>	100	R 35.08	R 3 508.00
	<b>EXISTING SERVICES</b>				
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
	<b>FINISHINGS</b>				
<b>CARRIED FORWARD</b>					<b>R 34 814 275.45</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 34 814 275.45</b>
PSDB 5.1.2.2	Topsoiling	m <sup>2</sup>	516600	R 10.47	R 5 408 802.00
	Reinstate roads and driveways complete with all courses				
	a) Gravel in driveways	m <sup>2</sup>	2983	R 97.75	R 291 588.25
	b) Asphalt of 30 - 60mm thickness in roadway	m <sup>2</sup>	214	R 162.15	R 34 700.10
	c) Concrete	m <sup>3</sup>	2035	R 247.12	R 502 889.20
	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 41 064 781.20</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DK</b>	<b>SECTION 5: GABIONS AND PITCHING</b>				
	<b>GABIONS</b>				
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 <sup>2</sup>	487	R 1 355.24	R 660 001.88
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 <sup>2</sup>	487	R 15.99	R 7 787.13
PSDK 3.2	<b>STONE PITCHING</b>				
	Supply all labour, plant and material and lay medium grouted pitching as indicated, including for all surface preparation and compaction (Provisional Quantity)	m <sup>2</sup>	125	R 413.97	R 51 746.25
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 719 535.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 G</b>	<b>SECTION 6 : CONCRETE STRUCTURAL</b>				
<b>8.2 PSG 4.5, 7.2</b>	<b>FORMWORK</b>				
	<b>DN2450 IV Chambers (2 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	355	R 272.90	R 96 879.50
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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				
	DN2450 pipe through chamber walls	No.	4	R 3 091.57	R 12 366.28
	<b>DN1524 IV Chambers (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
	<b>DN2234 Meter Chamber (1 Off)</b>				
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	180	R 272.90	R 49 122.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	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
<b>CARRIED FORWARD</b>					<b>R 498 147.01</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 498 147.01</b>
8.2.6	Box out holes/form voids:  Large, circular, diameter greater than 1,0m, depth 0m to 0,5m  DN2234 pipe through chamber walls	No.	2	R 2 033.93	R 4 067.86
<b>DN200 Scour Chambers (9 Off)</b>					
8.2.1	Rough to External walls above and below ground level	m <sup>2</sup>	560	R 272.90	R 152 824.00
8.2.2	Smooth to exposed face of Internal walls	m <sup>2</sup>	425	R 406.79	R 172 885.75
8.2.2	Smooth to underside of roof slab	m <sup>2</sup>	65	R 435.54	R 28 310.10
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide  200mm wide	m	100	R 143.73	R 14 373.00
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.	18	R 476.94	R 8 584.92
	DN200 air vents in roof slab	No.	18	R 476.94	R 8 584.92
	Large, circular, diameter greater than 1,0m, depth 0m to 0,5m  DN550 manhole access in roof slab	No.	9	R 1 586.47	R 14 278.23
<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide  150mm wide	m	180	R 143.73	R 25 871.40
<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>					
8.2.5	Horizontal / Vertical narrow widths up to 300mm wide  150mm wide	m	180	R 143.73	R 25 871.40
<b>8.3</b>	<b>REINFORCEMENT</b>				
<b>DN2450 IV Chambers (2 Off)</b>					
8.3.1	Mild Steel	t	3.74	R 12 032.07	R 44 999.94
8.3.1	High Tensile Steel	t	14.95	R 12 032.07	R 179 879.45
<b>DN1524 IV Chambers (1 Off)</b>					
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
<b>DN2234 Meter Chamber (1 Off)</b>					
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
<b>CARRIED FORWARD</b>					<b>R 1 404 399.61</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 1 404 399.61</b>
	<b>DN200 Scour Chambers (9 Off)</b>				
8.3.1	Mild Steel	t	4.75	R 12 032.07	R 57 152.33
8.3.1	High Tensile Steel	t	19.00	R 12 032.07	R 228 609.33
	<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>				
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
	<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>				
8.3.1	Mild Steel	t	0.13	R 12 032.07	R 1 564.17
8.3.1	High Tensile Steel	t	0.50	R 12 032.07	R 6 016.04
	<b>Concrete encasement DN2450 pipe at river crossings (Provisional Quantity)</b>				
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
	<b>Concrete encasement DN1524 pipe at river crossings (Provisional Quantity)</b>				
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
<b>8.4</b>	<b>CONCRETE</b>				
	<b>DN2450 IV Chambers (2 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	94	R 125.27	R 11 777.89
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	43	R 1 955.23	R 83 097.28
	Walls	m <sup>3</sup>	107	R 1 955.23	R 209 209.61
	<b>DN1524 IV Chambers (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 43 015.06
	Walls	m <sup>3</sup>	54	R 1 955.23	R 105 582.42
	<b>DN2234 Meter Chamber (1 Off)</b>				
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	47	R 125.27	R 5 887.69
8.4.3	15MPa concrete for platforms, steps, pipe supports etc.				
	Pipe supports	m <sup>3</sup>	7.5	R 1 789.80	R 13 423.50
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	22	R 1 955.23	R 42 037.45
	Walls	m <sup>3</sup>	54	R 1 955.23	R 104 604.81
	<b>DN200 Scour Chambers (9 Off)</b>				
<b>CARRIED FORWARD</b>					<b>R 2 630 646.81</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 2 630 646.81</b>
8.4.2	10 MPa concrete 55mm thk for blinding	m <sup>2</sup>	160	R 125.27	R 20 079.53
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Base	m <sup>3</sup>	74	R 1 955.23	R 144 687.02
	Walls	m <sup>3</sup>	104	R 1 955.23	R 202 366.31
	Roof slab	m <sup>3</sup>	12.5	R 1 955.23	R 24 440.38
	<b>DN200 Air Valve Chamber Type 2 (8 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>DN200 Air Valve Chamber Type 4 (8 Off)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Strip Foundation	m <sup>3</sup>	5.0	R 1 955.23	R 9 776.15
	<b>Concrete encasement DN2450 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	75	R 2 215.64	R 166 173.00
	<b>Concrete encasement DN1524 pipe at river crossing (Provisional Quantity)</b>				
8.4.3	Concrete, Grade 25MPa/19mm for:				
	Concrete encasement of pipe	m <sup>3</sup>	100	R 2 215.64	R 221 564.00
<b>8.4.4</b>	<b>UNFORMED SURFACE FINISHES</b>				
	<b>DN2450 IV Chambers (2 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	77	R 21.55	R 1 659.35
	To top of walls	m <sup>2</sup>	19	R 21.55	R 409.45
	<b>DN1524 IV Chambers (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 840.45
	To top of walls	m <sup>2</sup>	10	R 21.55	R 204.73
	<b>DN2234 Meter Chamber (1 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	39	R 21.55	R 829.68
	To top of pipe cradle	m <sup>2</sup>	6.5	R 21.55	R 140.08
	To top of walls	m <sup>2</sup>	10	R 21.55	R 204.73
	<b>DN200 Scour Chambers (9 Off)</b>				
8.4.4(a)	Wood-floated				
	To floor slabs	m <sup>2</sup>	160	R 21.55	R 3 454.47
<b>CARRIED FORWARD</b>					<b>R 3 437 252.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 3 437 252.26</b>
	To roof slabs	m <sup>2</sup>	61	R 21.55	R 1 310.24
	To top of walls	m <sup>2</sup>	41	R 21.55	R 892.17
	<b>MISCELLANEOUS</b>				
	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 <sup>2</sup>	20	R 114.33	R 2 286.60
	Neoprene inserts for pipes at pipe supports - For DN1524	m <sup>2</sup>	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 <sup>3</sup>	42.2	R 2 215.64	R 93 555.40
	Removable roof slabs in Meter Chambers	m <sup>3</sup>	9.4	R 2 215.64	R 20 793.78
	Removable roof slabs in Air Valve-Type2	m <sup>3</sup>	9.4	R 2 215.64	R 20 716.23
	Removable roof slabs in Air Valve Type 4	m <sup>3</sup>	9.4	R 2 215.64	R 20 738.39
PSG 8.9	Grouting of pipes/specials through walls or slabs inclusive of pipe wall joint sealing				
	ii) DN2450 in IV Chamber	No.	4	R 6 618.09	R 26 472.36
	v) DN1524 in IV Chamber	No.	2	R 6 618.09	R 13 236.18
	vi) DN300 in IV Chamber	No.	6	R 2 873.22	R 17 239.32
	vii) DN200 in IV Chamber	No.	3	R 1 969.29	R 5 907.87
	viii) DN2234 in Meter Chamber	No.	2	R 5 165.34	R 10 330.68
	ix) DN200 in Scour Chamber	No.	9	R 1 969.29	R 17 723.61
PSG 8.10	Casting of pipes/specials through walls or slabs				
	Air vents in roof slab in chambers	No.	18	R 750.50	R 13 509.00
	Securex manhole cover in roof slab in chambers	No.	9	R 2 680.10	R 24 120.90
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 3 734 637.99</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 7 : MEDIUM PRESSURE PIPELINES</b>				
	Supply and transport of polyurethane coated, epoxy lined steel pipe				
	DN2450 * 14mm thick * grade X42 pipe	m	7325	R 14 298.00	R 104 729 990.40
	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				
	DN2450 * 14mm thick * grade X42 pipe	m	7325	R 5 151.60	R 37 734 439.68
	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:				
	<b>Bends for DN2450 * 14mm thick * grade X42 pipe:</b>				
8.2.3 & PSL 3.4.4.1	up to 15 deg	No.	15	R 20 231.22	R 303 468.30
8.2.3 & PSL 3.4.4.1	16 to 30 deg	No.	12	R 34 044.79	R 408 537.48
8.2.3 & PSL 3.4.4.1	31 to 45 deg	No.	11	R 44 766.94	R 492 436.34
8.2.3 & PSL 3.4.4.1	46 to 60 deg	No.	3	R 44 766.94	R 134 300.82
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
	<b>Bends for DN1524 * 10mm thick * grade X42 pipe:</b>				
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
	<b>SPECIAL ASSEMBLIES</b>				
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.	8	R 84 748.30	R 677 986.40
<b>CARRIED FORWARD</b>					<b>R 185 215 151.33</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 185 215 151.33</b>
PSL 5.1.8	DN200 Air Valve Assembly - Type 4, PN 16, Inclusive of all Pipe Reinforcing	No.	8	R 140 890.51	R 1 127 124.08
	DN200 Scour Valve Assembly, Terminal End Type 1, PN16, Inclusive of Collar Plates.	No.	9	R 30 216.41	R 271 947.69
	DN2450 Isolating Valve Assembly Complete	No.	2	R 4 283 963.52	R 8 567 927.04
	DN1524 Isolating Valve Assembly Complete	No.	1	R 1 643 040.65	R 1 643 040.65
	DN2234 Meter Chamber Assembly Complete	No.	1	R 3 480 138.53	R 3 480 138.53
<b>8.2.13</b>	<b>VALVE CHAMBER AND MANHOLES</b>				
	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 ancillaries 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.	9	R 28 475.27	R 256 277.43
	Air Valve Chambers				
	a) Type 2	No.	8	R 61 874.57	R 494 996.56
	b) Type 4	No.	8	R 61 875.57	R 495 004.56
PSL 5.1.5	Supply and install Pipe Route Marker Posts.	No.	61	R 421.80	R 25 545.90
<b>PSL 7.3</b>	<b>HYDRAULIC TESTING</b>				
	Fabrication, Installation, Remove & Handover to the employer Bullnoses of :				
	DN2450 * 14mm thick * grade X42 pipe	No.	2	R 37 566.67	R 75 133.34
	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	12113	R 56.91	R 689 339.45
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 202 370 698.25</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 LB	<b>SECTION 8 : BEDDING (PIPES)</b>				
	<b>Bedding material</b>				
	Supply of selected <b>granular</b> material for 300mm bedding cradle below pipe invert and for fill blanket from pipe invert to 300mm above pipe crown, from commercial sources				
	i) DN2450 pipe	m <sup>3</sup>	44775	R 284.97	R 12 759 531.75
	ii) DN1524 pipe	m <sup>3</sup>	17855	R 284.97	R 5 088 139.35
	<b>Selected Backfill</b>				
	Selected <b>fill</b> 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 <sup>3</sup>	50	R 284.97	R 14 248.50
PSLB 3.3	Cement stabilised selected fill bedding (Soilcrete Bedding - 4% CEMENT)	m <sup>3</sup>	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 <sup>3</sup>	50	R 726.55	R 36 327.50
PSLB 5.1.2.1	Supply and place into position, geotextile for sub soil drains	m <sup>2</sup>	500	R 15.99	R 7 995.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 17 927 495.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200LG</b>	<b>SECTION 9 : PIPE JACKING</b>				
	<b>DN2750 PIPE JACK 2 - R603</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
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	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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
	<b>DN2750 PIPE JACK 2 - UMLAAS ROAD RAIL</b>				
8.2.1 PSLG 8.2.1	<b>Jacking establishment:</b>				
8.2.1(a)	<b>Fixed Charges</b>	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
<b>CARRIED FORWARD</b>					<b>R 4 738 652.40</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 4 738 652.40</b>
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	<b>Supply of Pipes to be Jacked:</b>				
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 1 843 593.75
PSLG 8.2.3	<b>Jacking of Pipes:</b>				
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 unforeseen rock or boulders	Prov Sum	1	R 20 000.00	R 20 000.00
8.2.9 PSLG 8.2.9	<b>Stabilization of unstable areas or grouting of voids where ordered by the Engineer:</b>				
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	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 9 545 356.05</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	LAND ACQUISITION	R 0.00
SECTION 2	CROP COMPENSATION - FORESTRY	R 4 320 000.00
SECTION 3	CROP COMPENSATION - SUGAR CANE	R 17 746 964.73
SECTION 4	CROP COMPENSATION - MAIZE	R 0.00
SECTION 5	CROP COMPENSATION - ORCHARDS	R 1 559 250.00
SECTION 6	CROP COMPENSATION - OTHER CROPS	R 2 495 080.67
SECTION 7	CROP COMPENSATION - GRAZING PASTURES	R 2 236 140.00
SECTION 8	LAND RENTAL	R 2 997 066.47
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3 C - PHASE 2</b>		<b>R 31 354 501.86</b>



**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
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
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3</b>		<b>R 44 228 054.00</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>AMOUNT (RANDS)</b>
SECTION 1	PRELIMINARY AND GENERAL	R 1 770 761.55
SECTION 2	SITE CLEARANCE	R 281 519.95
SECTION 3	EARTHWORKS (ROADS. SUBGRADE)	R 303 717.22
SECTION 4	SUBBASE	R 981 059.04
SECTION 5	BASE	R 863 069.64
SECTION 6	ASPHALT, BASE AND SURFACING	R 1 526 622.95
SECTION 7	CONCRETE KERBING AND CHANNELLING	R 980 433.96
SECTION 8	ANCILLARY ROAD WORKS	R 966 115.74
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3</b>		<b>R 7 673 300.04</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
SANS 1200 C	<b>SITE CLEARANCE</b>				
	<b>CLEAR SITE</b>				
8.2.1	Clear and grub site	ha	3	R 9 775.00	R 29 325.00
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
8.2.9	Transport Materials and Debris to unspecified sites and dump ( Provisional Quantity )	m3.km	3030	R 7.48	R 22 664.40
8.2.10	Remove topsoil to nominal depth 150mm, stockpile and maintain	m2	12120	R 3.22	R 39 026.40
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	2335	R 48.18	R 112 500.30
	ii) Stabilised gravel layerworks to roads	m3	335	R 48.18	R 16 140.30
	Remove existing road asphalt surfacing (25 -45mm thickness)	m2	805	R 10.11	R 8 138.55
	<b>FENCING</b>				
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	250	R 48.99	R 12 247.50
	ii) All galvanized diamond mesh fence.(Provisional Quantity)	m	250	R 48.99	R 12 247.50
	iii) All electric fence (Provisional Quantity)	m	150	R 62.48	R 9 372.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 281 519.95</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DM</b>	<b>EARTHWORKS (ROADS. SUBGRADE)</b>				
	<b>TREATMENT OF ROAD-BED</b>				
8.3.3(a)	Road-bed preparation rip and recompact insitu material to :				
	i) Minimum 90% of Mod. AASHTO density	m <sup>3</sup>	1426	R 43.42	R 61 916.92
	<b>EARTHWORKS</b>				
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 <sup>3</sup>	660	R 43.42	R 28 657.20
8.3.5	Selected Natural Gravel Subgrade (G7 quality material), compacted to 93% Mod AASHTO Density				
	i) From commercial source	m <sup>3</sup>	1110	R 34.69	R 38 505.90
	ii) From stockpile in item 1.5.1	m <sup>3</sup>	665	R 96.33	R 64 059.45
8.3.5	Selected Natural Gravel Subgrade (G9 quality material), compacted to 93% Mod AASHTO Density				
	i) From commercial source	m <sup>3</sup>	1155	R 34.69	R 40 066.95
	ii) From stockpile in item 1.5.1	m <sup>3</sup>	660	R 96.33	R 63 577.80
8.3.13(a)	<b>SURFACE FINISHES</b>				
8.3.13(a)	Topsoiling measured under PSD				
8.3.15	Catchwater mounds and channels	m <sup>3</sup>	30	R 103.82	R 3 114.60
	<b>MISCELLANEOUS</b>				
PSDM 8.3.17	Construction of new-to-existing road joint	m	120	R 31.82	R 3 818.40
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 303 717.22</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS1200ME</b>	<b>SUBBASE</b>				
	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	m <sup>3</sup>	165	R 330.44	R 54 522.19
8.3.3	From commercial source	m <sup>3</sup>	175	R 200.00	R 35 000.00
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	m <sup>3</sup>	165	R 268.78	R 44 348.70
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	m <sup>3</sup>	340	R 193.58	R 65 817.20
	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	m <sup>3</sup>	165	R 251.12	R 41 434.39
8.3.3	From commercial source	m <sup>3</sup>	1430	R 170.00	R 243 100.00
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	m <sup>3</sup>	165	R 193.58	R 31 940.70
8.3.5 (d)	Extra over item for stabilization of G6 material with road lime to meet C1 quality specification				
	150mm thick for Asphalt Roads	m <sup>3</sup>	1595	R 268.78	R 428 704.10
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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 981 059.04</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200MF</b>  8.3.3 (b)	<b>BASE</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	1685	R 512.21	R 863 069.64
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 863 069.64</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200MH</b>	<b>ASPHALT, BASE AND SURFACING</b>				
	<b>ASPHALT</b>				
8.5.1	Prime Coat:  Prime coat using MC 30 bitumen (or similar approved) at 0.7 litres/m2	m2	10910	R 15.95	R 174 014.50
8.5.5	Variations in quantities of prime:  i) Mc 30	litre(l)	7640	R 17.20	R 131 388.90
8.5.3	Tack Coat:  Spray surface using 30% stable grade emulsion at 0.3 litres/m2	m2	10910	R 8.01	R 87 334.55
8.5.5	Variations in quantities of emulsion:  i) 30% stable grade emulsion	litre	3275	R 15.26	R 49 976.50
PSMH 8.5.4	Asphalt Surfacing:  Continuously medium graded asphalt surfacing using 60/70 Pen.grade bitumen:  i) 30mm to roads	m2	10910	R 99.35	R 1 083 908.50
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 1 526 622.95</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 MK</b>	<b>CONCRETE KERBING AND CHANNELLING</b>				
	<b>KERB</b>				
	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	3000	R 270.76	R 812 287.50
8.2.1	Fig 6 kerb and cast insitu 25Mpa offset, laid on curves less than 20m radius	m	65	R 306.88	R 19 946.88
8.2.6	<b>ANCILLARIES</b>				
	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
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 980 433.96</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200MM</b>	<b>ANCILLARY ROAD WORKS</b>				
	<b>GUARDRAILS</b>				
8.2.1	Supply and erect galvanized steel guardrails on timber posts, backfilled with material available from site	m	1000	R 489.84	R 489 840.00
8.2.2	Extra-over Item 7.1.1 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
	<b>PERMANENT TRAFFIC SIGNS</b>				
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 2m <sup>2</sup>	m <sup>2</sup>	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	m <sup>3</sup>	10	R 273.51	R 2 735.13
	<b>ROAD MARKINGS</b>				
PSMM 8.4.1	Retro-reflective paint applied at nominal rate of 0,42 l/m <sup>2</sup> (including glass beads, setting out and pre-marking)				
	a) White lines (broken or unbroken) (width 100 mm)	m	1515	R 4.97	R 7 529.55
	b) White lines (broken or unbroken) (width 200mm)	m	3030	R 6.11	R 18 513.30
	c) Yellow lines (broken or unbroken) (width 100mm)	m	3030	R 9.71	R 29 421.30
	d) White characters and symbols	m <sup>2</sup>	20	R 4.97	R 99.40
	e) Traffic island markings (any colour)	m <sup>2</sup>	20	R 6.11	R 122.20
8.4.2	Variation rates of application:				
	a) White paint	litre	320	R 39.97	R 12 790.40
	b) Yellow paint	litre	130	R 39.97	R 5 196.10
	c) Glass beads	kg	10	R 39.97	R 399.70
8.4.3	<b>ROAD STUDS</b>				
	a) Supply and install Lynkor "Lynx" road studs with anchor shanks and 23/23 glass element reflectors:				
	(i) red/red	No	75	R 159.88	R 11 991.00
	<b>MISCELLANEOUS</b>				
8.4.4	Setting out and premarking of lines (excluding traffic island markings, characters, and symbols)	m	1515	R 1.50	R 2 272.50
<b>CARRIED FORWARD</b>					<b>R 599 769.24</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>BROUGHT FORWARD</b>					<b>R 599 769.24</b>
PSMM 8.9.1	<b>ACCOMODATION OF TRAFFIC</b>				
	Accomodation of traffic	Sum	1	R 200 000.00	R 200 000.00
	<b>BARRICADING</b>				
	Supply, install, maintain, remove and relocate:				
	i) Barrier Fence	m	1000	R 68.55	R 68 550.00
	ii) Rigid Barricades for preventing access	m	250	R 53.33	R 13 332.50
	iii) Armco type barriers	m	100	R 543.72	R 54 372.00
	iv) New Jersey type barriers	m	100	R 300.92	R 30 092.00
<b>CARRIED FORWARD TO SUMMARY</b>					<b>R 966 115.74</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
SECTION 1	PRELIMINARY AND GENERAL	R 360 474 222.64
SECTION 2	BULK EARTHWORKS	R 126 836 518.33
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
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3</b>		<b>R 1 562 054 964.77</b>

**SUMMARY**

<b>SECTION</b>	<b>DESCRIPTION</b>	<b>TOTAL</b>
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
<b>TOTAL CARRIED TO BILL OF QUANTITIES 3</b>		<b>R 194 287 465.26</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 DB</b>	<b>SECTION 4 : PIPE TRENCHES</b>				
	<b>EXCAVATION</b>				
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:				
	<b>DN1000mm pipe</b>				
	2,5 to 3,0m	m3	4503	R 156.01	R 702 435.03
	<b>DN 2200mm pipe</b>				
	over 3,0m	m3	664	R 156.01	R 103 512.64
	<b>DN 2500mm pipe</b>				
	over 3,0m	m3	3820	R 171.47	R 654 929.67
	<b>DN 2700mm pipe</b>				
	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
	<b>FINISHINGS</b>				
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
<b>TOTAL CARRIED TO SUMMARY</b>					<b>R 1 925 655.94</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200G</b>	<b>SECTION 5 : CONCRETE STRUCTURAL</b>				
8.1.3	<b>CONCRETE</b>				
8.4.2	<b>Blinding layer in grade 15/19 concrete:</b>				
	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
	<b>Mass concrete in grade 15/19concrete:</b>				
	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	<b>Strength concrete: Grade 25/19</b>				
	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	<b>Strength concrete: Grade 35/19</b>				
	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
	<b>FORMWORK - excl that for construction joints</b>				
<b>Total carried forward</b>					<b>R 15 784 299.70</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 15 784 299.70</b>
	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
	<b>REINFORCEMENT</b>				
	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
	<b>UNFORMED SURFACE FINISHES</b>				
	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
	<b>JOINTS</b>				
<b>Total carried forward</b>					<b>R 38 661 148.18</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 38 661 148.18</b>
	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
<b>Total carried forward</b>					<b>R 39 517 885.46</b>



PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 39 517 885.46</b>
	<b>Miscellaneous</b>				
	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 sterilizing 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
	<b>Curing of Concrete</b>				
	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
	<b>Provisional Sums</b>				
	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
	<b>Miscellaneous steelwork</b>				
	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
<b>Total carried forward</b>					<b>R 40 167 318.10</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 40 167 318.10</b>
	Brass benchmark plaque and stainless steel reference bolt as detailed	No	1	R 4 025.00	R 4 025.00
	<b>Hot Dip Galvanised</b>				
	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
	<b>Sundries</b>				
	Supply all materials, plant and labour and repair 65mm dia. X 100mm deep test core holes using 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
	<b>PROTECTION WORKS</b>				
	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
	<b>SITE DRAINAGE</b>				
	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
<b>Total carried forward</b>					<b>R 40 843 023.60</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 40 843 023.60</b>
	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
<b>TOTAL CARRIED TO SUMMARY</b>					<b>R 40 865 053.00</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>SANS 1200 L</b>	<b>SECTION 6 : MEDIUM PRESSURE PIPELINES</b>				
PSL 8.2.1	<b>Supply</b>				
	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	<b>Lay, bed, joint and test pipes for diameter:</b>				
	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
<b>Total carried forward</b>					<b>R 32 069 730.86</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT	
<b>Total brought forward</b>					<b>R 32 069 730.86</b>	
8.2.5	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	
	<b>OUTLET/SCOUR CHAMBER (PIPE TO BE TAPE WRAPPED AND MORTAR LINED)</b>					
	2100mm dia bellmouth	No.	1	R 22 310.00	R 22 310.00	
	Item 1 - 2100mm dia. X 90 deg. gusseted 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. gusseted 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	
	<b>INLET CHAMBER (PIPES TO BE COATED AND LINED WITH SFE EPOXY)</b>					
	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. gusseted bend	No.	1		R 26 657.00	R 26 657.00
	<b>Total carried forward</b>					<b>R 32 813 035.55</b>

PAYMENT	DESCRIPTION	UNIT	QUANTITY	RATE	AMOUNT
<b>Total brought forward</b>					<b>R 32 813 035.55</b>
	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
<b>TOTAL CARRIED TO SUMMARY</b>					<b>R 32 978 287.68</b>

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