

Numbers Sheet Name Numbers Table Name Excel Worksheet Name

Annex Cover XXX Village

	Table 1	Annex Cover XXX Village
Sched1 P&G	Table 1	Sched1 P&G
Sched2 Site Clearance	Table 1	Sched2 Site Clearance
Sched3 Wat Earthworks	Table 1	Sched3 Wat Earthworks
Sched4 Wat Pipeworks	Table 1	Sched4 Wat Pipeworks
Summary	Table 1	Summary
Flexible (2)	Table 1	Flexible (2)
Flexible Bulk Steel	Table 1	Flexible Bulk Steel
Flexible	Table 1	Flexible
Sched5 Reservoir, Tanks & Buildi	Table 1	Sched5 Reservoir, Tanks & Buildi

SCHEDULE 1: PRELIMINARY & GENERAL

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
1	SANS 2001A	SCHEDULE 1: PRELIMINARY & GENERAL				
1,1	8,3	FIXED-CHARGE ITEMS				
1.1.1	8.3.1	1. Contractual requirements	Sum	1		
	8.3.2	2. Establishment of facilities on the site:				
1.1.2	PSA 8.3.2.2	1) Facilities for the Engineer				
		a. Name Boards	No	1		
		b. Furnished Office(No.2)	Sum	1		
		c. Latrine facilities	Sum	1		
		d. Covered carport	Sum	1		
		e. Survey instruments(1 no)	Sum	1		
	PSA 8.3.2.2	2) Facilities for the Contractor				
		a. Offices and storage sheds	Sum	1		
		b. Workshops	Sum	1		
		c. Ablution and latrine facilities	Sum	1		
		d. Tools and equipment	Sum	1		
		e. Water supplies and electric power and communications	Sum	1		
		f. Security of works	Sum	1		
1.1.3	8.3.3	Other fixed-charge obligations	Sum	1		
1.1.4	8.3.4	Removal of site establishment	Sum	1		
1.1.5		Locating existing services	PC Sum	1	10000,00	10 000,00
1.1.6		Provision for reinstating of existing fences	PC Sum	1	15 000,00	15 000,00

**TOTAL CARRIED FORWARD
BROUGHT FORWARD**

1,2	8,4	TIME-RELATED ITEMS		
1.2.1	8.4.2	Operation and maintenance of facilities on site for the duration of construction		
1.2.1.1	8.4.2.2	2) Facilities for Contractor for construction duration, except where otherwise stated		
		a. Offices and storage sheds	Month	12
		b. Workshops	Month	12
		c. Ablution and latrine facilities	Month	12
		d. Tools and equipment	Month	12
1.2.2	8.4.3	Supervision for the duration of construction	Month	12
1.2.3	8.4.4	Company and head office overhead costs for the duration of the Contract	Month	12

**TOTAL CARRIED FORWARD
BROUGHT FORWARD**

1.2.6	PS7	Allow for compliance with all aspects of the OH&S Spec including: risk assessment; provision of the safety plan; ap safety officer; safety training (induction) of workforce and notification(s) to the Department of Labour	Month	12		
1.2.7	PS8	Allow for compliance with all aspects of the Environment Management Plan	Month	12		
	PS 12	2) Training of Workers				
		a. Training allowance paid to targeted labour in terms of formal training	PC Sum	1		30 000,00
		b. Overheads, charges and profit on (a) above	%		10%	3 000,00
		c. Transportation and communication of workers training where it is not possible to undertake the training in close proximity to the site	PC Sum	1		35 000,00
		d. Overheads, charges and profit on (c) above	%		10%	3 500,00

**TOTAL CARRIED FORWARD
BROUGHT FORWARD**

3) Relocation of services

a. Relocation of essential services to be done by administering authority if required	PC Sum	1	35 000,00
b. Overheads, charges and profit on (a) above	%	10%	3 500,00

4) Community Liaison Officer

a. Allow for work done by community liaison officer	PC Sum	1	100 000,00
b. Overheads, charges and profit on (a) above	%	10%	10 000,00

**TOTAL CARRIED FORWARD
BROUGHT FORWARD**

1,4

8,7

DAY WORKS**Note:** To be executed on instruction of the Engineer only

1. Labour

a. Skilled	hr	Rate Only
b. Semi-skilled	hr	Rate Only
c. Unskilled	hr	Rate Only
d. Armed guard	Man-days	Rate Only

2. Plant Hire (Work rates on site)

Tipper trucks

a. Capacity 6 m3 (small)	hr	Rate Only
b. Capacity 10m3 (medium)	hr	Rate Only
c. Capacity 12m3 (large)	hr	Rate Only

Flat bed trucks

d. Capacity 3 tonne (small)	hr	Rate Only
e. Capacity 5 tonne (medium)	hr	Rate Only
f. Capacity 10 tonne (large)	hr	Rate Only

3. LDVs

a. Capacity 1 tonne	km	Rate Only
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4. Water tankers

a. Capacity 6 000 litres (small)	hr	Rate Only
b. Capacity 9 000 litres (medium)	hr	Rate Only
c. Capacity 15 000 litres (large)	hr	Rate Only

5. Excavators

Crawler excavators

a. 20 tonne	hr	Rate Only
b. 30 tonne	hr	Rate Only

TOTAL CARRIED FORWARD
BROUGHT FORWARD

-
-

6. TLBs		
Tractor Loader Backhoe		
a. 2 x 4	hr	Rate Only
b. 4 x 4	hr	Rate Only
7. Rollers		
Walk behind vibrating rollers		
a. Model BW 61 (small)	hr	Rate Only
b. Model BW 76 (medium)	hr	Rate Only
c. Model BW 90 (large)	hr	Rate Only
8. Compactors		
	hr	Rate Only
9. Compressors		
Portable diesel compressors		
a. Small	hr	Rate Only
b. Medium	hr	Rate Only
c. Large	hr	Rate Only
10. Water pumps		
Portable water pumps		
a. Small	hr	Rate Only
b. Medium	hr	Rate Only
c. Large	hr	Rate Only

a. 2 x 4	hr	Rate Only
b. 4 x 4	hr	Rate Only
7. Rollers		
Walk behind vibrating rollers		
a. Model BW 61 (small)	hr	Rate Only
b. Model BW 76 (medium)	hr	Rate Only
c. Model BW 90 (large)	hr	Rate Only
8. Compactors		
	hr	Rate Only
9. Compressors		
Portable diesel compressors		
a. Small	hr	Rate Only
b. Medium	hr	Rate Only
c. Large	hr	Rate Only
10. Water pumps		
Portable water pumps		
a. Small	hr	Rate Only
b. Medium	hr	Rate Only
c. Large	hr	Rate Only

SCHEDULE 2: SITE CLEARANCE

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
2	SANS PSC 2001 C	SCHEDULE 2: SITE CLEARANCE				
2,1	8.2.1	Clear and grub 1.0m wide street strip for pipe in road reserve.	m	0		
2,2	8.2.2	Remove and grub large trees, and tree stumps of girth:				
		a. Over 1m and up to and including 2m	No	5		
		b. Over 2m and up to and including 3m	No	5		

TOTAL CARRIED FORWARD TO SUMMARY

SCHEDULE 3: WATER SUPPLY - EARTHWORKS

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
3	SANS	SCHEDULE 3: WATER SUPPLY - EARTHWORKS				
3,1	2001DB	EXCAVATIONS				
	PSDB 8.3.2	Excavate in all materials for trenches, backfill, compact for trenches, and dispose of excess material				
		a) For base width up to 1000mm, Excavation depth over and up to:				
		1) 0.0 m to 1.5 m	m	0		
		2) 1.5 m to 2 m	m		94,90	Rate only
3,2	8.3.2	Extra-over items 3.1 for				
		1. Intermediate excavation	m³	1 000		
		2. Hard rock excavation	m³	0		
3,3	8.3.2	Excavate and dispose of unsuitable material from trench bottom (Provisional)	m³	2 430		
3,4	8.3.3	EXCAVATION ANCILLARIES				
3,5	8.3.3.3	Compaction in road reserves	m³	2 300		
3,6	8.3.5	Existing services that intersect or adjoin a pipe trench				
		a. Services that intersect a trench	No.	90		
		b. Services that adjoin a trench	m	7 690		
	SANS 2001LB	BEDDING				
3,7	8.2.1	Provision of bedding from trench excavation				
		a. Selected granular	m³	0		
		b. Selected fill	m³	0		
3,8	8.2.2	Provision of bedding from commercial source				
		a. Selected granular	m³	0	300,00	Rate only
		b. Selected fill	m³	0	500,00	Rate only
3,9	8.2.4	Encasing of pipes in concrete (20MPa)	m³	21		

TOTAL CARRIED FORWARD TO SUMMARY

SCHEDULE 4: WATER SUPPLY - PIPEWORKS

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
4	SANS	SCHEDULE 4: WATER SUPPLY - PIPEWORKS				
4,1	2001L	PIPES				
4.1.1	8.2.1a	Supply, handle, lay, bed in flexible pipe bedding and test uPVC class 9 pipes complete with spigot and socket joints to				
		1. 63 mm diameter	m	7 857		
		2. 75 mm diameter	m	3 030		
		3. 90 mm diameter	m	2 563		
		4. 110 mm diameter	m	2 987		
4,2	8.2.2	SPECIALS AND FITTINGS				
		Extra-over item 4.1 for supplying, handling, laying, bedding, jointing and testing of the following fittings				
4.2.1		Bends				
		11.25 degree bends				
		1. 63 mm diameter	No	118		
		2. 75 mm diameter	No	6		
		3. 90 mm diameter	No	12		
		4. 110 mm diameter	No	8		
		22.5 degree bends				
		1. 63 mm diameter	No	60		
		2. 75 mm diameter	No	5		
		3. 90 mm diameter	No	13		
		4. 110 mm diameter	No	8		
		45 degree bends				
		1. 63 mm diameter	No	22		
		2. 75 mm diameter	No	6		
		3. 90 mm diameter	No	8		
		4. 110 mm diameter	No	8		
TOTAL CARRIED FORWARD						-
BROUGHT FORWARD						-

90 degree bends

1. 63 mm diameter	No	83
2. 75 mm diameter	No	4
3. 90 mm diameter	No	6
4. 110 mm diameter	No	5

4.2.2

Cast Iron Tees

1. 75 X 63 mm diameter	No	7
2. 90 X 63 mm diameter	No	105
3. 110 X 63 mm diameter	No	34
4. 110 X 75 mm diameter	No	7
5. 110 X 90 mm diameter	No	50

4.2.3

Cast Iron Equal Tees

1. 63 mm diameter	No	40
2. 75 mm diameter	No	6
3. 90 mm diameter	No	8

4.2.4

Flange adaptors

1. 63 mm diameter	No	42
2. 75 mm diameter	No	4
3. 90 mm diameter	No	6
4. 110 mm diameter	No	3

4.2.5

Reducers

1. 75 X 63 mm diameter	No	4
2. 90 X 63 mm diameter	No	18
3. 90 X 75 mm diameter	No	1
4. 110 X 63 mm diameter	No	14

		5. 110 X 75 mm diameter	No	1		

TOTAL CARRIED FORWARD -

BROUGHT FORWARD -

		6. 110 X 90 mm diameter	No	15
4.2.6		Cast Iron End Caps		
		1. 63 mm diameter	No	14
4.3	PSL3.10	Isolating valves		
	PSL 3.10.2	Extra-over item 4.1 for the supplying, installing cutting in and testing flanged Class 12 clockwise closing non rising spindle resilient seal gate valves , as per drawing.		
		1. 63 mm diameter	No	12
		2. 75 mm diameter	No	8
		3. 90 mm diameter	No	9
		4. 110 mm diameter	No	10
4.4	PSL3.10	Water Meter		
		Kent Helix H4000 woltmann-type flanged water meter or similar approved as per drawing , for pipe diameters:		
		1. 63 mm diameter	No	4
		2. 75 mm diameter	No	8
		3. 90 mm diameter	No	8
		4. 110 mm diameter	No	6
4.5	PSL5.6	CHAMBERS		
		Construct valve chambers complete with step irons, cover and frames, as per drawing	No.	11
		4. Backfill chambers using selected fill	m ³	78
4.6		SUNDRIES		
4.6.1	8.2.11	Thrust blocks and pedestals class 25/19 concrete, as per drawing	m ³	80,0
4.7		Pipe Markers Supply and install precast concrete pipeline markers, as per drawing	No	20

TOTAL CARRIED FORWARD TO SUMMARY

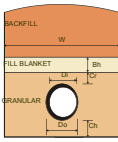
SUMMARY OF BILL OF QUANTITIES

SCHEDULE	DESCRIPTION		AMOUNT (R)
SCHEDULE 1:	PRELIMINARY AND GENERAL	R	-
SCHEDULE 2:	SITE CLEARANCE	R	-
SCHEDULE 3:	WATER - EARTHWORKS	R	-
SCHEDULE 4:	WATER - PIPEWORKS	R	-
Subtotal 2		R	-
Contingencies (10%)		R	-
Sub-total 3		R	-
VAT		R	-
TOTAL		R	-

Bedding volume calculation

110 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.075 m
Inside diam. Di =	0.071 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.275 m
Fill Blanket height, Bt =	0.200 m
Width, W =	1.000 m
Fill Blanket area, Ba =	0.135 m ²
Granular area, Ca =	0.911 m ²



Bedding volume calculation

160 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.160 m
Inside diam. Di =	0.154 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.300 m
Fill Blanket height, Bt =	0.200 m
Width, W =	0.780 m
Fill Blanket area, Ba =	0.152 m ²
Granular area, Ca =	0.283 m ²

Bedding volume calculation

200 Diam Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.200 m
Inside diam. Di =	0.192 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.400 m
Fill Blanket height, Bt =	0.200 m
Width, W =	0.800 m
Fill Blanket area, Ba =	0.160 m ²
Granular area, Ca =	0.289 m ²

Bedding volume calculation

250 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.250 m
Inside diam. Di =	0.240 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.400 m
Fill Blanket height, Bt =	0.200 m
Width, W =	0.900 m
Fill Blanket area, Ba =	0.170 m ²
Granular area, Ca =	0.333 m ²

Bedding volume calculation

315 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.315 m
Inside diam. Di =	0.303 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.515 m
Fill Blanket height, Bt =	0.200 m
Width, W =	0.975 m
Fill Blanket area, Ba =	0.183 m ²
Granular area, Ca =	0.380 m ²

Bedding volume calculation

355 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.355 m
Inside diam. Di =	0.341 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.555 m
Fill Blanket height, Bt =	0.200 m
Width, W =	0.905 m
Fill Blanket area, Ba =	0.191 m ²
Granular area, Ca =	0.431 m ²

Bedding volume calculation

400 Diameter Flexible pipe

Project Name	460
Project number	0000
Outside diam. Di =	0.400 m
Inside diam. Di =	0.384 m
Contingency measurement	15 %
Granular support height, Ch =	0.100 m
Granular roof height, Cr =	0.100 m
Granular total height, Ct =	0.600 m
Fill Blanket height, Bt =	0.200 m
Width, W =	1.000 m
Fill Blanket area, Ba =	0.200 m ²
Granular area, Ca =	0.474 m ²

Excavation Volume to Pipe Invert

Pipe diameter	Length	Ass depth	Width	Volume	Linear Measurements
mm	m	m	m	m ³	m
75	3 201.81	0.90	0.68	2 253	287.81
90	0.00	1.00	0.68	0	0.00
110	1 920.00	1.10	0.68	1 439	185.34
160	0.00	1.10	0.76	0	0.00
200	0.00	1.20	0.80	0	0.00
250	0.00	1.20	0.80	0	2.00
315	0.00	1.20	0.85	0	0.00
355	0.00	1.20	0.85	0	0.00
400	0.00	1.20	0.85	0	0.00
Sub-Totals	5 122		3.762	4 326	
Min clearance	5 122				3210

Excavation Volume

800

Excavation Volume of Trench Bottom

Pipe diameter	Length	Ass depth	Width	Volume	Total Volume	Volumetric Measurements
mm	m	m	m	m ³	m ³	Meth Type % Hand m ³ %
75	3 202.81	0.100	0.68	2.16	289	55% 1624
90	0.00	0.100	0.68	0	0	55% 738
110	1 920.00	0.200	0.68	130	148	Intermediate 25% 391
160	0.00	0.100	0.76	0	0	Hand rock 25% 738
200	0.00	0.200	0.80	0	0	Machine m ³ 37%
250	0.00	0.100	0.80	0	0	Sub
315	0.00	0.100	0.85	0	0	Intermediate 25% 354
355	0.00	0.100	0.85	0	0	Hand rock 25% 443
400	0.00	0.100	0.85	0	0	Hand rock
Sub-Totals	5 121.81		3.46	388	Total Hand & Machine	4724

Excavation Volumes

800

Total Trench Excavation Volume

4 326

Excavation Volume to Pipe Invert

388

Excavation Volume of Trench Bottom

4 724

Provision of Granular & Fill Volume

15,000

Pipe diameter	Length	Granular area	Granular volume	Pipe volume	Granular volume	Fill area	Fill volume	Total Fill Volume
mm	m	m ²	m ³	m ³	m ³	m ²	m ³	m ³
75	3 202.81	0.181	0.07	2.4	781	0.180	212	889
90	0.00	0.250	0	0	0	0.180	0	0
110	1 920.00	0.250	0.60	18	622	0.180	327	323
160	0.00	0.250	0	0	0	0.180	0	0
200	0.00	0.250	0	0	0	0.180	0	0
250	0.00	0.250	0	0	0	0.180	0	0
315	0.00	0.333	0	0	0	0.180	0	0
355	0.00	0.333	0	0	0	0.180	0	0
400	0.00	0.333	0	0	0	0.180	0	0
Sub-Totals								
From trench excavations								
From borrow pit								
Imported commercially								
Total								

Excavation and Bedding Ancillaries

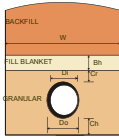
Item	Quantity	Unit	Volume
Intermediate	865	m ³	865
Hand rock	25%	m ³	1 082
% Granular Stone or Crushable Material	25%	m ³	90
Total required base-BI			2 488
Total available base-BI			1 997
Base-BI Deficiency			1 482
Total Unavailable Material			3 177

2:Project QUALITY CONSULTANTS PROJECT MANAGEMENT LOCAL MUNICIPALITY/WATER SUPPLY MIX WATER SYSTEM 22/05/2010 PIPES/WATER SUPPLY PIPELINE BIDDING DOCUMENT

Bedding volume calculation

110 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.075	m
Inside diam. Di =	0.071	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.275	m
Fill Blanket height, Bb =	0.200	m
Width, W =	1.700	m
Fill Blanket area, Ba =	0.135	m ²
Granular area, Ca =	0.911	m ²



Bedding volume calculation

160 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.160	m
Inside diam. Di =	0.154	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.200	m
Fill Blanket height, Bb =	0.200	m
Width, W =	0.780	m
Fill Blanket area, Ba =	0.263	m ²
Granular area, Ca =	0.263	m ²

Bedding volume calculation

200 Diam Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.200	m
Inside diam. Di =	0.192	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.400	m
Fill Blanket height, Bb =	0.200	m
Width, W =	0.800	m
Fill Blanket area, Ba =	0.160	m ²
Granular area, Ca =	0.269	m ²

Bedding volume calculation

250 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.250	m
Inside diam. Di =	0.240	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.400	m
Fill Blanket height, Bb =	0.200	m
Width, W =	0.900	m
Fill Blanket area, Ba =	0.179	m ²
Granular area, Ca =	0.333	m ²

Bedding volume calculation

315 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.315	m
Inside diam. Di =	0.303	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.515	m
Fill Blanket height, Bb =	0.200	m
Width, W =	0.915	m
Fill Blanket area, Ba =	0.183	m ²
Granular area, Ca =	0.393	m ²

Bedding volume calculation

355 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.355	m
Inside diam. Di =	0.341	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.505	m
Fill Blanket height, Bb =	0.200	m
Width, W =	0.905	m
Fill Blanket area, Ba =	0.191	m ²
Granular area, Ca =	0.431	m ²

Bedding volume calculation

400 Diameter Flexible pipe

Project Name	ABG	0000
Project number	ABG	0000
Outside diam. Di =	0.400	m
Inside diam. Di =	0.394	m
Contingency measurement	15	%
Granular support height, Ch =	0.100	m
Granular roof height, Cr =	0.100	m
Granular total height, Ct =	0.600	m
Fill Blanket height, Bb =	0.200	m
Width, W =	1.000	m
Fill Blanket area, Ba =	0.200	m ²
Granular area, Ca =	0.474	m ²

Excavation Volume to Pipe Invert

Pipe diameter	Length	Ave depth	Width	Volume	Total Volume	Linear Measurements
mm	m	m	m	m ³	m ³	Hand excav
75	3.201,81	0.050	0.800	2.323	297,618	3201,810
90	0.00	0.050	0.800	0	0,00	Sub (m)
110	1.843,26	0.100	0.800	1.381	188,226	Intermediate (m)
180	0.00	0.100	0.750	0	0,00	Hand (m)
200	0.00	0.200	0.800	0	0,00	Machine
250	0.00	0.200	0.800	0	0,00	2500
300	0.00	0.200	0.800	0	0,00	1843,260
350	0.00	0.200	0.800	0	0,00	37%
400	0.00	0.200	0.800	0	0,00	340
450	0.00	0.200	0.800	0	0,00	340
500	0.00	0.200	0.800	0	0,00	0
550	0.00	0.200	0.800	0	0,00	3807
600	0.00	0.200	0.800	0	0,00	3076
Sub-Totals	5.045		3.704	4.260		4
Site clearance*	5.045					3210

Excavation Liner

800

Excavation Volume of Trench Bottom

Pipe diameter	Length	Ave depth	Width	Volume	Total Volume	Volumetric Measurements	Hand m ³
mm	m	m	m	m ³	m ³	M1 Type	%
75	3.201,81	0.100	0.800	2.581	331,918	Sub	55%
90	0.00	0.100	0.800	0	0	Hand	25%
110	1.843,26	0.100	0.800	1.381	188,226	Intermedate	25%
180	0.00	0.100	0.750	0	0	Hand	25%
200	0.00	0.200	0.800	0	0	M1 Type	37%
250	0.00	0.200	0.800	0	0	Sub	20%
300	0.00	0.200	0.800	0	0	Intermedate	20%
350	0.00	0.200	0.800	0	0	Hand	20%
400	0.00	0.200	0.800	0	0	Hand	20%
450	0.00	0.200	0.800	0	0	Hand	20%
500	0.00	0.200	0.800	0	0	Hand	20%
550	0.00	0.200	0.800	0	0	Hand	20%
600	0.00	0.200	0.800	0	0	Hand	20%
Sub-Totals	5.045,07		3.41	392		Total Hand & Machine	483

Excavation Volumetric

Excavation Volume to Pipe Invert

4.260

Excavation Volume of Trench Bottom

392

Total

4.652

Division of Granular & Fill Volume

Pipe diameter	Length	Granular area	Granular volume	Pipe volume	Granular volume	Fill area	Fill volume	Total Fill Volume
mm	m	m ²	m ³	m ³	m ³	m ²	m ³	m ³
75	3.201,81	0.100	0.67	2.4	781	0.180	212	993
90	0.00	0.250	0	0	0	0.180	0	0
110	1.843,26	0.250	0.37	14	288	0.180	225	333
180	0.00	0.250	0	0	0	0.180	0	0
200	0.00	0.250	0	0	0	0.180	0	0
250	0.00	0.200	0	0	0	0.180	0	0
300	0.00	0.200	0	0	0	0.180	0	0
350	0.00	0.200	0	0	0	0.180	0	0
400	0.00	0.200	0	0	0	0.180	0	0
450	0.00	0.200	0	0	0	0.180	0	0
500	0.00	0.200	0	0	0	0.180	0	0
550	0.00	0.200	0	0	0	0.180	0	0
600	0.00	0.200	0	0	0	0.180	0	0
Sub-Totals			1.205	32	1.349		807	928

From trench excavations

From trench excavations	65%	783	0	990	66%	525	683
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From borrow pit

From borrow pit	0%	0	0	0	0%	0	0
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Imported commercially

Imported commercially	35%	422	0	485	35%	283	328
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Total

Total	1	1.205	0	1.350	1	807	928
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Excavation and Bedding Ancillaries

Intermedate	25%		862	862			862
Hand rock	25%		1.065	1.228			1.228
% Current Stock or Usuitable Material	25%		98	235			235
Total required backfill			960	1.425			1.425
Total available backfill			960	960			960
Backfill Deficiency			0	465			465
Total Unsuitable Material			0	3.127			3.127

SCHEDULE 6:

RESERVOIRS, TANKS, BUILDINGS AND FENCE

Item	Payment Reference	Description	Unit	Qty	Rate (R)	Amount (R)
6	SANS	SCHEDULE 6: RESERVOIRS, TANKS, BUILDINGS AND FENCE				
6.2	PSJ	ABECO PRESSED RECTANGULAR STEEL ELEVATED TANK, OR SIMILAR APPROVED - 150 KL				
6.2.1		Supply, install Abeco type 150 kl capacity rectangular pressed steel Tank with a 10m high stand including a walkway and landing platforms.	No.	1	976 178,00	976 178,00
6.2.2		MSV Model 2020S 2 piece full bore ball valve, 316 stainless steel body and ball, PTFE seats and seals, flanged and drilled, or similar approved for pipe diameter 100mm	No.	1	43 334,10	43 334,10
6.2.3		Provision of overflow GMS drain 150mm diameter pipe	m	1	521,57	521,57
6.2.4		FOUNDATION REINFORCEMENT DETAILS:				
6.2.4.1		Mild steel bars: R8	kg	N/A		
6.2.4.2		High tensile bars: Y12	kg	825	10,92	9 009,00
		Y16	kg	1425	10,92	15 561,00
6.2.5		FOUNDATION CONCRETE DETAILS:				
6.2.5.1		Grade 25/19 Concrete	m ³	20	2 500,00	50 000,00
6.2.6		platform	Prov Sum	1	75 000,00	75 000,00
6.3	PSK	PUMPHOUSE CONSTRUCTION				
6.3.1		Supply and construct pump house complete with all accessories as shown on the drawing	No.	1	110 000,00	110 000,00
6.4	PSL	CONCRETE PALISADE FENCING				
6.4.1		Supply and erect 2.4 m high concrete palisade fence with razor wire on top and 4m wide gate comprising of 2 x 2m leaves per set, complete with all accessories.	m	250	1 047,01	261 751,75
6.5	PSM	PRESSURE REDUCING VALVE(FLOW CONTROL VALVE)				
		1. Flanged 100mm diameter PN 16 pressure reducing valve including valve chamber, complete with pressure gauges, anticavitation upstream pressure up to 10 bars, adjustable downstream set range between 1 - 5 bars "CLA VAL" type, or similar as shown on the drawing	No.	1	69 001,60	69 001,60

TOTAL CARRIED FORWARD TO SUMMARY

1 610 357,02