ANNEX C FINANCIAL AND ECONOMIC

FEASIBILITY STUDY FOR MORETELE 2

ANNEX C: FINANCIAL AND ECONOMIC

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Table C.1-1: Construction Costs and Disbursement Schedule for Case A and B

Moretele 2	Total		2	3	4	,000Rand)
The me	Total	1998	1999	2000	2001	2002
Item	87,591	1770	1777	6,364	38,628	31,633
se A				20,135	29,530	9,754
Bulk	59,418 303	-	-	303	29,330	9,734
- Intake and Pump Station	1		-	303 56	- 1	•
- Raw Water Pipeline	56	7	- [E 145	•
- WIW and Pump Station	10,290	•	-	5,145	5,145	0.000
- Bulk Supply Pipelines	46,385	-	- 1	13,916	23,193	9,277
- Regional Reservoirs	1,600	-	-	480	800	320
- Pump Stations	784			235	392	157
Retail	28,173	-	-	5,635	16,904	5,635
- Service Reservoir-	4,565	-	-	913	2,739	913
- Reticulation Pipelines	22,738	- [-	4,548	13,643	4,548
- Standpipes	870			174	522	174
Yard Connection	<u> </u>	-	- 1	-	<u> </u>	
ise B	122,422	•	-	33,096	67,002	22,324
Bulk	61,962	- [•	21,004	30,726	10,232
- Intake and Pump Station	454	-	-	454	-	
- Raw Water Pipeline	56	-	-	56	-	
- WTW and Pump Station	10,290	-	-	5,145	5,145	14 1.
- Bulk Supply Pipelines	46,385	-	-	13,916	23,193	9,27
- Regional Reservoirs	3,600	-	-	1,080	1,800	720
- Pump Stations	1,177	-	-	353	589	235
Retail	44,990	-	-	8,998	26,994	8,99
- Service Reservoir	11,320	-	-	2,264	6,792	2,26
- Reticulation Pipelines	32,998	-	-	6,600	19,799	6,60
- Standpipes	672	- [-	134	403	13
Yard Connection	15,470			3,094	9,282	3,09
ase B-A	34,831			7,326	20,569	6,93
Bulk	2,544		-	869	1,197	47
Intake and Pump Station	151	-	-	151	-	
- Raw Water Pipeline			_ '	_	- 1	
- WTW and Pump Station	1 .	_ [_	_	-	
- Bulk Supply Pipelines	1 1	_		_	_	
- Regional Reservoirs	2,000	_	_	600	1,000	40
- Pump Stations	393	_	_	118	197	. 7
Retail	16,817	 -		3,363	10,090	3,36
- Service Reservoir	6,755		- 1	1,351	4,053	1,35
	10,260	- {	-	2,052	6,156	2,05
- Reticulation Pipelines		- 1	-	<u> </u>	(119)	
- Standpipes Yard Connection	(198) 15,470			(40) 3,094	9,282	3,09

Table C.1-2 Disbursement and Project Cost for Case A and B: Moretele 2

									(Uni	,000Rand
		II.				1000	1000	3 2000	2001	200
Casa A	Total.	Item			Total	1998	1999	2000	2001	200
Case A	Total	(1)	,		213,268	632	4,988	57,198	107,533	42,91.
	Bulk	(i)Direct Construction Cost			59,418	•	-	20,135	29,530	9,75
	•	(2)P&G	(1)x	15%	8,913	•	-	3,020	4,429	1,463
	1		(1)+(2)	1	68,331	-	-	23,155	33,959	11,21
	1	(4)Engineering Fee	(3)x	10%	6,833	-	1,708	1,708	1,708	1,708
	•	(5)Miscellaneous	(1)x	2%	1,188	-	594	594	-	
	1	(6)Institutional Support	(3)x 2	.5%	1,708	342	342	342	342	343
		(7)Sub-Total	(3)+(4)+(5)		78,060	342	2,644	25,799	36,009	13,26
		(8) Physical Contingency	(3)x		10,250		-	3,473	5,094	1,68.
		(9) Price Escalation (10%/a)	(7)+(8)x	1	38,481	- 34	555	9,689	19,076	9,12
		(10)Sub-Total	(8)+(9)		48,731	34	555	13,162	24,170	10,80
		· · ·	(7)+(10)		126,791	376	3,199	38.961	60,178	24,076
	Į.	YAT		14%		53	448	5,455	8,425	3,37
	Į.	Grand Total		1470	144,542	428	3,647	44,416	68,603	27,44
	Retail	(1)Direct Construction Cost	 		28,173			5,635	16,904	5,63
		(2)P&G	(1)x	1500	4,226	•	•	845	2,536	-
		(3)Base Cost		1.370		•	•			84:
		` '	(1)+(2)		32,399	. •		6,480	19,439	6,48
		(4)Engineering Fee	(3)x	1070	3,240	• 1	810	810	810	81
	l	(5)Miscellaneous	. ,	المير				-		
	1	(6) Institutional Development	(3)x 2		810	162	162	162	162	16
		(7)Sub-Total	(3)+(4)+(5)		36,449	162	972	7,452	20,411	7,45
		(8) Physical Contingency	. (3)x	15%	4,860	-	-	972	2,916	97
		(9)Price Escalation(10%/a)	(7)+(8)x		18,978	16	204	2,788	10,826	5,14
		(10)Sub-Total	(8)+(9)		23,837	16	204	3,760	13,742	6,11
		Total	(7)+(10)		60,286	178	1,176	11,212	34,153	13,56
		VAT		14%		25	165	1,570	4,781	1,89
	<u> </u>	Grand Total			68,726	203	1,341	12,782	38,935	15,46
Case B	Total				286,360	771	5,944	71,437	149,059	59,14
	Be)k	(1)Direct Construction Cost			61,962			21,004	30,726	10,23
	İ	(2)P&G	(1)x	15%	9,294	-	-	3,151	4,609	1,53
		(3)Base Cost	(1)+(2)		71,256		-	24,154	35,335	11,76
	ļ	(4)Engineering Fee	(3)x	10%	7,126		1,781	1,781	1,781	1,78
	i	(5)Miscellaneous	(i)x	2%	1,239		620	620		
	1	(6)Institutional Support	(3)x 3	2.5%	1,781	356	356	356	356	35
	i	(7)Sub-Total	(3)+(4)+(5)	+(6)	81,403	356	2,757	26,911	37,473	13,90
		(8) Physical Contingency		15%		, .	۱ ,	3,623	5,300	1,70
		(9)Price Escalation (10%/a)	(7)+(8)x		40,139	36	579	10,107	19,851	9,50
		(10)Sub-Total	(8)+(9)		50,828	36	579	13,730	25,151	11,33
	•	Total	(7)+(10)		132,230	392	3,336	40,642	62,624	25,23
	1	VAT		14%		55	467	5,690	8,767	3,5
	<u>L</u>	Grand Total			150,742	447	3,803	46,331	71,391	28,7
	Retail	(1)Direct Construction Cost			44,990	-	-	8,998	26,994	8,99
		(2)P&G	(1)x	15%		١.		1,350	4,049	1,35
	1	(3)Base Cost	(1)+(2)		51,739	Ι.	.	10,348	31,043	10,34
	1	(4)Engineering Fee	(3)x	10%] .	1,293	1,293	1,293	1,29
		(5) Miscellaneous	, V		"]				1,2
	1	(6)Institutional Development	(3)x	5 50⊈	1,293	259	259	. 259	259	2.5
	1	(7)Sub-Total	(3)+(4)+(5)			259	1,552	11,900	32,595	11,90
		(8)Physical Contingency				"	1,552			
		(9)Price Escalation(10%/a)	(3)x	1370			1 226	1,552	4,656	1,5:
		• • • • • • • • • • • • • • • • • • • •	(7)+(8)x		30,306	25	326	4,453	17,289	8,2
		(10)Sub-Total	(8)+(9)		38,066	26	326	6,005	21,945	9,70
		Total	(7)+(10)		96,272	285	1,878	17,905	54,540	21,6
	l	VAT		14%		40	263	2,507	7,636	3,00
	-	Grand Total	 		109,750	324	2,141	20,411	62,176	24,6
	Yard	(1)Direct Construction Cost			15,470			3,094	9,282	3,0
	Connection	, ,,	(1)x		7,221			1,024	4,308	1,8
		Total	(1)+(2)		22,691		-	4,118	13,590	4,9
			• '	14%	3,177	1 -	-	577	1,903	6
		YAT	l							
		VAT Grand Total			25,868			4,695	15,492	5,6
Case B	A Bulk					18	156	4,69\$ 1,915		
Case B-,	A Buik Retail				25,868	18 121	156 800		2,788	5,64 1,33 9,21
Case B-,		Grand Total			25,868 6,201			1,915		

Table C.1-3: Annual Operation and Maintenance Cost for Case A and B: North Mankwe (Case A)

Annual Water Production: 1,147,210 kl (Unit: 000Rand)

(Case A))			Annual Water I	roduction:	1,147,210	ki (Ui	nii: UUUKana)
I			Bulk Water S				Retail Supply	
ltem	Raw Water	Electricity	Chemicals	Salaries	Maintenance		Administration	Total
Urit Cost	0.013 R/kl	0.15 R/kl	0.04 R/kl	0.025 R/k3	0.015 R/kl	Sub-Total	204,900 R/year	
Escalation	0%	3%	0%	0%	0%	<u> </u>	0%	
Year								1
5	14.91	199.49	45.89	28.68	17.21	306.18	204.90	511.08
6.	14.91	205,47	45.89	28.68	17.21	312.16	201.90	517.06
7	14.91	211.64	45.89	28.68	17.21	318.33	204.90	523.23
8	14.91	217.99	45.89	28.68	17.21	324.68	204.90	529.58
9	14.91	224.53	45.89	28.68	17.21	331.22	204.90	536.12
10	14.91	231.26	45.89	28.68	17.21	337.95	204.90	542.85
11	14.91	238.20	45.89	28.68	17.21	344.89	204.90	549.79
12	14.91	245.35	45.89	28.68	17.21	352.04	204.90	556.94
13	14.91	252.71	45.89	28.68	17.21	359.40	204.90	564.30
14	14.91	260.29	45.89	28.68	17.21	366.98	204.90	571.88
15	14.91	268.10	45.89	28.68	17.21	374.79	204.90	579.69
16	14.91	276.14	45.89	28.68	17.21	382.83	204.90	587.73
17	14.91	284.42	45.89	28.68	17.21	391.12	204.90	596.02
18	14.91	292.96	45.89	28.68	17.21	399.65	204.90	604.55
19	14.91	301.75	45.89	28.68	17.21	408.44	204.90	613.34
20	14.91	310.80	45.89	28.68	17.21	417.49	204.90	622.39
21	14.91	320.12	45.89	28.68	17.21	426.81	204.90	631.71
22	14.91	329,73	45.89	28.68	17.21	436.42	204.90	641.32
23	14.91	339.62	45.89	28.68	17.21	446.31	204.90	651.21
24	14.91	349.81	45.89	28.68	17.21	456.50	204.90	651.40
25	14.91	360.30	45.89	28.68	17.21	466.99	204.90	671.89
26	14.91	371.11	45.89	28.68	17.21	477.80	204.90	682.70
27	14.91	382.24	45.89	28.68	17.21	488.93	204.90	693.83
28	14.91	393.71	45.89	28.68	17.21	500.40	204.90	705.30
29	14.91	405.52	45.89	28.68	17.21	512.21	204.90	717.11
30	14.91	417.69	45.89	28.68	17.21	524.38	204.90	729.28

(Case B))			Annual Water I	roduction:	3,059,226	ki (U	nit: '000Rand
i i			Bulk Water S	upply			Retail Supply	1
tem	Raw Water	Electricity	Chemicals	Salaries	Maintenance		Administration	Total [
Unit Cost	0.013 R/kJ	0.15 R/kl	0.04 R/kJ	0.025 R/kl	0.015 R/kl	Sub-Total	507,300 R/year]
Escalation	0%	3%	0%	0%	0%		0%	
Year	***************************************							T
5	39.77	531.97	122.37	76.48	45.89	816.48	507.30	1,323.78
ું કે ડુંં	39.77	547.93	122.37	76.48	45.89	832,44	507.30	1,339.74
7	39.77	564.37	122.37	76.48	45.89	848.88	507.30	1,356.18
8	39.77	581.30	122.37	76.48	45.89	865.81	507.30	1,373.11
9	39.77	598.74	122.37	76.48	45.89	883.25	507.30	1,390.55
10	39.77	616.70	122.37	76.48	45.89	901.21	507.30	1,408.51
111	39.77	635.20	122.37	76.48	45.89	919.71	507.30	1,427.01
12	39.77	654.26	122.37	76.48	45.89	938.77	507.30	1,446.07
13	39.77	673.89	122.37	76.48	45.89	958.39	507.30	1,465.69
14	39.77	694.10	122.37	76.48	45.89	978.61	507.30	1,485.91
15	39.77	714.93	122.37	76.48	45.89	999.43	507.30	1,506.73
16	39.77	736.37	122.37	76.48	45.89	1,020.88	507.30	1,528.18
17	39.77	758.47	122.37	76.48	45.89	1,042.97	507.30	1,550.27
18	39.77	781.22	122.37	76.48	45.89	1,065.73	507.30	1,573.03
19	39.77	804.66	122.37	76.48	45.89	1,089.16	507.30	1,596.46
20	39.77	828.80	122.37	76.48	45.89	1,113.39	507.30	1,620.60
21	39.77	853.66	122.37	76.48	45.89	1,138.17	507.30	1,645.47
22	39.77	879.27	122.37	76.48	45.89	1,163.78	507.30	1,671.08
23	39.77	905.65	122.37	76.48	45.89	1,190.16	507.30	1,697.40
24	39.77	932.82	122.37	76.48	45.89	1,217.32	507.30	1,724.62
25	39.77	960.80	122.37	76.48	45.89	1,245.31	507.30	1,752.63
26	39.77	989.63	122.37	76.48	45.89	1,274.13	507.30	1,781.43
27	39.77	1,019.31	122.37	76.48	45.89	1,303.82	507.30	1,811.12
28	39.77	1,049.89	122.37	76.48	45.89	1,334.40	507.30	1,841.70
29	39.77	1,081.39	122.37	76.48	45.89	1,365.90	507.30	1,873.20
30	30 77	1 111 83	122.37	76.48	45.89	1,398,34	507.30	1,905.64

Table C.1-4: Different Local Structure Models (Retail Supply)

	Service Level A							
	Structure Model 1	Structure Model 2						
Size	Small Community: e.g.	Medium: e.g.						
	350 Households	800 Households						
- [2100 People	4800 People						
Mngt.	Water Committee:	Water Committee:						
Ĭ	- Chair person	- Chair person						
ì	- Vice Chair	- Vice Chair						
	- Secretary	- Secretary						
	- Treasurer	- Vice Secretary						
l	110000101	- Treasurer						
Staff	Water Bailiff (x 2)	Bookkeeper / Administrator						
Otali	(122)	Water Bailist (x 2)						
	Part-time employee/s.	Part-time employee/s.						
	Functions may be combined.							
		evel B						
	Structure Model 3	Structure Model 4						
Size	Structure Model 3 Small Community: e.g.							
Size	Small Community: e.g.	Structure Model 4						
Size		Structure Model 4 Medium: e.g.						
	Small Community: e.g. 350 Households 2100 People	Structure Model 4 Medium: e.g. 800 Households						
Size Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee:	Structure Model 4 Medium: e.g. 800 Households 4800 People						
	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee:						
	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person						
	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair						
	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary						
Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary						
	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer Pipe / Meter Maintenance (x1)	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1)						
Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2)						
Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer Pipe / Meter Maintenance (x1)	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2) Meter Readers / Collect. Officers (x						
Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer Pipe / Meter Maintenance (x1) Meter Readers / Collection Officers (x 2)	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2)						
Mngt.	Small Community: e.g. 350 Households 2100 People Water Committee: - Chair person - Vice Chair - Secretary - Treasurer Pipe / Meter Maintenance (x1)	Structure Model 4 Medium: e.g. 800 Households 4800 People Water Committee: - Chair person - Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2) Meter Readers / Collect. Officers (x						

Table C.1-5: Costing of Alternative Structure Models / Options

Role / Position	Cost (R	()
	Monthly	Annually
Water Committee:		
Chairperson	75	900
Vice Chairperson	75	900
Secretary	75	900
Vice Secretary	75	900
Treasurer	75	900
Bookkeeper / Cashier (Part-time)	500	600
Bookkeeper / Cashier (Full-time)	2000	2400
Operator (Valves, pumps, plant)(Part-time)	450	540
Maintenance Worker (Part-time)	450	540
Collections / Water Bailiff (Part-time)	200	240

Organisational Model	Cost (R	.)
	Monthly	Annually
Model 1:		
Service Level A Small Community	700	8,400
Model 2:		
Service Level A Medium Community	1,275	15,300
Wedian Community		
Model 3:		
Service Level B Small Community	1,150	13,800
Model 4:		
Service Level B Medium Community	3,675	44,100

Table C.1-6: Administration Cost For Retail Supply: Moretele 2

		Service l	Service Level B			
	Calculated Population	Cost	W)	Cost (R)		
Settlement/ Community	Topulation	Monthly	Annual	Monthly	Annual	
1 Lefiso/Mmutlestad	5,440	1,275	15,300	3,675	44,100	
2 Lefiswane	5,760	1,275	15,300	3,675	44,100	
3 Ramantsho	550	700	8,400	1,150	13,800	
4 Semohlase	448	700	8,400	1,150	13,800	
5 Moletsi	1,664	700	8,400	1,150	13,800	
6 Marapyane	21,504	1,275	15,300	3,675	44,100	
7 Opgeruimd	1,856	700	8,400	1,150	13,800	
8 Ga-Ramantshane	14,720	1,275	15,300	3,675	44,100	
9 Kalkfontein	9,600	1,275	15,300	3,675	44,100	
Sub-Total of Moretele 2 East	61,542	9,175	110,100	22,975	275,700	
10 Lefifi	12,160	1,275	15,300	3,675	44,10	
11 Rapotokwane	5,504	1,275	15,300	3,675	44,10	
12 Norman	538	700	8,400	1,150	13,80	
13 Bamekgoko	9,600	1,275	15,300	3,675	44,10	
14 Phake C	2,304	700	8,400	1,150	13,80	
15 Phake B	1,280	700	8,400	1,150	13,80	
16 Phake A	2,240	700	8,400	1,150	13,80	
17 Mantiole	9,600	1,275	15,300	3,675	44,10	
Sub-Total of Moretele 2 West	43,226	7,900	94,800	19,300	231,60	
TOTAL	. 104,768	17,075	204,900	42,275	507,30	

Table C.1-7: Preliminary Tariff Setting for Case A and B Moretele 2

Bulk Water Tariff

	Annual Production	O&M Cost	Reserve for Replacement	Loan Repayment	Total	Bulk Tariff (Unit Cost)
	(KL)	(000R)	(1000R)	(000R)	(000R)	(R/KL)
	(1)	(2)	(3)	(4)	(5)= (2)+(3)+(4)	(6)=(5)/(1)
Case A	1,147,210	312.16	146.25	0	458.41	0.40
Case B	3,059,226	832.44	411.72	521.67	1765.83	0.58

Retail Water Tariff

	Annual Water Sales	Bulk Water Purchase	O&M Cost	Loan Repayment	Total	Retail Tariff (Unit Cost)
	(KL)	(000R)	('000R)	('000R)	(000R)	(R/KL)
	(7)	(8)=(1)x(6)	(9)	(10)	(11)= (8)+(9)+(10	(12)=(11)/(12)
Case A	975,128	458.41	204.90		663.31	
Case B	2,600,342	1765.83	507.30	5457.39	7730.52	2.97

	Consu	mption	Monthl	y Tariff	Share of Income		
ſ	Average	Low-Income	Average	Low-Income	Average	Low-Income	
ĺĺ	(kl/m/hh)	(kl/m/hh)	(R/m/hh)	(R/m/hh)	1,446R/m	337R/m	
	(13)	(14)	(15)=(12)x(13	(16)=(12)x(14	(15)/1,446	(16)/337	
Case A	4.80	4.80	3.27	3.27	0.2%	1.0%	
Case B	13.06	4.80	38.81	14.27	2.7%	4.2%	

Reserve for Replacement : Replacement Cost for Pumps, Interest Rate (Deposit)5%, 15 years

Loan Repayment: Interest rate 8%, 20 years equal repayment

Table C.1-8: Disbursement Schedule and Project Cost for Case C: North Mankwe

		Stage		SI	AGE 1 (S	STAGE 1 (Service Level A.	4 Y				STAGE	STAGE 2 (Upgrade)	(e)		
		Year	F	63	60	4	S	Sub-	9	7	8	6	10	Sub-	Total Fall
Item	c		1998	1999	2000	2001	2002	Total	2003	2004	2005	2006	2007	Total	
Case C Total			632	886'5	861,78	107.538	42.912	213.268	225	1,540	22,933	66,870	26 148	117,716	330,984
1	(1)Direct Construction Cost			[20,135	29,530	9,754	59,418	•	•	698	1,197	479	2,544	61,962
	(2)P&G	(1)x 15%	٠	•	3,020	4,429	1,463	8,913	•	•	130	179	77	382	9,294
6	(3)Base Cost	0)+(3)	•	•	23,155	33,959	11,217	68,331	•	1	8	1,376	550	2,926	71,256
3(4)	(4)Engineering Fec	×	•	1,708	1,708	1,708	1.708	6,833	•	73	73	55	73	293	7,126
(8)	(S)Miscellaneous	(1)x 2%	,	204	\$65	•	•	1,188	,	23	23	•	,	51	1,239
1(9)	(6)Institutional Support		342	342	342	342	342	1,708	15	13	15	15	15	3	1,781
_	7)Sub-Total	(3)+(4)+(5)+(6)	342	2,644	25,799	36,009	13,267	78,060	15	113	1,112	1,464	638	3,342	81,403
(8)	(8) Physical Contingency	(3)x 15%	1	•	3,473	5,094	1,683	10,250	•	•	150	306	83	439	10,688
160	(9) Price Escalation (10%/a)		34	555	689.6	19,076	9,127	38,481	11	107	1,444	2,268	1,149	4,979	43,460
010	Total	(8)+(8)	34	555	13.162	24.170	10,809	48,731	11	107	1,593	2,474	1231	5,418	\$4,148
Total		3+03	376	3,199	38,961	60,178	24,076	126,791	92	221	2,706	3,938	1.869	8,760	135,551
VAT		14%	S	84	5,455	8,425	3,371	17,751	4	31	379	551	282	1,226	18,977
Gra	Grand Total		428	3,647	44,416	68,603	27,447	144,542	30	251	3,085	4,489	2,131	986.6	154.528
Retail (1)[(1)Direct Construction Cost		•	1	5,635	16,904	5,635	28,173	,	'	3,363	10,090	3,363	16,817	86.4
	(2)P&G	(1)x 15%	•	•	845	2,536	848	4,226	•	•	505	1,514	505	2,523	6,749
	(3)Base Cost	(1)+(2)	•	•	6,480	19,439	6,480	32,399	•	•	3,868	11,604	3.868	19,340	51,739
(4)E	(4)Engineering Fee	(3)x 10%	•	810	810	810	810	3,240	•	483	£83	483	£83	1,934	5,174
(S)	(5)Mixcellaneous		•	•	•	•	•	Þ	ı	'	•	•		•	1
7(9)	6)Institutional Development	(3)x 2.5%	162	162	162	162	162	810	26	26	3	64	97	483	1,293
	7)Sub-Total	(3)+(4)+(5)+(6)	162	972	7,452	20,411	7,452	36,449	62	280	4 448	12,184	4.48	21,757	58,206
(8)	(8) Physical Contingency	(3)x 15%	•	•	272	2,916	972	4,860	•	1	280	1.741	280	2,801	7,761
(8)	(9)Price Escalation(10%/a)	×(8)+(C)	16	204	2,788	10,826	5,143	18,978	22	550	5,750	18,909	8,014	33,298	52,275
130	(10)Sub-Total	(8)+(8)	16	204	3,760	13,742	6,115	23,837	75	550	6,330	20,649	8,594	36,199	60,036
Total		(01)+(10)	178	1,176	11,212	34,153	13,566	60,286	171	1,131	10,779	32,833	13,042	57,956	118,242
VAT		14%	ß	165	1.570	4.781	1,899	8,440	73	158	1,509	4.597	1,826	8,114	16.554
Gra	Grand Total		203	1,341	12,782	38,935	15,466	68,726	195	1,289	12,288	37.430	14,868	06,070	134,796
Yard (1)D	(1)Direct Construction Cost		ľ	1	-	·	-	•	*	•	3,094	9,282	3,094	15,470	15,470
cctton	Connection (2)Price Escalation(10%/a)	(1)×	•	•	•	. •	•	•	•	ı	3,538	12,604	4,931	21.074	21,074
Total		(1)+(2)	•	•	•	•	:	-,	,	•	6,632	21,886	8,025	36,544	36,544
TAV		14%	•	•	•		,	,	1	•	82	3,064	1.124	5,116	5,116
Gra	Grand Total		٠		٠	•	•	•	•	•	7,561	24,951	9.149	41.660	41,660
	7														

Table C.1-9: Project Cost and Allocation for Case C: Moretele 2

						(Unit: ,U	ookano
	Item	Project	Cost	Stag		Stag	
	1 (CSI)	riojeci	CUSI	(RDP (Grant)	(Loan/Ow	n Fund)
Total		330,984	100.0%	213,268	100.0%	117,716	100.0%
Bulk	(1)Direct Construction Cost	61,962	(45.7%)	59,418	(46.9%)	2,544	(29.0%)
Supply	(2)P&G	9,294	(6.9%)	8,913	(7.0%)	382	(4.4%)
	(3)Base Cost	71,256	(52.6%)	68,331	(53.9%)	2,926	(33.4%)
	(4)Engineering Fee	7,126	(5.3%)	6,833	(5.4%)	293	(3.3%)
	(5)Miscellaneous	1,239	(0.9%)	1,188	(0.9%)	51	(0.6%)
	(6)Institutional Support	1,781	(1.3%)	1,708	(1.3%)	73	(0.8%)
	(7)Sub-Total	81,403	(60.1%)	78,060	(61.6%)	3,342	(38.2%)
	(8)Physical Contingency	10,688	(7.9%)	10,250	(8.1%)	439	(5.0%)
	(9)Price Escalation(10%/a)	43,460	(32.1%)	38,481	(30.3%)	4,979	(56.8%)
	(10)Sub-Total	54,148	(39.9%)	48,731	(38.4%)	5,418	(61.8%)
	Total	135,551	(100.0%)	126,791	(100.0%)	8,760	(100.0%)
	VAT	18,977		17,751		1,226	
	Grand Total	154,528	46.7%	144,542	67.8%	9,986	8.5%
Retail	(1)Direct Construction Cost	44,990	(38.0%)	28,173	(46.7%)	16,817	(29.0%)
Supply	(2)P&G	6,749	(5.7%)	4,226	(7.0%)	2,523	(4.4%)
	(3)Base Cost	51,739	(43.8%)	32,399	(53.7%)	19,340	(33.4%)
	(4)Engineering Fee	5,174	(4.4%)	3,240	(5.4%)	1,934	(3.3%)
	(5)Miscellaneous	-	(0.0%)	-	(0.0%)	-	(0.0%)
Ì	(6)Institutional Development	1,293	(1.1%)	810	(1.3%)	483	(0.8%)
ŀ	(7)Sub-Total	58,206	(49.2%)		(60.5%)	21,757	(37.5%)
	(8)Physical Contingency	7,761	(6.6%)	4,860	(8.1%)	2,901	(5.0%)
	(9)Price Escalation(10%/a)	52,275	(44.2%)		(31.5%)	F .	(57.5%)
	(10)Sub-Total	60,036	(50.8%)		(39.5%)		(62.5%)
1	Total	118,242	(100.0%)		(100.0%)		(100.0%)
	VAT	16,554		8,440		8,114	<i>:</i>
	Grand Total	134,796	40.7%	68,726	32.2%	66,070	56.1%
Yard	(1)Direct Construction Cost	15,470	(42.3%)	-		15,470	(42.3%)
Connection	(2)Price Escalation(10%/a)	21,074	(57.7%)	-		21,074	(57.7%)
1	Total	36,544	(100.0%)	-	1	36,544	(100.0%)
	VAT	5,116		-		5,116	
	Grand Total	41,660	12.6%	<u> </u>	0.0%	41,660	35.4%

	Project	Cost	Stag (RDP C		Stag (Loan/Ow	
Bulk Supply	154,528	100.0%	144,542	93.5%	9,986	6.5%
Retail Supply	134,796	100.0%	68,726	51.0%	66,070	49.0%
Yard Connection	41,660	100.0%	-	0.0%	41,660	100.0%
Total	330,984	100.0%	213,268	64.4%	117,716	35.6%

Table C.1-10: Project Costs for Case A and B at 1997 Price: Moretele 2

	·····							·	(Unit:	,000Rand
		Thomas .		i	Year	1000	2	3	4	
· · · · · · ·	ومتاثان النواء فيماهما	Item			Total	1998	1999	2000	2001	200
ase A 1 I		(VD			147,765	574	4,122	42,973	73,450	26,645
l'		(1)Direct Construction Cost	70 0 .		59,418	-	•	20,135	29,530	9,754
ļ		(2)P&G	(1)x	15%	8,913	- [•	3,020	4,429	1,463
1			(1)+(2)	100	68,331	-		23,155	33,959	11,217
ŀ		(4)Engineering Fee	(3)x	10%	6,833	•	1,708	1,708	1,708	1,703
		(5)Miscelluneous	(1)x	2%	1,188		594	594		
		(6)Institutional Support	(3)x	2.5%	1,708	342	342	342	342	342
		(7)Sub-Total	(3)+(4)+(5		78,060	342	2,644	25,799	36,009	13,26
ļ		(8)Physical Conlingency	(3)x	15%	10,250			3,473	5,094	1,683
i			(7)+(8)		88,310	342	2,644	29,272	41,103	14,94
		VAT		14%	12,363	48	370	4,098	5,754	2,09.
ŀ		Grand Total			100,673	389	3,014	33,370	46,857	17,04
ĺ	Retail	(1)Direct Construction Cost			28,173	•	-	5,635	16,904	5,633
1		(2)P&G	x(1)	15%	4,226	-	-	845	2,536	843
1		(3)Base Cost	(1)+(2)		32,399	•	-	6,480	19,439	6,48
		(4)Engineering Fee (5)Miscelluneous	(3)x	10%	3,240 -	-	810	810	810	81
ļ		(6)Institutional Development	(3)x	2.5%	810	162	162	162	162	16
}		(7)Sub-Total	(3)+(4)+(5)+(6)	36,449	162	972	7,452	20,411	7,45
		(8) Physical Contingency	(3)x	15%	4,860	-	-	972	2,916	97
l		Total	(7)+(8)		41,309	162	972	8,424	23,327	8,42
İ		VAT		14%	5,783	23	136	1,179	3,266	1,17
	*	Grand Total			47,092	185	1,108	9,603	26,593	9,60
ase B	Tetal				197,821	701	4,913	53,672	101,809	36,72
I	Bulk	(1) Direct Construction Cost		-	61,962			21,004	30,726	10,23
		(2)P&G	(1)x	15%	9,294	-	-	3,151	4,609	1,53
		(3)Base Cost	(1)+(2)		71,256	-		24,154	35,335	11,76
- 1		(4)Engineering Fee	(3)x	10%	7,126	•	1,781	1,781	1,781	1,78
1		(5)Miscelluneous	(1)x	2%	1,239	-	620	620		
		(6)Institutional Support	(3)x	2.5%	1,781	356	356	- 356	356	3.5
ļ		(7)Sub-Total	(3)+(4)+(5	i)+(6)	81,403	356	2,757	26,911	37,473	13,90
į		(8)Physical Contingency	(3)x	15%	10,688			3,623	5,300	1,70
- 1		Total	(7)+(8)		92,091	356	2,757	30,535	42,773	15,67
		VAT	Ì	14%	12,893	50	386	4,275	5,988	2,19
		Grand Total			104,984	406	3,143	34,809	48,761	17,86
	Retail	(1)Direct Construction Cost			44,990	•	-	8,998	26,994	8,99
		(2)P&G	(1)x	15%	6,749	-	-	1,350	4,049	1,3
		(3)Base Cost	(1)+(2)		51,739	-	-	10,348	31,043	10,3
		(4)Engineering Fee	(3)x	10%	5,174		1,293	1,293	1,293	1,25
		(5)Miscelluneous				-			_	
•		(6)Institutional Development	(3)x	2.5%	1,293	259	259	259	259	2:
		(7)Sub-Total	(3)+(4)+(5	9+(6)	58,206	259	1,552	11,900	32,595	11,9
		(8)Physical Contingency	(3)x	15%	7,761		-	1,552	4,656	1,5
		Total	(7)+(8)		65,967	259	1,552	13,452	37,252	13,4
		VAT	[14%	* 2	36	217	1,883	5,215	1,80
		Grand Total	<u></u>		75,202	295	1,769	15,335	42,467	15,33
	Yard	(1)Direct Construction Cost			15,470	-		3,094	9,282	3,09
	Connection	VAT	1	14%				433	1,299	4:
		Grand Total	<u> </u>		17,636			3,527	10,581	3,5
ase C	(Cost for Up-	Grading)			Year	6	7	8	9	
]	2003	2004	2005		20
	Bu)k		1		4,310	17	129	1,439	1,904	8:
	Refail	· · · · · · · · · · · · · · · · · · ·	1		28,110	110	661	5,732	15,874	5,73
	Yard Conne	ction	T		17,636			3,527	10,581	3,5
								,		ولون

Table C.1-11: Project Cost and Allocation for Case C at 1997 Price: Moretele 2

				Stag	e 1	Stage	
	Item	Projec	Cost	_RDP C		(Loan/Ow	
Total		197,821	100.0%	147,765	100.0%	50,056	100.0%
Bulk	(1)Direct Construction Cost	61,962	(67.3%)	59,418	(67.3%)	2,544	(67.3%)
Supply	(2)P&G	9,294	(10.1%)	8,913	(10.1%)	382	(10.1%)
•••	(3)Base Cost	71,256	(77.4%)	68,331	(77.4%)	2,926	(77.4%)
	(4)Engineering Fee	7,126	(7.7%)	6,833	(7.7%)	293	(7.7%)
	(5)Miscellaneous	1,239	(1.3%)	1,188	(1.3%)	51	(1.3%)
	(6)Institutional Support	1,781	(1.9%)	1,708	(1.9%)	73	(1.9%)
	(7)Sub-Total	81,403	(88.4%)	78,060	(88.4%)	3,342	(88.4%)
	(8)Physical Contingency	10,688	(11.6%)	10,250	(11.6%)	439	(11.6%)
	Total	92,091	(100.0%)	88,310	(100.0%)	3,781	(100.0%)
	VAT	12,893		12,363		529	
	Grand Total	104,984	53.1%	100,673	68.1%	4,310	8.6%
Retail	(1)Direct Construction Cost	44,990	(68.2%)	28,173	(68.2%)	16,817	(68.2%)
Supply	(2)P&G	6,749	(10.2%)	4,226	(10.2%)	2,523	(10.2%)
,,,	(3)Base Cost	51,739	(78.4%)	32,399	(78.4%)	19,340	(78.4%)
	(4)Engineering Fee	5,174	(7.8%)	3,240	(7.8%)	1,934	(7.8%)
	(5)Miscellaneous	•	(0.0%)	-	(0.0%)	-	(0.0%)
	(6)Institutional Development	1,293	(2.0%)	810	(2.0%)	483	(2.0%)
ł	(7)Sub-Total	58,206	(88.2%)	36,449	(88.2%)	21,757	(88.2%)
	(8)Physical Contingency	7,761	(11.8%)	4,860	(11.8%)	2,901	(11.8%)
	Total	65,967	(100.0%)	41,309	(100.0%)	24,658	(100.0%)
	VAT	9,235		5,783	ľ	3,452	
	Grand Total	75,202	38.0%	47,092	31.9%	28,110	56.2%
Yard	(1)Direct Construction Cost	15,470				15,470	
Connection	on VAT	2,166				2,166	
	Grand Total	17,636	8.9%	<u> </u>	0.0%	17,636	35.2%

	Projec	t Cost	Stag (RDP (Stag (Loan/Ow	
Bulk Supply	104,984	100.0%	100,673	95.9%	4,310	4.1%
Retail Supply	75,202	100.0%	47,092	62.6%	28,110	37.4%
Yard Connection	17,636	100.0%	•	0.0%	17,636	100.0%
Total	197,821	100.0%	147,765	74.7%	50,056	25.3%

Bulk Supply	1st Tier	100,673	68.1%	50.9%	:	
Retail Supply	1st Tier	47,092	31.9%	23.8%	1st Tier	
Total		147,765	100.0%	74.7%	147,765	74.7%
Buik Supply	2nd Tier	4,310	8.6%	2.2%	2nd Tier	
Retail Supply	3rd Tier	28,110	56.2%	14.2%	4,310	2.2%
Yard Connection	3rd Tier	17,636	35.2%	8.9%	3rd Tier	
Total		50,056	100.0%	25.3%	45,746	23.1%
		197,821		100.0%		
	Retail Supply Total Bulk Supply Retail Supply Yard Connection	Retail Supply 1st Tier Total Bulk Supply 2nd Tier Retail Supply 3rd Tier Yard Connection 3rd Tier	Retail Supply 1st Tier 47,092 Total 147,765 Bulk Supply 2nd Tier 4,310 Retail Supply 3rd Tier 28,110 Yard Connection 3rd Tier 17,636 Total 50,056	Retail Supply 1st Tier 47,092 31.9% Total 147,765 100.0% Bulk Supply 2nd Tier 4,310 8.6% Retail Supply 3rd Tier 28,110 56.2% Yard Connection 3rd Tier 17,636 35.2% Total 50,056 100.0%	Retail Supply 1st Tier 47,092 31.9% 23.8% Total 147,765 100.0% 74.7% Bulk Supply 2nd Tier 4,310 8.6% 2.2% Retail Supply 3rd Tier 28,110 56.2% 14.2% Yard Connection 3rd Tier 17,636 35.2% 8.9% Total 50,056 100.0% 25.3%	Retail Supply 1st Tier 47,092 31.9% 23.8% 1st Tier Total 147,765 100.0% 74.7% 147,765 Bulk Supply 2nd Tier 4,310 8.6% 2.2% 2nd Tier Retail Supply 3rd Tier 28,110 56.2% 14.2% 4,310 Yard Connection 3rd Tier 17,636 35.2% 8.9% 3rd Tier Total 50,056 100.0% 25.3% 45,746

Table C.2-1: Cash Flow Analysis for Bulk Supply (Case C) at 1997 Price: Moretele 2

Tariff Forceast A. Service Lovel B. Water Demand b-1)Population b-2)Consumption b-3)Water Demand (AADD) b-4)Water Demand (SPDD)		•			•	4	^	ø	~	c	^	2			3	*
d (AADD) d (SPDD)		1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	20		2010	2011
d (AADD) d (SPDD)						v		-	- Ser	Service Level A-				Service Level B		
d (AADD) d (SPDD)							-									
d (AADD) d (SPDD)			•	•	•	•	61,542	104,768	104,768	104,768	104,768	104,768		104,78	104,78	25,78
	30 LCD					-	•	. !	:				3 6			9 30
	№1)×№2)XL/d		,			•	98.5	3,145	5,145 2,17,4	5,145 277 c	5,145 5,716	5,145 A 715	1979	1976	100.00	400,00
	b-3) x 1.5 KL/d F-3) x 366 KT/h				, ,							1,147,210	3.059,226			3,059,226
	100 CO CO CO CO CO CO CO CO CO CO CO CO CO															
C. Bulk Water Tariff	RAC						0.39	0.39	0.39	0.39	0.39	0.39	0.57	0.57	0.57	0.57
Income Statements	Vear	o	-	2	3	4	\$	\$	7	30	٥	10		12	13	74
(1,000R)	į	1997	8661	8	2000	2001	2002	2003	2004	2005	2002	2007	2008	\$002	2010	201
D. Revenue											,				,	,
d-1) Water Sales	C.x b-5)			•	•	•	263	17	447	744	74	1	1,744	4	4	4
d-2) Revenue Total			•	1	•	•	763	447	447	447	147	147	1.744	1.744	1.744	1.144
E. Expenses	(Unit Cost)	(Real Escalation)	ttion)					1		1	,	```	•	•	5	•
e-1) Raw Water Cost	0.013 R/KL	× 4-5)	•	٠	٠	٠	٥	13	2	si j	î	2	₹ ;	₹ ;	3 5	3 5
e-2) O&M Cost		x & 5)	•	•	٠	٠	171	ম	33	310	316	323	088	\$\$;	616	25.
-Power	0,150 R/KL	86	٠	٠	٠	•	117	202	212	218	ß	ន	635	654	674	\$
Chemical	0.040 R/KL		•	•	•	٠	23	3	\$	4	\$	\$	ផ	ដ្ឋ	ផ	ដ
Salation	0.025 RACL		•	٠		•	17	ន	ጸ	ጵ	દ્વ	গ	94	92	92	8
Maintenance Cost and other	0.015 R/KT		•	•	•	٠	01	17	17	17	17	17	\$. 5	3	\$
	(J. 1746.2)		,	٠		•	180	312	318	325	331	338	920	939	958	979
•6				1			8	235	129	a	116	<u>\$</u>	Ž	808	785	765
Cash Flow Statements	Year	٥	-	7	3	4	•	9	7	30	٥	2		12	13	7.
(1,000R)		1,997	1 998	1,999	2,000	2,001	2,002	2.003	7,884	2,005	2,006	2,007	2,008	2,009	2,010	2,011
F. Inflow										į	,			ì	i	
f-1)Net Operating Income						٠	£	135	ŝ	123	116	3	828	\$02	787	ê
f-2)Grant (RDP Fund)			389	3,014 3	33,370 4	46,857	17,942	•	•	•	,	•	•	•		•
F-3)Loan				•	•	•	•	17	129	1,439	\$?		• 6	• `	. 1	• {
f-4)Interest Generated	5%						•	•	=	00 F1	22	25	₹ 1	8	57	3
f-Sylnflow Total			385	3,014 3	33,370 4	46,857	17,125	156	360	1,580	2,045	28	863	798	SCS S	ĝ
C. Outflow						100	44.044	ŗ	ōć.	1.430	700	\$,	•	•	•
g-1)CAPEX+Replacement			200	3,014	35,570	46,837	17,042	:	671	KC+11	\$	770	. {	ţ		ŝ
g-2)Loan Repayment (CAPEX)	i			,	•		•	•	•	•	•	•	775	1	77.	770
g-3)Short Term Loan interest	70%				• }	• •	• :	٠ ن	•		. 50		• 8	. 5	;	ţ
g-4)Outflow Total	en Collecte Allert Grant Andrew St. (1988) 300 cm	e cassimina di secolor	έ	\$	- 5	10,057	7/0//	/ /	No.	V64.1	,		la series de		177	11
n Co	1	the second of the second	د	9.		J. C	3	À.	?	Service Contraction	747	The state of the s	The same of	The second second		Section 2
cum.			0	0	٥	0	8	222	Ŕ	Š	ş	786	1,128	7,408	COS.1	4.12
Loan outstanding	20 vears							11	147	1,598	3,630	4,742				
Interest	%8							-	2	128	280	379				
Total								20	159	1,726	3,920	5,121				

Table C.2-1: Cash Flow Analysis for Bulk (Case C) at 1997 Price: Moretele 2 (cont'd)

Columbia Columbia										Ę	,	ř	*	7.0	28	8	R
104,708 104,	Water Demand and	15	16	17	38.	19 2016	20 20	2018	2019	C 2020	\$ CO2	202	2023	2024	2025	2026	2027
1,004,768 10	Faritt Forecast	7107	C102	207	257	0107			Service	H 190							Î
1,277 1,27	A. Service Level	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \												,			1
8,381 8,381	b-1)Population	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768	104,768
1,2,772 1,2,	b-2)Consumption		į		0	000	.00	200	0 201	182.8	28.	181	8.381	8.381	8.381	8,381	8,381
1, 100	5-3)Water Demand (AADD)	8,381	8, 38 18, 6		185,8	3,381	10 5-1	10 (17)	12.50	12.572	12.572	12.572	12,572		12,572	12,572	12.572
1, 10.5 1, 1	b-4)Water Demand (SPDD) b-5)Annual Water Production	3,059,226	3,059,226												1.7	922,650	
1, 805 1, 805 1, 805 1, 805 1, 807 1	Double Waters Torriet	65.0	0.50	0.59	0.59	0.59	0,59	0.62	0.62	0.62	0.62	0.62	0.64	0.64	0.64	0.64	0.64
1,805 1,805 1,805 1,805 1,805 1,807 1,897 1,897 1,897 1,897 1,998 1,999 1,99	Dulk Water Leaves		<u> </u>	17	3-	2	20	21	22	23	24	25	26	Z	ñ	প্ল	දූ
1,805 1,805 1,805 1,805 1,805 1,805 1,897 1,897 1,897 1,897 1,998 1,999 1,99			2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
1,802 1,803 1,805 1,805 1,807 1,897 1,99				ý	303.	300.1	308 1	1 897	1 %07	1 897	1.897	1.897	1.958	1.958	1,958	1,958	1,958
40 40<	d-1) Water Sales	7,74	7,805	7.805	7.805	7.805	7.805	1,897	1.897	1,897	1.897	1,897	1,958	1,958	7,958	1,958	8561
1,003 1,004 1,00	Expenses	: •						•	•	Ş	Ş	Ş	Ş	Ş	9	Ş	. 8
981 1,003 1,026 1,049 1,044 1,048 1,144 906 933 961 960 1,019 1,099 1,019 1,099 1,01	e-1) Raw Water Cost	40	우	\$	Q	9	9	₹	3	3 5	3 5	}	3 2	2	, <u>, , , , , , , , , , , , , , , , , , </u>	1.326	1.359
12	0-2) O&M Cost	98	3	1,003	1,026	1,049	1.074	,098 20,0	1,124	ž	033	3 3	į &	1.019	1,050	1,081	1,114
16 76<	-Power	715	8 5	, ;	19.5	§ 5	77.	2 2	123	3	ä	13	12	ä	ផ្ល	H	22
46 46<	-Chemical	3 %	77 72	3 5	1 %	1 %	1 %	2	92	2	16	92	2	76	32	2,6	ኢ
1,027 1,043 1,066 1,089 1,113 1,138 1,164 1,190 1,217 1,245 1,274 1,394 1,334 1,366 1,907 1,904 1,497 1,49	-Salation		2 %	\$ \	3	₹ \$	\$. . \$	\$	4	. 3	\$	\$	\$	3	3	\$
764 762 716 692 735 707 679 651 664 <td>Stronger Treed</td> <td></td> <td>1.07</td> <td>5PO 1</td> <td>7 066</td> <td>1.089</td> <td>1.113</td> <td>1.138</td> <td>1.164</td> <td>1,190</td> <td>1,217</td> <td>1.245</td> <td>1.274</td> <td>1,304</td> <td>1.334</td> <td>7.366</td> <td>1.398</td>	Stronger Treed		1.07	5PO 1	7 066	1.089	1.113	1.138	1.164	1,190	1,217	1.245	1.274	1,304	1.334	7.366	1.398
15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 20 2000 2000 2000 2001 2002	Net Operating Income	1.	1	762	739	716	692	759	733	702	629	159	3	99	3	. 592	
400R) 2,012 2,013 2,014 2,015 2,017 2,019 2,020 2,021 2,020 2,021 2,020 2,021 2,020 <th< td=""><td></td><td>7</td><td></td><td>61</td><td>ž</td><td>102</td><td>20</td><td>21</td><td>22</td><td>23</td><td>*</td><td>23</td><td>8</td><td>27</td><td>8</td><td>ম</td><td>30</td></th<>		7		61	ž	102	20	21	22	23	*	23	8	27	8	ম	30
perating lincome 744 784 762 739 716 692 759 733 707 679 651 684 654 624 592 perating lincome (RDP Fund)	LEST FLOW STANFILLS (1,000F)	20		2,014	2,015	2,016	2,017	2,018	2.019	2,020	2,021	2,022	2,023	2.024	2,025	2,026	2023
Comparison	. Inflow							i	;			•	707	737	767	Ç	Ş
Op Fund) Operation Operation 181 200 108 126 143 159 175 5 10 Generated 107 123 143 162 181 200 108 126 143 159 175 5 10 Oral 851 968 969 859 859 859 836 626 602 602 ARD 851 867 859 859 859 836 626 602 602 ARD 852 <	F1)Net Operating Income	747	784	762	739	716	692	759	733	40/	6/0	Š	\$	5	S	•	•
Generated 107 123 143 162 181 200 108 126 143 159 175 5 10 5 10 out	F-2) Grant (RDP Fund)	•	•	•	•	•	•	•	•	٠	•	•	•			•	•
Generated 107 123 143 162 181 200 108 120 145 153 157 694 654 628 662 Octal 851 908 905 901 897 891 867 859 849 838 826 684 654 628 662 -Replacement CAPEN, 522 522 522 522 522 522 522 522 522 52	F-3)Loan	١	•	•	• ;	• :	•	• •	1 }	• :	• 6	· ¥.	• (· •	92	14
Ocal 851 908 905 901 897 891 867 839 849 535 6.0 00 00 00 00 00 00 00 00 00 00 00 00 0	f-4)Interest Generated	107	123	143	162	181	200	30.	97	143		67.	107	777	, Ę	209	574
+Roplacement 3,982 522 522 522 522 522 522 522 522 522 5	f-S)Inflow Total	851	જ	505	706	897	168	867	ΛĊΡ	A SPO	370	0*0	.	3	•	;	•
522 522 522 522 522 522 522 522 522 522	o-1)CAPEX+Replacement		•	•	•	٠	2,194	•	•	1	•	3,982	• ;	• ;	٠	٠ {	٠ \$
522 522 522 522 522 522 522 522 522 522	R-2)Loan Repayment (CAPEX			23	\$22	\$22	522	522	ž	ğ	23	222	E :	ž,	77	776	1
522 522 522 522 522 527 522 522 522 522	g-3)Short Term Loan Interest		•	•	•	•	•	•	•	• ;	• ;	•	2 ;	* 5	, (:	ţţ.
330 386 383 360 375 1884 345 347 345 347 304 285 3,478 3,495 182 33 97 204 285 2,469 2,855 3,238 3,617 3,992 2,168 2,514 2,851 3,178 3,495	8-4)Outflow Total			522	3		2.7/5	522	522	522	522	4.00	970	• 1	107	18	Ç
2,469 2,855 3,238 3,617 3,992 2,168 2,514 2,851 3,178 3,499 3,184 3,55	The part of the pa			383	. fr ≥ 4	375	-1,824	Ç.	19	3.00	4		23	5	204	284	337
	um.			3,238		3,992	2,168	2514	2,851	3,178	C.4.	797.	ê		3	3	3

Loan outstanding Principal

Table C.2-2; Cash Flow Analysis for Retail Supply (Case C-1) at 1997 Price: Moretele 2

water Demand and Tarif Forecast A. Service Level B. Water Demand b-1)Population b-2)No. of Household b-3)No. of Yard Connection b-4)Converpion		<	-	L1	:•1	ŧ	^	ø	~	0	•	₹.	•	4	:	
rd thold Connection	1641) & (100%	86	2000	2002	2002	2003	2002	2005	2006	2007	2008	5005	2010	2011
ad thold Connection						J			Service	Service Level A			,	-Service Level	 	
old prinection																
oction							C) 550	972.774	10.4.769	10.4 7KP	104.768	104 76X	104.768	104.768	104.768	124,768
oction			•	•		•		0000	30.		14.730	0.23	0,229	16.770	16.370	16.370
notroc			٠		•		010,7	19,570	10,570	e e e	2/10/	2	, and	1,733	14.773	ť,
				•	•	•	٠;	٠;	٠ ;	. 6	, ;	, 6	6	Ş	ç	8
	ខ្ម						Š.	3 5	3 :	3 :	3 5	3 5	28.0	38.8	× 38.	8.383
b-5)Water Demand	7.5×74×5/4		٠		,		Q.	5 1 €	5,143	3,140	2	3	0	, ev	700 5	36.75
r water Ratio							15.0%	15.0%	15.0%	2.0%	15.0%	15.0%	20.0	15.0%	2.5.	2
	N. S. V. J. G. L.Y. IA			ı	,	•	1,569	7.672	2,672	2,672	202	2,672	7.124			\$
	2) 11 0 1 1 (. 1	•	•	673.885	147.210		147210	7	1.147,210	3,059,226	3.059,226 3,		3,059,226
CETOE	0-2) x 300 K(0-0		•	1			COS CT3	074 178		871.50		975 128	2,600,342	2600342 2	2,600,342, 12	2,600,342
	b-7) x 365 KL/a				•	•	*****	*****		200						
C. Retail Water Tariff							•	į	•	į		5	6	212	6	5
cel Metail Water Taniff	S						79.0	0.67	190	000	700	3	£.1.2	77.7	4.4	į
	c-1 by 25ledx6.4x30 R/month/Household	Vmonth/House	chold				3.22	8. 23.	a E	m H	333	, 33 13 13	:			
out of the second	P/month/Household	usehold					19.40	19.40	19.40	19.40	19.40	19.40				
Co) Mascive for Oppositing	The second secon		-	,	-	J	8	٥	7	×	ļ^	10		21	13	7
Income Statements	1021	2 60	- 8	1 8	, 002	300	3002	2003	2007	2005	2006	2007	2008	2002	2010	50
(1,000K)		166	1330	222				290								
D. Kevenue					٠.		418	683	652	652	652	652	2.25	2,251	2,251	1,151
6-1) Water Sales (Cost Portion)			•	•	•	•	1901	127.6	2 431	2.431	2 42	1416	1362	3.262	3,262	3.762
d-2) Reserve Fund / Amortisation				•		٠	2000	1001	200	1001	4 0.83	2000	\$ 57.3	5 5 / 3	5.513	5.513
d-3)Revenue Total			•	•	•	•	XXC'7	00,		600	3	3				
E. Expenses								•	Ċ,	02.0	0.30	0,0	650	150	0.57	0.57
e-1) Bulk Water Tariff	22			•	•	•	X	X	86.5	Š		5 4		787	777	744
S.	e-1)x b-8)						363	3 2	1	ì	ì	ì	!	ļ Ş	Ş	Ş
c-3) Maintenance & Admin Cost							22	503	G (S (3 5	3 5	200	200	Š	300
e-4) Expenses Total					•		418	652	652	259	700	70	1077	4,436		, e e e e
Net Operating Income							1,961	3,431	3,01	3,63	. J. L.	7,416	707.6	2076	3.00	-
Cash Flow Statements		0	-	2	3	4	'n	٥		×	6	0.		13 8	<u>~</u>	2 2
(1,000R)	!	1,997	1.998	1.999	2,000	2.001	2,002	2,003	5 8 7	2,005	88	2,007	2,00%	3	OIO!	5
F. Inflow							100	200	1,431	7.421	2.42)	1416	1363	3.50	3,262	3,262
f-1) Net Operating Income				• :	• ;	•	1.861	•	7							
i-2) Grant (RDP Fund)			185	1,108	9,603	26,593	7,007,	•	•			100				•
f.3) Loan				•	•	•	•	• 8	' 6	7	15,6,61	7 6	• •	. "		4
f-4) Interest Generated	2%		•		•	•	• ;	R (0.7	77	1 100	2 2	2 364	336.5	376	×
f-S) Inflow Total			185	1,108	,60 <u>3</u>	26,593	30.7	3,530	70/5	, J. O.	C+1'K1	1671	27.0	3		3
G. Outflow						;	į	;	,	000	727	9			1	•
g-1) CAPEX+Replacement			18\$	1,108	603	26,593	6,003	01	8	Ž,	25 ES	À	• • • • • • • • • • • • • • • • • • • •		. 25.5	, ,,
g-2) Loan Repsyment (CAPEX)			•	•	•	•	•	•		•	•		2000	3. Cat.	3	,
g-3) Short Term Loan Interest	36		٠	•	•	٠	١	•	•		• !	1 (, ,	, ;	. 436	, 75,
g-d)Oudlow Total			185	1,108	9,603	26 593	9,603	0//	SS .	9.259	26,455	V.5.2.	3.02.	2,02,6	7076	3,60,6
いたいからいからいからないというできないというできないとなるというないのできないのできないのではなっていませんということがあっています。			0	•	•	•	. 1881	3,420	2,639	270	77.0	-4,WG	A Company of the Company	Campbell March	une los casas de la casas de	10000
Auth	The course of the conflict ordered and the contract of the con		0	٥	٥	0	1.981	5.400 004	% 31	8,765	1,0%	45	22	8	\$	7

Loan outstanding													*	%%			8
CAPEX . Principal Interest	 &	20 years 8%									5,732 459 6,191	23,830	23,562	8			
1 1	Year		0 1997	1998	1999	3 2000	2001	2002	\$ 6 2003	7 2004	2005 2005	2006	2007	11 2008	2009	2010	2011
Monthly Expenditure Averago Lower Income	68LCD 25LCD	R/HH/M R/HH/M						22.62 22.62	22.22	22.62	22.2	ងដ	22.62	27.68 10.18	27.68	27.68	27.68
Inflation Economic Growth Rate Household Income Lower Incomo Average Incomo	Inflation 0% with Rate 0% 8/4 a Average R/ms 337	0% 0% 0% Average R/month 337	0% 0% 1% ago R/month 337 1466	337 337 3466	337 (2) 1,466	337 1) 466	337 1.466	33.7 1,466	337 5,466	337 _1466	337 11.466	337 1.466	337	337	28 28 4 4	337	337
Water Purchase/Income (Affordability Check) Lower Income Average Income	Affordability C	Check)	0.0%	%0.0 %0.0	0.0%	%0.0 %0.0	%0.0 %0.0	6.7% 1.5%	6.7% 1.5%	6.7% 1.5%	6.7% 1.5%	6.7% 1.5%	6.7%	3.0% 1.9%	3.0%	3.0% 1.99%	3.0%

Vol.4 Moretele 2

Table C.2-2: Cash Flow Analysis for Retail Supply (Case C-1) at 1997 Price: Moretele 2 (cont'd)

A. Service Level A. Service Level A. Service Level A. Service Level A. Service Level B. Water Densend D-1)Population 104,768 10 D-1)Population 14,733 14 D-2)No. of Yard Connection 14,733 14 D-2)No. of Yard Connection 14,733 14 D-2)No. of Yard Connection 15,0% D-3)No. of Yard Connection D-1)X D-4) 8,381 B-2)Notional Water Ballod D-3)X 1-6 7,124 D-3)Annual Water Ballod D-3)X 1-6 7,124 D-3)Annual Water Parity D-3)X 1-6 7,124 D-3)Annual Water Tarity D-1)X 365 2,600,342 2,60	104,768 1, 16,370 14,733 80 8,381 15,0% 7,126 3,0 2,600,342 2,6 2,14 2,14 2,15 2,13 2,13 2,13 2,13 2,13 2,13 2,13 2,13	2014 104,768 1 16,370 14,733 80 8,381 15,0% 7,124 3,059,226 3,0 2,600,342 2,0 2,600,342 2,0 2,114	- 1	الممال المالية		2018 104,768 16,370 14,733 80 8,381 15,0% 7,124 7,124 7,124 2,003,42, 2,26 2,18 2,18	. I	2020 24,768 16,370 15,0% 15,0% 15,0% 21,124 21,18 21,18	104,768 16,370 14,733 80 8,381 15,0% 7,124 7,124 2,000,542 2,18	2022 104,768 16,370 14,733 80 8,381 15,0% 7,124 3,059,226 2,600,342	104,768 16,370 18,733	2024 104,768 16,370	104.768 16.370	2026 104,768 16,370	3027
		04,768 1 16,370 1,4,733 8,381 15,0% 7,1124 2,68,281 1,7124 2,68,281 2,68,281 2,68,281 2,68,281 2,68,281 2,88,28	m ^e 1				104,768 16,370 14,733 8,381 15,0% 7,134 059,226 3, 059,226 3, 2,138 2,18 2,18	23 218	14	B	104,768 16,370 14,733	104,768	104,768	104,768	
		04,768 1 16,370 14,733 8,88 8,381 15,6% 7,1124 2,14 2,14 2,312		·	77	A 10 M	- 0 0			and the second s	104,768 16,370 14,733	104,768	104.768	104,768	
		04,768 1 16,370 14,733 80 8,381 15,0% 7,124 7,124 2,14 2,14	m e 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · · · · · · · · · · · · · · · ·	, m"					and the second s	104,768 16,370 14,733 80	16,768	104.768 16.370	104,768	
		2,014 2,014 2,014 2,14 2,14 2,14 2,14	m en		m "	A 10 M	_			and the second s	16,370 14,733 80	16,370	16,370	16,370	% 3.
		14,733 8,381 15,6% 7,7134 2,714 2,14 2,14 2,312	m en	E I	7 7 7					and the second s	14.733 80	\	200		16,370
		14,733 8,88 8,381 15,0% 7,124 59,226 00,342 2,6 17 2,14 2,312	m e	i i	~ ~ ~ _	A			and the second second		80	į		ŧ	1
		80 8.381 15.0% 7,134 20,342 24 20,342 24 2,14 2,14	mer l	K I		A 10 10 10 10 10 10 10 10 10 10 10 10 10	a		The state of the s		26	35,45	(T) '\$'	667 t	7
7808		8,381 15.0% 7,124 59,226 3,0 00,342 2,0 2,14 2,12 2,312	m e1		m"				1			2	3	3	3 ;
3,008		15.0% 7,124 59,226 3,0 00,342 2,6 2,14 17 2014			, "" _						373	8,381	8,381	8,381	8,38
23.30%		2,312 2,312 2,14 2,14 2,312		K I	. "" _ _				2.44		35.0%	35.0%	15.0%	15.0%	15.0%
300		2014 2014 2014 2014 2014 2014	m 61	K I	"" _ _							1	ć	4177	7117
208.		20,226 3,0 00,342 2,6 2,14 17 2014 2,312	m er	K I	"		~ ~ ~							٠	
		2.14 2.14 2.14 2.312		B 1	" <u> </u>		~ ~								3038
	+ ^ +	2.14 17 2014 2.312	1 1 1 .		2017	13 13 10 10 10 10 10 10 10 10 10 10 10 10 10	21.8	23	2.18			2,600,342 2	1,600,341 1	1,600,742	1887
		2,312	2.14	2.14	202 2017	151 18 151 18	2019	23 23	2.18		٠.				
		2312	2015	2016	2017	15.00	2019	33	7	e c	930	2.20	3.20	2.20	230
		17 2014 2,312	18 2015	19 2016	20 2017	2018 8100	222 2019	ន		1	1			i	
		2,312	18 2015	19 2016	20 2017	2018	2019	83							
		2014	2015	19 2016	2017	20.53 20.83	2019	ន							ľ
		2014	2015	2016	2312	\$10¢	2019		ጸ	ĸ	8	. 27	ત્ર	ନା	3
		2,312			2,312	5	404.	2020	2021	2022	2023	2024	2025	2026	707
		2,312			2,312		404								
			2312	2.312		2,404		2. 24.	2,404	44.	2,465	2,465	2,465	2465	7,16
		230	3763	2363	2,565	346	23,65	2.068	3,265	3,265	3256	3,256	3.256	3256	3,256
		300		1000	275	0377	200	988	2,660	0883	5 727	122	\$ 72.1	1023	3
		2.763	2,200	2,200	ener's	2,000	2003	3		1001				•	•
			:	;	;		;		,		,				
		0.59	0.59	0.59	0.59	7970	0.62	7970	5	9	5	t	3 :	5 :	5
	1,805	1,805	1,805	1,805	1,805	1,897	1.897	1.897	1,897	1,897	1,958	1,958	1,958	86	Š
	204	202	507	707	507	803	507	507	507	507	\$03	207	507	\$04	8
		2312	2372	2312	2.312	2 50.	2,404	2.404	2.404	2.404	2.465	2.465	2,465	2,465	2.465
		3252	3252	3.52	3,252	3.265	3,265	3.265	3,265	3265	3,256	3256	3,256	3256	3,256
) (e	17	18	18	ន	73	13	53	8	ส	8	53	8	ያነ	8
(1,000R) 2,012	2,013	2,014	2,015	2,016	2,017	2.018	2,019	2,020	2,021	2,022	2,023	2,024	2,025	2,026	2,027
					•							1	1	,	,
me	3,252	3,252	3,252	3,252	3,252	3,265	3,265	3.265	3,265	3.29	S. C.	Q.	2,230	Š.	000
f.2) Grant (RDP Fund)		•		•	•	•		•		•	•	ı	1	•	•
(3) Loan		•			,	•		,	•		•	•			•
(4) Interest Generated 5% 5	ø	φ	ø	۲-	1-	۲-	20	O.	=	12	2	4	2	છ	==
3,267	3,258	3,258	3,259	3,259	3,259	3,272	3,273	3,274	3,275	3,276	3,268	3,269	3,270	3,271	3,272
												٠			
a-1) CAPEX+Replacement		1	٠	•	•	•	•	٠	•	•	•	٠	•	٠	
EX) 3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3.25
. %		٠			٠			•	•	•	•	•	•	•	•
3,252	252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252	3,252
STORY	9			4	8	8	21	22	2	25	17	18	18	. 61	ક

Lown outsitabiling CAPEX 20 Principal 20 Interest 8%																
Affordability Year	15 2012	16 2013	17 2014	18 2015	19 2016	20 2017	21 2018	2019 2019	23 2020	24 2021	2022	26 2023	2024	13 X	3026	2027
Monthly Expenditure Average 68LCD Lower Income 25LCD	27.68	27.94 10.27	27.94 10.27	2.72 72.01	27.94 10.27	27.94 10.27	28.46 10.46	28.46 10,46	28.46 10.46	28.46 10.46	28.46 10.46	28.72 10.56	28.72 10.56	28.72	28.72 10.56	28.72
Inflation 0% Economic Growth Rate 0% Heusehold Income Average Lower Income 337 337 Average Income	337	337	337 1,466	337	337 1466	337 1,466	33.7 2 17466	337	337	337	337	337	337	337 (3.866)	33 33 34 35 36 37	337 12-66
Water Purchase/Jacome (Affordability Ch. 3.0% Lower Income Average Income	3.0%	3.0%	3.0%	3.0%	3.0%	3.0%	3.1%	3.1%	3.1% 	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%	3.1%

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Table C.2-3: Cash Flow Analysis for Retail Supply (Case C-2) at 1997 Price: Moretele 2

104,768 104,7124 104,723 104	Tariff Forecast A. Survice Lovel B. Water Demand b-1)Population		1997	868	1999	2000	2001	£00£	5000	7000	3	YVV.	1000	:	****		
Nate Demand Nate Demand	A. Norvice Level B. Water Demand b-1)Population							-	2002	2000	CO07	3337	cons		2002	2010	2011
Note The proposed Note	B. Water Demand b-1)Population																
No. of National Actions No. of National Actional Actional No. of National Actional No. of National National National National Actional No. of National N	b-1)Population							٠	•								
Note of the control o					•	•	٠	61,542	104,768	304,768	2 768	104,768	26.768	104,768	2 768	104,768	2 28
Commentation Comm	LOVE OF Household			٠	•	,	•	9.616	16.370	16.370	16.370	16.370	16.370	16.370	16,370	16,370	16.370
Name Change Part	P. 31 No. of Yard Connection			٠	•	•	•				•		,	15 198	15.198	15.198	15.198
State Stat		8						8	30	8	8		30		8	8	8
State Board State Board		P1)×54) KL/d		٠	•	•	•	3	3,143	3,143	3,143		3,143		8,381	8,381	8,38
Winer Endled PAY NATE GLAS 1,500 1,500 1,500 1,500 2,500 </td <td>5-6)Unaccounted for water Ratio</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>٠</td> <td>15.9%</td> <td>15.0%</td> <td>15.0%</td> <td>15.0%</td> <td></td> <td>15.0%</td> <td></td> <td>15.0%</td> <td>15.0%</td> <td>15.0%</td>	5-6)Unaccounted for water Ratio						٠	15.9%	15.0%	15.0%	15.0%		15.0%		15.0%	15.0%	15.0%
Second National Protection Second Nationa	7)Water Billed			•	•	,	•	1.569	2.672	2672	2,672	2.672	2672		7,124	7,124	7,124
Part Part	Share Miles	200 376 50						y 23 E Y	1147310	01.05.01.0	. 010271	010071	011271	2000	- 1		Arr 030
Section Value Total Value Total Value Total Value	5-6 JAMINAL WASKET FTOCHCOON	6-50 × 00 × 00 × 00 × 00 × 00 × 00 × 00 ×		•	•	٠	•	605.00	017,111,4	2000	000, 300		200,000	2000		-	
Real Water Turff RVAL RV	2-9) Annual Water Sales	P-7) X 365 KL/8		•	•	•	•	2/4305	VO.1.28	873,678	67.7°C	3,00	37.07				7.70
Real Water Turff RAM	?. Retail Water Tariff						٠										
The Rate Turff (Johns) Near Turf	o-1)Retail Water Tariff	ZZZ.						0.67	0.67	0.67	0.67	49.67	0.67		2.97	3	5
Newtoning Newt	>2)Flat Rate Taniff		R/month/House	pjoq				3.22	3.22	3.22	333	3.33	3.22				
Comment Comm	-3)Reserve for Upgrading		wsehold														
Control Cont	Doome Malements		С	-	7	٦,	4	\$	Ģ	7	*	٥	10	1	12	13	4.
Valet State (Cost Portion) Valet State (C	:		1001	8	800	2000	2001	2002	2003	2007	2005	3006	2007	2008	5002	2010	201
Nater Sales (Cost Portion)																	
	[-1] Weign Sales (Cost Portion)			•	٠			217	652	652	652	652	652	2.251	2.25	2.251	2.251
Revente Figure RACI	1) December Dang (American)						,		;	,	1		•	V CDV	Į,	Ş	1
Second Column	A A A A A A A A A A A A A A A A A A A	_		•		•				' '	,	' '	,				
Bulk Water Turiff BAZI	(-3)Revenue Total			1		•	•	284	rco Co	603	200	3	6	(1/3)	5717	1,143	1.143
Substitute Sub	. Expenses	200						ć	6	0.0	6	0,0	6	5	£3 <	63.0	0
Substitution Subs					•	•	•	À () (1)	À (X ()	3) ()	, c.	Ĉ.	3
135 205 507								₹:	ì	ì	3 5	7 6	i i	1	4.	¥ {	. ·
Department of the control of the c	-3) Maintenance & Admin. Cost							ŝ	g :	ę i	3	Q :	â	Ř	3	À ;	?
New Natements(1,000)t 1,977 1,998 1,999 2,000 2,003 2,0	ed) Expenses Total	de la company establishe de la company de la	ACT ACT ACT ACT ACT ACT ACT ACT ACT ACT	See and Selections of the	to the second of	And the state of t	A rest of the control of	718	652 7	652	652	622	652	\$, 472	2251 5,672	\$472	5.751 5.77
1,997 1,998 1,999 2,000 2,001 2,002 2,003 2,004 2,005 2,006 2,007 2,008 2,009 2,010 Net Operating Income 185 1,108 9,603 26,593 9,603 110 661 9,259 26,455 9,259 2,472 5,472 5,472 5,472 2,472	de Flow Catemounts 1 000E		ŀ	-	,	5	4	~	١	7	*	٥	Ş	=	5	73	4,
Main Mark	TOOK T MERCHICANS TOOK TOOK	>	1.997	866.	86.	2,000	2,001	2,002	2.003	2004	2,005	200,	2,007	2,008	7,00	2010	2,011
Net Operating Income Crant (NDP Fund.) Loan Loan Loan Loan Loan Loan Loan Loan Loan Repayment (CAPEX) Short Term Loan Interest Complian Fepalment Loan Lo	Inflow																
Crant (NDP Fund) 185 1,108 9,603 26,593 9,603 110 661 9,239 26,455 9,239 Loan Interest Generated 5% 1,108 9,603 26,593 9,569 1/1 662 9,269 26,456 9,289 5,472	-1) Net Operating Income					•		ģ	,~	~	-	n	_	5,472	5,472	5,472	5,472
Loan	2) Grant (RDP Fund)			185	1,108	9,603	26,593	9,603	•	,	١	١					•
Interest Generated 5% 18% 1,10% 9,603 26,593 9,509 111 662 9,260 26,456 9,260 5,472 5,472 5,472 1,472 utflow utflow CAPEXY-Replacement 18% 1,10% 9,603 26,593 9,603 110 661 9,259 26,455 9,259 5,438 5	3) Loan					٠	,	•	110	₹	9,259	26,455	6776	•	•	•	٠
Inflow Total 1108 9,603 26,59 111 662 9,269 26,456 9,472 5,478 5,438 5,438 5,438 5,438 5,439 5,459 5,450 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460 5,460	4) Interest Generated	%\$		•	•	•	٠	٠	•	٠	•	•	•	٠	•	•	•
Utflow CAPEX*Replacement CAPEX	5) Inflow Total			185	7.708	9,603	26.593	9.569	111	299	9.260	26.456	9.260	5.472	5,472	5.472	5.477
CAPEX+Replacement Loan Repayment (CAPEX) Loan	Outflow			!													
Loan Repayment (CAPEX) Loan Repayment (CAPEX) Short Term Loan Interest Short Term Loan Interest Cutflow Total The short Term Loan Interest Cutflow Total The short Term Loan Interest The short Term Loan Intere	1) CAPEX+Replacement			185	1,108	9,603	26,593	609,6	110	8	9,259	26,455	9,259	•	•	•	•
Short Termi Loan Interest 7% 2 1 3 2 1 1 2 2 3 3 3 2 1 1 2 Outflow Total Outflow Total Interest 1/10	-2) Loan Repayment (CAPEX)			•	•	•	٠	•	•	٠	٠	٠		5,458	5,458	5,458	5,458
1.00 9,603 26,593 9,603 113 664 9,262 26,458 9,202 26,458 9,262 26,458 9,262 3,460 3,460 3,459 3	-3) Short Term Loan Interest	28%		. •	1	ı	•	٠	ч	t s	w	m	m	m	(1	,	٥
STATE OF THE PROPERTY OF THE P	A)Outflow Total			185	7,108	9,603	26.593	9,603	113	750	9,262	26.458	9,262	5,460	5,460	5,459	5,458
	Chapter Control of the Control of th	e traderio e esta della compania della	William Company Committee of the Committ	W		9	10	3	The Land or the	J	at Comment		The section of the second		1	The state of	The state of the s
	U.	Andread Andread in the second of the control of the	A CONTRACTOR AND A CONT	0	* O	0	0	3	38	37	ક્ષ	9	4	.30	-18	~	0

201 1 102	38.78	337 3,466	2.6%
13 0102	38.78	337	1.0%
12 2009	38.78	337	4.2% 2.6%
11 2008	38.78	337 	4.2% 2.6%
2007	3.8	337	0.29%
2005	3.23	337 1.466	1.0%
8 2005	333	337 1,466	1.0% 0.29%
2004	3,33	337	1.0%
2003	333	337 (1),466	1.0%
2002	3.22	337 (746)	1.0%
4 2001		337 (1,466)	0.0% 0.0%
3 2000		337 Jule	%00 %00
1999		337 3,466	%0°0 %0°0
1998		337	0.0% \$6.0
0 1997		337	%0.0 %0.0
	HEVN	homb month	Water Furchase/Income (Affordability Check) 0.0% Lower Income (25LCD) 0.0% Average Locome (68LCD) 6.0%
		337 88 337 88 88 88 88 88 88 88 88 88 88 88 88 88	y Cheel (D) (D)
(ear	681.0	Rate	Water Purchase/Income (Affordability Check) Lower Income (25LCD) Avarage Locome (68LCD)
	ture	Influe Growth	ncome (A
ility	Expendi	Economi d Incomi come income	rchase/L
Affordab	Monthly Average Lower In	Househol Lower Inc Average	Water Purchase Lower Income Average Income
	1 1 2 3 4 5 6 7 8 9 10 11 12 13 14 5 6 7 8 9 10 11 12 13 14 15 15 15 15 15 15 15 15 15 15 15 15 15	Year 0 1 2 3 4 5 6 7 8 9 10 11 12 13 Inditiure 68LCD R/HH/M 1997 1998 2000 2001 2003 2004 2005 2006 2007 2008 2010 2 25LCD R/HH/M 3.22 3.22 3.22 3.22 3.22 3.22 3.22 3.22 3.22 3.22 3.22 14.26	Year 0 1 2 3 4 5 6 7 8 9 10 11 12 13 SellCD R/HH/M 1997 1998 1999 2000 2001 2002 2003 2004 2006 2007 2008 2009 2010 25LCD R/HH/M 3

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Table C.2-3: Cash Flow Analysis for Retail Supply (Case C-2) at 1997 Price: Moretele 2 (cont'd)

w ater Lemano and Tariff Forecast A. Service Level B. Depulation b. D. Or Household b. D. Or Yard Convection	2	<u>.</u>	Š	1,	20	62	20	13	H	ឧ	ষ	ክ	8	ĭ	9	ì	*****
L. Service Level 3. Water Demand >1)Population >2)No. of Household >5)No. of Yard Connection		2012	2013	2014	2015	2016	2017	2018	2019	2020	3021	2022	283	202	2025	0.0	, O.
. Water Demand >1)Population >2)No. of Household >3)No. of Yard Convection																	
≻1)Population ≻2)No. of Household ≻3)No. of Yard Connection				:			. 652. 401	37. 771	372 701	104 768	2768	104.768	34.768	104,768	104,768	104,768	97.38
>2)No. of Household		104,768	10-1,768	10.768 10.768	80,788	8 f	00/ 3/2	90,47	27.75	0,72.70	16 320	16 370	16.370	16.370	16,370	16,370	16,370
>3)No. of Yard Connection		16,370	16,370	16,370	16,370	0/5,01	0/5'01	2000	20121	20171	15 108	15.108	15.198	15.198	15.198	15,198	15.198
		15,198	15,198	15,198	15.19%	5,158 6,6	861.0	96T'C1	8	8	8	8	8	8	જ્ઞ	8	\$
5-4)Consumption		8	8	S ;	2	€ ;	0000	0 35 8	×28.5	¥ 381	× 28	8.381	8.381	8,381	8,38]	8,381	8,381
b-S)Water Demand.	ور م × (آم	8,381	8,381	8,381	8 38	5,551	1000	1000		760.51	15.08%	% 2 2 2	15.0%	15.0%	150%	15.0%	15.0%
h-6)Unaccounted for water Ratio		15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	13.0%	20.6	2.0%	2000	200	701.6	7124	7:50	7124	7.12
b-7)Water Billod		7.124						: '	٠.,								3,059 226
A-8) Annual Water Production	b.5) x 365 3,059,226 3,059,226	059,226						•	t								2 600 342
b-9)Annual Water Sales	5-7) x 365 2,600,342	,600,342		2,600,342 2	2,600,342 2,	2,600,342 2	2,600,342 2,4	2,600,342 2,	,600,342 2,	7,000,342	1 MO	1	-	-			
C. Retail Water Tariff		•			:	:		•	4	*	8	Š	30.5	202	3.05	3.05	3.05
c-1)Retail Water Tariff		2.87	58	8	8;	8,	8	3.03	\$.003	5.03	3.5	3		ì			
c-2)Flat Rate Tariff	c-1)x 25lod																
c-3)Keserve for Upgradure												36	71,	Lit.	č	8	8
Income Statements	Year	22	2	17	81	61	့	គ	F1 ;	n g	\$ 6	ទន្	9 6	400	300	2026	2027
(1,000K)		2012	2013	2014	Si Si	2016	2017	2018	5016	2020	1707	2000	3				
D. Revenue				4.6.4	415	2312	2312	40.	404	404	404,2	2404	2,465	2,465	2,465	2,465	2,465
d-1) Water Sales (Cost Portion)			215.2	7107	7167	290.5	, 4K3	\$475	5.475	5,475	5,475	5,475	5,460	5,406	5,456	×. 84.	2. 2. 2. 2.
d-2) Reserve Fund / Amortusation	Ę	7,47	204.0	6 1	200	3/2.6	7 7 7 5	7.879	7,879	7.879	2,879	2,879	7,937	7,931	7,937	7,937	7,931
d-3)Revenue Total		7,723	7,773	(//)	(1),	21											,
E. Expenses		5	050	050	0.50	0.59	0.59	0.62	0.62	0.62	0.62	0.62	\$	2	\$ 500	30.5	200
e-i) Burk Water Land	10 10 10	1744	808	1 805	1.805	1.805	1,805	1,897	1,897	1.897	1,897	1,897	1,958	1,958	Š	808	ŝ
o-2) Bulk water Purchase	(0-0 V/1-0	5	203	205	203	507	207	507	503	\$02	8	% %	8	207	Š	3	2 3
e-3) Maintenance & Admin. Cost	5		2000	23.7	2312	2.312	2,312	2,404	2,404	2,404	2.49	2,404	2.465	2,465	2,465	2,465	7.40
e-4) Expenses Total Net Operating Income	And the second s	5,472	, S.465	5,463	5,463	5,460	3,5460	5,475	5,475	\$47.8	5.475	2475	S 466	3,466	\$466°	े ३,466	•
						٩	Ş	į	6.6	22	24	ξ.	38	LZ.	8	ક્ષ	8
Cash Flow Statements (1,000R)	(X)	35	91 6	17	2015 2015	2016	2017	2,018	2,019	2.020	2,021	2,022	2,023	2,024	2,025	2,026	2,027
		4,014	27.4	2													771.7
E. Inflow		5.472	5.463	5.463	5,463	5,463	5,463	5,475	5,475	5,475	5,475	5,475	5,456	2,466	9,400	8	00
fel) ive Operating present fel) Grant (RDP Fund)	:	•	•	•		٠	•	•		1	•	•	•			• •	•
63) Loan			•	•	•	•	•	• 1		• •	• •	r	• •	• •	· 6	=	21
Ca) Tetomes Concerned	%5	0		(1	73	73	ų	m	4	n	ِ ا	-	'n	267.0	× 5	<i>(1)</i>	5.478
f-5) Inflow Total		5,472	2,464	5,464	5,465	5.465	5,465	5,478	5.479	3,480	5,481	2,4%2	b/ b' C	0,4,0			
G. Outflow									•	,	•	•	•	•	٠	•	٠
g-t) CAPEX+Replacement		35. 3	, 448	- × 458	. 458	5.458	5,458	5,458	5,458	5,458	5,458	5,458	5,458	5,458	5,458	5,458	5,458
2-2) Loan Kepayment (CACEA)	ą.	0040	•	,	; ·	•	•	٠	•	•	•	•	1 ;	• •	• •		
g-s) Snort Lorm Lown Interest a-41Outflow Total	R .	5,458	5,458	5,458	5,458	5.458	5.458	5,458	5,458	5,458	5,458	5,458	5,458	5.458		000	00000 10000000000000000000000000000000
Salar Salar		15	•	1.	T		30	8		ล	Section 1	N.	Section 17		ž	745	386

,	302 7302	39.83	4 3	337
	2028	39.82	4 .	337
	2023	39.82	¥ \$	337
	27 2024	39.82	41 29	337 (A66)
	26 2023	39.82	2 5.	337
	25 2022	39.56	3 .25	337 3.466
	202 1202	39.56	14.St	337
	23 2020	39.56	72.	337 . 1,466
	22 2019	39.56	3	337
	21 2018	39.56	42.41	337 1.466
	20 2017	39.04	14.35	337
	19 2016	30.05	14.35	337 3. 7666
	18 2015	ş	4.35	33.7

Loen outstanding CAPEX Principal Interest	07 %8																(1
Affordability	Year	15 2012	16 2013	17 2014	18 2015	19 2016	20 2017	21 2018	20102	23 2020	202 1202	25 2022	2023	2024	763 n	3038	8 68
Monthly Expenditure Average Lower Income	81.CD 251.CD	38.78 14.26	39.04	39.04	39,04 14,35	39.04	39.04	39.56 14.54	39.56 14.54	39.56 14.54	39.56 14.54	39.56 14.54	39.82	39.82 14.64	39.82	39.82	% 4 3 3
Indiation Economic Growth Rate Household Income Lower Income	Inflation 6% with Rate 0% Average 337	337	337 	337	337	337 3 3.66	337	337	337 1. 666	337	337 1. Jeon 1	337 1,466	337	337	337 1,466	337	337
Water Furchase/Income (Affordability Ch. Lower Income (25LCD) Average Income (65LCD)	come (Affordability Ch. (25LCD) 4.2% (68LCD) 2.6%	4.2% 2.6%	4.3%	43% 2.7%	4.3%	4.3%	4.3%	4.3%	4.3%	13%	43%	4.3%	23%	43%	43%	43%	43%

Table C.3-1: NPV and FIRR Analysis for Loan (Case C-1): Moretele 2

(Unit: DOOR)

	Analysis		ollection	FIRE	ď Z	2.0%	4.7%	7.1%	9.3%		Cost(Loan)	FIRR	93%	8.0%	86.9		ost	FIRE	86.0	86.0	7.9%	5.7%		emand	FIRE	5.8%	7.6%	9.3%						
	Sensitivity Analysis		1. Tariff Collection	Factor	%09	70%	80%	808	100%		2. Capital Cost(Loan)	Factor	1.0	1.1	1.2		3. O&M Cost	Factor	0.0	1.0	ti G	1.5		4. Water Demand	Factor	8.0	6.0	1.0						
and NPV	i=8%	NPV		0	0	0	0	33	75	Ţ	-3,807	-8,835	-2,984	1,752	1.615	1.488	1.371	1,263	1.178	1,085	8	919	376	86	735	676	622	-10	533	480	450	413	379	1,616
Real Interest Rate and NPV	i≃5%	NPV		0	0	0	0	38	68	1	4.770	-11,384	-3,956	2,389	2,264	2,146	2,034	1,927	1,849	1.751	1,659	1,570	099	1,444	1,367	1,293	1,223	-19	1,108	1.047	066	935	883	8,537
Real Inte	i=3%	NPV		0	0	0	0	42	100	1	-5.563	-13,535	4,794	2,952	2,852	2.756	2,662	2,571	2.515	2,429	2,345	2,263	696	2,163	2,086	2,012	1.940	-31	1.827	1.760	1.695	1 633	1.572	17,221
	Net Benefit	(9)=(8)-(4)	0	0	0	0	0	49	120	1	-7 047	-17.661	-6,443	4.086	4,067	4.047	4,027	4,006	4,037	4,014	3,992	3,968	1,750	4,023	3,998	3,971	3,944	99-	3,939	3,910	3,879	3,848	3.815	42,273
	Benefit	(8) = (7)x(9)	0	0	0	0	0	384	623	653	623	653	653	5,513	5.513	5.513	5,513	5.513	5,565	5.565	5,565	5,565	5,565	5.669	5,669	5,669	699'5	5,669	5,721	5,721	5,721	5,721	5,721	115,985
Bencfit	Tantf (R/KL)	ε	00.0	0.00	0.00	0.00	00:0	0.67	0.67	0.67	0.67	0.67	0.67	2.12	2.12	2.12	2.12	2.12	2.14	2.14	2.14	2.14	2.14	2.18	2.18	2.18	2.18	2.18	2.20	2.20	2.20	2.20	2.20	
	Anual Water Demand (KL)	(9)	0	0	0	0	0	572,802	975,128	975.128	975 128	975,128	975,128	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600.342	2.600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	2,600,342	
	Total Cost	(5) « (1)÷(2)		ō	0	0	0	335	534	259	7,701	18,314	7,096	1,427	1,446	1,466	1,486	1.507	1,528	1,550	1.573	1,596	3,814	1.645	1.671	1.697	1,725	5.735	1,781	1,811	1,842	1,873	1,906	73,712
	Retail Admin. Cost			0	0	0	٥	155	205	205	205	205	202	202	507	202	507	507	202	507	507	507	507	202	202	202	202	507	207	507	202	202	202	11,326
Cost	Bulk O&M Cost	<u> </u>		0	0	0	0	180	312	318	325	331	338	920	939	856	626	666	1.021	1,043	1,066	1,089	1,113	1,138	1,164	1,190	1,217	1,245	1,274	1,304	1,334	1,366	1,398	24,562
	Loan for Retail	0									5.732	15,874	5,732																					27,338
	Loan for Bulk CAPEX	(1)			- -		-		17	129	1,439	1,904	822						-				2,194					3,982						10,486
Year	-		0 1997	1 1998	2 1999	3 2000	4 2001	\$ 2002	6 2003	7 2004.	8 2005	9 2006	10 2007	11 2008	12 2009	13 2010	14 2011	15 2012	16 2013	17 2014	18 2015	19 2016	20 2017	21 2018	22 2019	23 2020	24 2021	25 202 52	26 2023	27 2024	28 2025	29 2026	30 2027	Total

9.3%

FIIR=

Table C.3-2: NPV and FIRR Analysis for Loan (Case C-2): Moretcle 2

Loan for Bulk CAPEX (1)	Loan for Retail (2)	Cost Cost Cost (3)	Retail Admin. Cost (4) (7)	Total Cost (5)= (1)+(2)	Anual Water Demayd (KL) (6) 0	Benefit Tariff (R/AT.) (7) 0.00 0.00	Benefit (8)= (0)x(7) 0	Net Benefit (9)~(8)-(4) 0	i=3% NPV 0	1=3% 1=5% 1=8%	MAN Dan	Sensitivity Analysis 1. Tariff Collection Factor FIRR	Analysis subsection FIRR
		000	00	000	0	0.00	00	0	00	000	000	809 808 808	0.7% 3.7% 8.5%
1	110	180	0 155 205	335 644	0 \$72,802 975,128	0.07	384 653	0 8 0	0 42 8	38	33 0	90% 100%	7.3% 9.1%
1,439	ŏ		205	1,314		0.67	653	-660 -10,575	-1.1	469	-385	2. Capital Cost(Loan)	Cost(Loan
1.904	26,455		205	28,895	975,128 975,128	0.67	653	-28.242	7	-18.205	-14.128	1.0	9.1%
			507	1.427	2,600,342	2.97	7,723	6.296	4,548	3.681	2,493	12	7.98 6.98
		958	507	1,466		2.97		6.257	4,261	3,318	2301	3. O&M Cost	ost
		999	507	1,507		2.97	7,723			2,990	1,960	Factor 0.9	FIRR 9.6%
		1,043	507	1,550		2.99	27.7.7	6,225	3,766	2,716	1,682	1.0	9.1% 8.3%
		1.089	507	1,596	$\perp \perp$	2.99	7,775			2,445	1,432	1.5	7.0%
2,194		1,138	507	3,614		3.03	7.879			2,237	1,238	4. Water Demand	emand
		1.164	507	1,671		3.03	7,879	6.208		2,013	1.053	0.8	6.0%
		1,217	502	1.725		3.03	978.T 978.T	6,154	3.028	1,908	313	60 H	7.68 9.18
3,982		1,274		Ш						1,730	831		
		1,304	507	1.811	2,600,342			: 1:	Ш	1.553	708		
\prod		1,366			2,600,342	3.05	7,931	6.058		1.472	88		
10,486	45 745	Ĺ	11 326	07170	1		٤	22089	27 547	13.522	2.380		

FIIR=

C.4 Economic Analysis

1. Conversion Factor and Calculated Project Cost

Project cost which is use for economic analysis must be based on the economic price, which under perfect market circumstance without any transfer expenses such as tax. Unskilled labour cost and fuel is assumed to be differing from the economic price in the project cost.

1. Labour Conversion Factor (LCF)

LCF= 30%

(1) Unemployment Rate

Economic Active Population	onemployme int	Unemploy	ment Kate			
		Total	Black	Colourd	Indians	White
973,000	325,000	33.4%	37.4%	17.6%	12.6%	7.9%
1,147,000	376,000	32.8%	35.8%	27.8%	4.4%	6.0%
	Active Population 973,000	Active nt Population 973,000 325,000	Active Population Total 973,000 325,000 33.4%	Active Population Total Black 973,000 325,000 33.4% 37.4%	Active Population Total Black Colourd 973,000 325,000 33.4% 37.4% 17.6%	Active Population Total Black Colourd Indians 973,000 325,000 33.4% 37.4% 17.6% 12.6%

[&]quot;Source: 1995 October Household Survey (OHS), CSS"

(2) Wage of Labour

1303 R/month

(1997 Feb. Current Price. Average Salaries and Wages and Bonuses per Month)
"Source: Labour Statistics. Employment and salaries and wages, CSS P0242.1, June 1997"

(3) Shadow Wage (Opportunity Cost) of Unskilled Labour

Labour intensive construction, as RDP project will maximise community Labour resources. Under this high unemployment circumstance, marginal cost of labour is assumed very low.

Opportunity cost of labour is estimated by economic value of domestic work as below.

Domestic Work Salaries

550R/month

Unemployed is assumed to do economic activity 5days out of 7days

550x5/7=

392.86 R/month

(4) Labour Conversion Factor (LCF)

LCF is calculated as below

Shadow Wage / Nominal Wage 392.86/1303=30%

2. Fuel Conversion Factor (FCF)

Nominal Fuel Cost including tax duty and levy and it is estimated 30% of consumer prices.

Fuel Conversion Factor (FCF) which convert nominal price to the economic price is calculated as below

FCF= 70%

Calculated project cost is estimated preliminary following the manner as below.

- 1) Breakdown Direct Construction Cost of each infrastructual component into four components as a) Labour, b) Material, c) Plant and d) Fuel in the same process of price adjustment formula of civil (RDP) contract.
- 2) Convert cost of unskilled labour and fuel using LCF and FCF respectively.
- 3) Calculate project cost with the multiplier.

2. Economic Benefit

Under the principle of "With" and "Without" project applied in the economic analysis, an economic benefit for Case C is measured as saving of cost for labour to be required for water cartage between residence and standpipe. In the level of yard-connection, a beneficiary is planned to consume 73 lcd or 467 litters per day per household consisting of 6.8 members on the average. Usually, community people use a polyethylene container with capacity of 20 litters and wheelbarrow for water cartage. Assuming two containers can be loaded in a wheelbarrow, it requires about 12 times round trip with average distance of 100 meters, requiring 15 minutes per trip or 180 minutes (3 hours) per day. On the other hand, it is reported that a daily unskilled labour costs around R4 to 5 per hour in rural communities, which is converted as the economic value at R1.2 to 1.5 per hour applying the labour conversion factor (LCF) as mentioned in the above. Thus, the economic benefit of the project can be worked out R3.6 per day or R108 per month per beneficial household.

Table C.4-1: Direct Construction Cost Breakdown and Converted Cost: Moretcle 2
Direct Cost Breakdown (Unit:,000Rsnd)

	Total	·- 	1.	abour		Materia	ls	Plant		Fuel	
Item		amount	96	(Skilled)	(Unskilled)	amount	96	amount	96	amount	%
Case A	87,591	22,206				17,783		40,901		6,702	
Bulk	59,418	14,935				13,557		25,634	,	5,293	
- Intake and Pump Station	303	76	25%	61	15	45	15%	167	55%	15	5%
- Raw Water Pipeline	56	14	25%	11	3	14	25%	22	40%	6	10%
- WTW and Pump Station	10,290	2,573	25%	2,058	515	1,544	15%	5,660	55%	515	5%
- Bulk Supply Pipelines	46,385	11,596	25%	4,639	6,958	11,596	25%	18,554	40%	4,639	10%
- Regional Reservoirs	1,600	480	30%	384	96	240	15%	800	50%	80	5%
- Pump Stations	784	196	25%	157	39	118	15%	431	55%	39	5%
Retail	28,173	7,272				4,226	,	15,267		1,409	
- Service Reservoir	4,565	1,370	30%	1,096	274	685	15%	2,283	50%	228	5%
 Reticulation Pipelines 	22,738	5,685	25%	1,137	4,548	3,411	15%	12,506	55%	1,137	5%
- Standpipes	870	218	25%	44	174	131	15%	479	55%	. 44	5%
Yard Connection										1	
Case B	119,870	31,352	<u> </u>	l		23,007		59,620		8,443	
Bulk	61,962	15,671				13,938		26,933		5,420	
- Intake and Pump Station	454	114	25%	91	23	68	15%	250	55%	23	5%
- Raw Water Pipeline	56	14	25%	11	3	14	25%	22	40%	6	109
- WTW and Pump Station	10,290	2,573	25%	2,058	515	1,544	15%	5,660	55%	515	59
- Bulk Supply Pipelines	46,385	11,596	25%	4,639	6,958	11,596	25%	18,554	40%	4,639	10%
- Regional Reservoirs	3,600	1,080	30%	864	216	540	15%	1,800	50%	180	59
- Pump Stations	1,177	294	25%	235	59	177	15%	647	55%		
Retail	42,438	11,814		1		6,749	1.0	24,179		2,250	T
- Service Reservoir	11,320	3,396	30%	2,717	679	1,698	15%	5,660	50%	566	59
- Reticulation Pipelines	32,998	8,250	25%	1,650	6,600	4,950	15%	18,149	55%	1,650	59
- Standpipes	672	168	25%	 	134	101	15%		55%		59
Yard Connection	15,470	3,868	25%	774	3,094	2,321	15%	8,509	55%	774	59

Converted Direct Cost

	Total		L	abour		Materia	ls	Plant		Fuel	
Item		amount	%	(Skilled)	(Unskilled)	amount	%	amount	%	amount	%
Conversion Factor				100%	30%	100%		100%		70%	
Case A	76,746	13,371				17,783		40,901		4,691	
Bulk	52,492	9,597				13,557		25,634		3,705	
- Intake and Pump Station	288	65	25%	61	5	45	15%	167	55%	11	59
- Raw Water Pipeline	52	12	25%	11	1	. 14	25%	22	40%	4	109
- WTW and Pump Station	9,776	2,212	25%	2,058	154	1,544	15%	5,660	55%	360	5%
- Bulk Supply Pipelines	40,123	6,726	25%	4,639	2,087	11,596	25%	18,554	40%	3,247	10%
- Regional Reservoirs	1,509	413	30%	384	29	240	15%	800	50%	56	59
- Pump Stations	745	169	25%	157	12	118	15%	431	55%	27	59
Retzîl	24,254	3,775				4,226		15,267		986	\Box
- Service Reservoir	4,305	1,178	30%	1,096	82	685	15%	2,283	50%	160	59
- Reticulation Pipelines	19,214	2,501	25%	1,137	1,364	3,411	15%	12,506	55%	796	59
- Standpipes	735	96	25%	44	52	131	15%	479	55%	30	59
Yard Connection	-									100	
Case B	107,093	18,556		[1	23,007	T	59,620	Π	5,910	
Bulk	54,895	10,230		7,898		13,938		26,933	T	3,794	
- Intake and Pump Station	431	98	25%	91	7	68	15%	250	55%	16	59
- Raw Water Pipeline	52	12	25%	11	1	14	25%	22	40%	4	109
- WIW and Pump Station	9,776	2,212	25%	2,058	154	1,544	15%	5,660	55%	360	59
- Bulk Supply Pipelines	40,123	6,726	25%	4,639	2,087	11,596	25%	18,554	40%	3,247	109
- Regional Reservoirs	3,395	929	30%	864	65	540	15%	1,800	50%	126	5
- Pump Stations	1,118	253	25%	235	18	177	15%	647	55%	41	5
Retail	39,126	6,624		4,400		6,749	T	24,179	T	1,575	П
- Service Reservoir	10,675	2,921	30%	2,717	204	1,698	15%		50%	396	5
- Reticulation Pipelines	27,883	3,630	25%	1,650	1,980	4,950	15%	18,149	55%	1,155	5
- Standpipes	568	74	25%	34	40			370	55%	24	5
Yard Connection	13,072	1,702	25%	774	928	2,321	15%	8,509	55%	541	5

Table C.4-2: Calculated Project Cost at 1997 Constant Price: Moretele 2 (1/2)
(Unit: 000Rand)

							(Unit: '	000Rand
الكنائل في المحمود				1	2	3	4	
	Item		total	1998	1999]	2000	2001	2007
A Total			113,379	441	3,173	33,315	56,379	20,271
Bulk	(1)Direct Calculated Cost		52,492	-	• 1	17,941	26,076	8,475
1	(2)P&G	(1)x 15%	7,874	·-	-	2,691	3,911	1,271
	(3)Base Cost	(1)+(2)	60,366	-1		20,632	29,987	9,74
	(4)Engineering Fee	(3)x 10%	6,037	-	1,509	1,509	1,509	1,50
	(5)Miscellaneous	(1)x 2%	1,050		525	525	-	
	(6)Institutional Developme	(3)x 2.5%	1,509	302	302	302	302	30
1	(7)Sub-Total	(3)+(4)+(5)+(6)	68,962	302	2,336	22,968	31,798	11,55
	(8)Physical Contingency	(3)x 15%	9,055	-	-	3,095	4,498	1,46
	Grand Total		78,017	302	2,336	26,063	36,297	13,01
Retail	(1)Direct Calculated Cost		24,254		-	4,851	14,552	4,85
	(2)P&G	(1)x 15%	3,638		-	728	2,183	72
1		(1)+(2)	27,892	-	-	5,578	16,735	5,5
	(4)Engineering Fee	(3)x 10%			697	697	697	69
	(5)Miscellaneous	` '	-	-	-	-	-	
1	(6)Institutional Support	(3)x 2.5%	697	139	139	139	139	13
	(7)Sub-Total	(3)+(4)+(5)+(6)	31,378	139	837	6,415	17,572	6,4
	(8)Physical Contingency	(3)x 15%		-	-	837	2,510	8.
	Grand Total	l `´	35,562	139	837	7,252	20,082	7,2
B Total			152,028	541	3,793	41,569	78,113	28,0.
Bulk	(1)Direct Calculated Cost		54,895	-		18,762	27,206	8,9
1	(2)P&G	(1)x 15%			-	2,814	4,081	1,3
-	(3)Base Cost	(1)+(2)	63,129	-	-	21,577	31,287	10,2
ĺ	(4)Engineering Fee	(3)x 10%	1 1		1,578	1,578	1,578	1,5
	(5)Miscellancous	(1)x 2%	1		549	549		
ĺ	(6)Institutional Developme	1	1,578	316	316	316	316	3
	(7)Sub-Total	(3)+(4)+(5)+(6		316	2,443	24,019	33,180	12,1
	(8)Physical Contingency	(3)x 15%				3,236	4,693	1,5
	Grand Total	``	81,588	316	2,443	27,256	37,873	13,7
Retail	(1)Direct Calculated Cost	T T	39,126		-	7,825	23,476	7,8
1	(2)P&G	(1)x 159] .	_	3,174	3,521	1,1
	(3)Base Cost	(1)+(2)	44,995	.		8,999	26,997	8,8
-	(4)Engineering Fee	(3)x 109	4,499		1,125	1,125	1,125	1,1
	(5)Miscellaneous	``				-		
	(6)Institutional Support	(3)x 2.59	1,125	225	225	225	225	:
1	(7)Sub-Total	(3)+(4)+(5)+(6		225	1,350	10,349	28,347	10,3
	(8)Physical Contingency	(3)x 159				1,350	4,050	1,3
-	Grand Total	``	57,368	225	1,350	11,699	32,396	11,6
Yard	(1)Direct Calculated Cost		13,072		-	2,614	7,843	2,6
	tion Grand Total		13,072	<u> </u>		2,614	7,843	2,0
el B-A								
Bulk		T	3,571	14	107	1,193	1,577	
Retail			21,807	3		4,447	12,314	4,4
-	Connection	1	13,072			2,614	7,843	2,6
Tota)		 	38,450		620	8,254	21,734	7,7

Table C.4-2: Calculated Project Cost at 1997 Constant Price: Moretele 2 (2/2)

(Unit: ,000Rand) 10 2003 2005 2006 2007 2004 Item Total 620 Case B-A(Higher Service Potion) 38,450 99 8,254 21,734 7,742 Bulk (1)Direct Calculated Cost 2,403 821 1,130 452 (2)P&G (1)x 15% 360 123 169 68 (1)+(2) (3)Base Cost 2,763 944 1,299 520 (4)Engineering Fee (3)x 10% 276 69 69 69 69 (5)Miscellaneous 48 24 24 (6)Institutional Developme 69 14 14 (3)x 2.5% 14 14 14 (7)Sub-Total (3)+(4)+(5)+(6) 3,157 14 107 1,051 1,382 603 (8) Physical Contingency (3)x 15% 414 142 195 78 Grand Total 3,571 14 107 1,193 1.577 680 Retail (1)Direct Calculated Cost 8,923 14,872 2,974 2,974 (2)P&G (1)x 15% 2,231 446 1,339 446 (3)Base Cost 17,103 (1)+(2) 3,421 10,262 3,421 (4)Engineering Fee (3)x 10% 1,710 428 428 428 428 (5)Miscellaneous (6)Institutional Support 428 86 86 86 (3)x 2.5% 86 86 (7)Sub-Total 19,241 (3)+(4)+(5)+(6) 86 10,775 513 3,934 3,934 (8)Physical Contingency (3)x 15% 2,565 513 1,539 513 Grand Total 21,307 86 513 4,447 12,314 4,447 (1)Direct Calculated Cost 13,072 2,614 7,843 2,614 Connection Grand Total 13,072 2,614 7,843 2,614

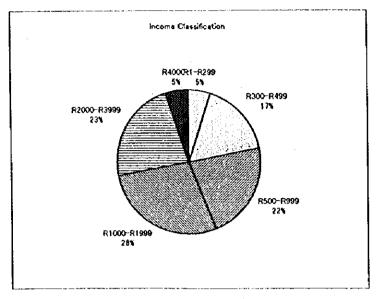
Table C.4-3: EIRR Analysis (Case C): Moretele 2

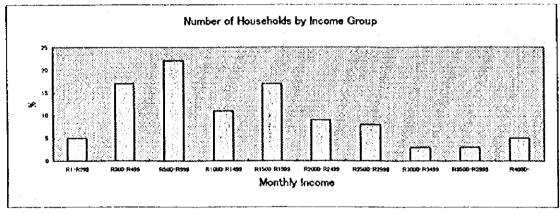
section Pronomic Value
Higher Service Economic Value Beneficiaries of Cartage Benefit (Household) (Remonth)
(9)
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108
0 108
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14,733
14,733

Figure C.5-1: Income Classification : Moretele 2

1. Monthly Household Income

		(R/month)
Income	%	Average
R1-R299	5%	146
R300-R499	17%	393
Lower	22%	337
R500-R999	22%	710
R1000-R1995	28%	1,530
Middle	50%	1179
R2000-R3995	23%	2,583
R4000-	5%	4,260
Higher	28%	2,882
Total	100%	1,466





2. Household Income by Occupation

Income	Total	Employee	Dom, Worl V	Vorker S	Self Empl.	Gen. Lab	Teacher	Pensioner	Other
R1-R299	5	1	1	0	1	0		0	2
R300-R499	17	1	1	1	2	0		12	0
Lower	22	2	2	1	3	0	(12	2
R500-R999	22	4	2	2	2	0		10	2
R1000-R1999	28	22	0	2	3	1	C)	
Middle	50	26	2	4	5	1	(10	2
R2000-R399\$	23	14		2		5	2		
R4000-	5	4				1		3	
Higher	28	18	0	2	0	6	2	0	0
Total	100	46	4	7	8	7	1	22	4

Source: Questioner Survey by JICA Study Team (1997)

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