ANNEX C

FINANCIAL AND ECONOMIC

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FEASIBILITY STUDY FOR KLIPVOOR

ANNEX C: FINANCIAL AND ECONOMIC

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

(Unit: ,000Rand) Klipvoor Total 1998 1999 2000 2002 2001 Item Case A 76,625 6.364 38,628 31,633 9,860 Bulk 54,604 17,618 27,126 303 303 - Intake and Pump Station 50 50 - Raw Water Pipeline 4,950 2,475 2,475 - WTW and Pump Station - Bulk Supply Pipelines 8,837 44,186 13,256 22,093 2,050 820 - Regional Reservoirs 4,100 1,230 305 508 203 - Pump Stations 1,015 13,213 4,404 4,404 Retail 22,021 5,435 1.087 - Service Reservoir 1.087 3.261 15,882 3,176 9,529 3,176 - Reticulation Pipelines 422 141 704 141 - Standpipes Yard Connection 22,361 Case B 122,308 33,206 66,742 . -31,704 10,682 Bulk 63,912 21,526 454 - Intake and Pump Station 454 50 50 - Raw Water Pipeline 5,000 10,000 5,000 - WTW and Pump Station 8,837 - Bulk Supply Pipelines 44,186 13,256 22,093 7,700 2,310 3,850 1,540 - Regional Reservoirs 1,522 457 761 304 - Pump Stations 8,488 25,463 8,488 42,438 Retail 2,578 2,578 7,734 - Service Reservoir 12,890 5,801 29,004 5.801 17,402 - Reticulation Pipelines 109 326 109 - Standpipes 544 9,575 3,192 Yard Connection 15,958 _ 3,192 Case B-A 45,683 11,183 26,404 8,096 3,908 4,579 821 Bulk 9,308 - Intake and Pump Station 151 151 - Raw Water Pipeline - WTW and Pump Station 5,050 2,525 2,525 - Bulk Supply Pipelines 720 1,080 1,800 3,600 - Regional Reservoirs - Pump Stations 507 152 254 101 4,083 12,250 4,083 Retail 20,417 4,473 1,491 1,491 - Service Reservoir 7,455 2,624 7,873 - Reticulation Pipelines 13,122 2,624 - Standpipes 3,192 9,575 3,192 Yard Connection 15,958

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

							-		(Unit:	,000Rand)
		Item			Total	1995	1999	2000	2001	2002
`	Total	IW4		╼┯┿	186,925	553	4,400	49,032	93,453	39,489
ase A		(1) Pro-10 - 4 - 1	·		54,604	- 333	7,707	17,618	27,126	9,860
,		(1)Direct Construction Cost	***			٠,	٦,			
		(2)P&G	(1)x	13%	8,191	- 1	- 1	2,643	4,069	1,479
			(1)+(2)		62,795	-1	- 1	20,261	31,194	11,339
	ļ	(4)Engineering Fee	(3)x	10%	6,279		1,570	1,570	1,570	1,570
	1	(5)Miscellaneous	(1)x	2%	1,092	•	546	546	· • • • • • • • • • • • • • • • • • • •	•
		(6)Institutional Support	(3)x 3	2.5%	1,570	314	314	314	314	314
			(3)+(4)+(5)		71,736	314	2,430	22,691	33,078	13,223
	1	(8) Physical Contingency	(3)x		9,419			3,039	4,679	1,701
			(7)+(8)x		35,693	31	510	8,517	17,523	9,111
		• • • •		ļ	45,112	31	510	11,556	22,202	10,812
		` '	(8)+(9)	- 1	116,848	345	2,940	34,247	55,280	24,035
	}		(7)+(10)					4 795	7,739	3,365
		VAT		14%	16,359	48	412			
		Grand Total			133,207	394	3,352	39,041	63,020	27,400
	Retail	(1)Direct Construction Cost		Į	22,021	•	• •	4,404	13,213	4,404
	İ	(2)P&G	(1)×	15%	3,303	-	-	661	1,982	661
		(3)Base Cost	(1)+(2)		25,324	-		5,065	15,194	5,065
		(4)Engineering Fee	(3)x	10%	2,532		633	633	633	633
		(5)Miscellaneous	` ` `	ļ	- [-1		-	-	
	1	(6)Institutional Development	(3)x	2.5%	633	127	127	127	127	127
		(7)Sub-Total	(3)+(4)+(5		28,490	127	760	5,825	15,954	5,825
		(8)Physical Contingency	(3)x			[[760	2,279	760
				15%	14,833	13	160	2,179	8,462	4,020
		(9)Price Escalation(10%/a)	(7)+(8)x					2,939		-
	1	(10)Sub-Total	(8)+(9)		18,632	13	160	, ,	10,741	4,779
		Total	(7)+(10)		47,122	139	919	8,764	26,696	10,604
		VAT		14%		19	129	1,227	3,737	1,485
	<u> </u>	Grand Total			53,719	159	1,048	9,991	30,433	12,089
Case B	Total				285,751	767	5,943	71,608	148,292	59,141
	Bulk	(1)Direct Construction Cost			63,912	-	-	21,526	31,704	10,682
	1	(2)P&G	(1)x	15%	9,587	-		3,229	4,756	1,602
		(3)Base Cost	(1)+(2)		73,499		-	24,755	36,460	12,284
	1	(4)Engineering Fee	(3)x	10%	7,350		1,837	1,837	1,837	1,837
	1	(5)Miscellaneous	(1)x	2%	1,278	_	639	639	-	i .
	1	(6)Institutional Support		2.5%		367	367	367	367	367
		(7)Sub-Total	(3)+(4)+(5			367	2,844	27,599	38,665	14,489
	1	· ·			1	1 307	2,011	3,713	5,469	1,843
	1	(8) Physical Contingency		15%		37	597	10,365	44, 4	9,970
		(9)Price Escalation(10%/a)	(7)+(8)x		41,451		597	14,078	20,482	
		(10)Sub-Total	(8)+(9)		52,476	37		1 1	25,951	11,813
	1	Total	(7)+(10)		136,441	404	3,441	41,677	64,616	1 .
		VAT	1	14%		57	482	5,835	9,046	3,682
	L	Grand Total			155,542	461	3,923	47,512	73,662	29,984
	Retail	(1)Direct Construction Cost			42,438		-	8,488	25,463	8,488
	i	(2)P&G	(1)x	15%	6,366	-		1,273	3,819	1,273
		(3)Base Cost	(1)+(2)		48,804			9,761	29,282	9,761
]	(4)Engineering Fee	(3)x	10%	4,880		1,220	1,220	1,220	1,220
	1	(5)Miscellaneous	1 ''		_	1.	1 -] -	1	l l
		(6)Institutional Development	(3)x	2.5%	1,220	244	244	244		1
		(7)Sub-Total	(3)+(4)+(244	1,464	11,225		
		• •	Crest	15%		•"	2,10.	1,464		1
Ì	i	(8) Physical Contingency					707	1		
	1	(9)Price Escalation(10%/a)	(7)+(8)x		28,587	24	307	4,200		
		(10)Sub-Total	(8)+(9)		35,907		L	5,664		
i		Total	(7)+(10)		90,811			16,889		2.74.4.4
	1	VAT	l .	14%	12,714	38		2,364		
		Grand Total			103,525	366	2,020	19,253	58,649	23,297
l	Yard	(1)Direct Construction Cost			15,958	-		3,192	9,575	3,19
	Connection		(i)x		7,449			1,056		
		Total	(1)+(2)		23,407			4,248	1	
1	1	VAT	(-).(-)	14%				595	1 -	1
1	1	Grand Total		1 4 N	26,684		1	4,843		
-	1 B. U	GIONG I ORGI	 							
Case B-			<u> </u>		22,336					
1	Retail				49,806		972			
ı										
	Yard Conn	rction	<u> </u>		26,684 98,825		1,543	4,843 22,576		

Table C.1-3: Annual Operation and Maintenance Cost for Case A and B: Klipvoor

Annual Water Production: (Unit: 000Rand) 1,257,257 kl (Case A) Retail Supply Bulk Water Supply Salaries Maintenance Administration Total Chemicals Electricity Raw Water Item 0.17 R/kl 0.05 RAI Sub-Total 342,300 R/year 0.15 R/kl 0.05 R/kl Unit Cost 0.17 R/kJ 0% 0% 0% 0% 3% 0% Escalation Year 1,114.12 213.73 62.86 771.82 342.30 218.63 62.86 213.73 342.30 £1,120.68 213.73 778.38 62.86 62.86 \$3.**6**.3 213.73 225.18 1,127,43 342 30 62.86 213.73 62.86 785.13 231.94 213.73 213.73 62.86 792.09 342.30 1,134.39 238.90 62.86 213.73 8 1,141.56 62.86 213.73 62.86 799.26 342.30 9 213.73 246.07 1,148.94 806.64 342.30 62.86 213.73 62.86 10 213.73 253.45 1,156.54 62.86 814.24 342.30 213.73 62.86 213.73 261.05 11 1,164.38 213.73 62.86 822.08 342.30 268.88 62.86 12 213.73 1,172.44 62.86 830.14 342.30 213.73 276.95 62.86 213.73 13 1,180.75 213.73 62.86 838.45 342.30 62.86 14 213.73 285.26 1,189.31 342.30 62.86 847.01 62.86 213.73 213.73 293.81 15 213.73 855.82 342.30 1,198.12 62.86 62.86 16 213.73 302.63 1,207.20 213.73 62.86 864.90 342.30 62.86 17 213.73 311.71 1,216.55 62.86 874.25 342.30 213.73 321.06 62.86 18 213.73 1,226.18 62.86 883.88 342.30 62.86 213.73 19 213.73 330.69 342.30 1,236.10 893.80 62.86 62.86 213.73 213.73 340.61 20 1,246.32 213.73 62.86 904.02 342.30 62.86 213.73 350.83 21 1,256.85 914.55 342.30 62.86 213.73 62.86 361.36 213.73 22 1,267.69 62.86 925.39 342.30 213.73 23 213.73 372.20 62.86 1,278.85 213.73 62.86 936.55 342.30 62.86 24 213.73 383.36 1,290.36 948.06 342.30 62.86 213.73 62.86 213.73 394.86 25 1,302.20 62.86 959.90 342.30 213.73 26 213.73 406.71 62.86 1,314,40 972.10 342.30 62.86 213.73 62.86 213.73 418.91 27 342.30 1,326.97 62.86 984.67 213.73 213.73 431.48 62.86 28 1,339,91 342.30 213.73 62.86 997.61 62.86 444.42 29 213.73 1,010.95 342.30 1,353.25 213.73 62.86 457.75 62.86 30 213.73

(Case B)	l			Annual Water F	roduction:	3,352,686	ki (U	nit: '000Rand)
1			Bulk Water S	upply			Retail Supply	
liem	Raw Water	Electricity	Chemicals	Salaries	Maintenance		Administration	Total
Unit Cost	0.17 R/kl	0.15 R/kJ	0.05 R/kl	0.17 R/kl	0.05 R/kl	Sub-Total	695,100 R/year] .
Escalation	0%	3%	0%	0%	0%		0%	<u> </u>
Year							ł	
5	569,96	583.00	167.63	569.96	167.63	2,058.18	695.10	2,753.28
JE 65%	569.96	600.49	167.63	569.96	167.63	2,075.67	~695.10 ~	2,770.77
7	569.96	618.51	167.63	569.96	167.63	2,093.69	695.10	2,788.79
8	569.96	637.06	167.63	569.96	167.63	2,112.24	695.10	2,807.34
و ا	569.96	656.17	167.63	569.96	167.63	2,131.36	695.10	2,826.46
10	569.96	675.86	167.63	569.96	167.63	2,151.04	695.10	2,846.14
11	569.96	696.14	167.63	569.96	167.63	2,171.32	695.10	2,866.42
12	569.96	717.02	167.63	569.96	167.63	2,192.20	695.10	2,887.30
13	569.96	738.53	167.63	569.96	167.63	2,213.71	695.10	2,908.81
14	569.96	760.69	167.63	569.96	167.63	2,235,87	695.10	2,930.97
15	569.96	783.51	167.63	569.96	167.63	2,258.69	695.10	2,953.79
16	569.96	807.01	167.63	569.96	167.63	2,282.19	695.10	2,977.29
17	569.96	831.22	167.63	569.96	167.63	2,306.40	695.10	3,001.50
18	569.96	856.16	167.63	569.96	167.63	2,331.34	695.10	3,026.44
19	569.96	881.84	167.63	569.96	167.63	2,357.03	695.10	3,052.13
20	569.96	908.30	167.63	569.96	167.63	2,383.48	695.10	3,078.58
21	569.96	935.55	167.63	569.96	167.63	2,410.73	695.10	3,105.83
22	569.96	963.61	167.63	569.96	167.63	2,438.80	695.10	3,133.90
23	569.96	992.52	167.63	569.96	167.63	2,467.70	695.10	3,162.80
24	569.96	1,022.30	167.63	569.96	167.63	2,497.48	695.10	3,192.58
25	569.96	1,052.97	167.63	569.96	167.63	2,528.15	695.10	3,223.25
26	569.96	1.084.56	167.63	569.96	167.63	2,559.74	695.10	3,254.84
27	569.96	1,117.09	167.63	569.96	167.63	2,592.27	695.10	3,287,37
28	569.96	1,150.61	167.63	569.96	167.63	2,625.79	695.10	3,320.89
29	569.96	1,185.12	167.63	569.96	167.63	2,660.31	695.10	3,355.41
30	569.96	1,220.68	167.63	569.96	167.63	2,695.86	695.10	3,390.96

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

	Service Le	vel 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:
	- Chair person	- Chair person
!	- Vice Chair	- Vice Chair
	- Secretary	- Secretary
	- Treasurer	- Vice Secretary
		- Treasurer
Staff	Water Bailiff (x 2)	Bookkeeper / Administrator
-		Water Bailiff (x 2)
	Part-time employee/s.	Part-time employee/s.
	Functions may be combined.	
	Service Le Structure Model 3	Structure Model 4
Size	Small Community: e.g.	Medium: e.g.
	350 Households	800 Households
	2100 People	4800 People
Mngt.	Water Committee:	Water Committee:
	1	
	1 - Chair person	l - Chair person
	- Chair person - Vice Chair	- Chair person - Vice Chair
	- Vice Chair	- Vice Chair
	- Vice Chair - Secretary	- Vice Chair - Secretary
	- Vice Chair	- Vice Chair
Staff	- Vice Chair - Secretary - Treasurer	- Vice Chair - Secretary - Vice Secretary - Treasurer
Staff	- Vice Chair - Secretary	- Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2) Meter Readers / Collect. Officers (x
Staff	- Vice Chair - Secretary - Treasurer Pipe / Meter Maintenance (x1)	- Vice Chair - Secretary - Vice Secretary - Treasurer Bookkeeper / Administrator (x1) Pipe / Meter Maintenance (x2)

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

Stipend / Employmen	t Cost per Position	
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	6000
Bookkeeper / Cashier (Full-time)	2000	24000
Operator (Valves, pumps, plant)(Part-time)	450	5400
Maintenance Worker (Part-time)	450	5400
Collections / Water Bailiff (Part-time)	200	2400

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
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: Klipvoor

		Service	Level A	Service	Level B
	Calculated Population	Cost	ത	Cost	(D)
Settlement/ Community	Lohnianon	Cost (R) Monthly Annual		Monthly	Annual
1 Dipetloana	1,700	700	8,400	1,150	13,800
2 Makekeng	6,528	1,275	15,300	3,675	44,100
3 Makgapha	1,088	700	8,400	1,150	13,800
4 Mogohlwaneng incl. Olverton	6,147	1,275	15,300	3,675	44,100
5 Renostervici	1,020	700	8,400	1,150	13,800
6 Selepe	653	700	8,400	1,150	13,800
7 Ngobi	8,541	1,275	15,300	3,675	44,100
8 Swaartboom	3,638	700	8,400	1,150	13,800
9 Transaksie	2,067	700	8,400		13,800
Sub-Total of Moretele North	31,382	8,025		17,925	215,100
10 Ga-Tsogwe	1,088	700	8,400		13,800
11 Fafung	4,488	700	8,400		13,800
12 Ga-Rasai	1,088	700	8,400	1,150	13,800
13 Ga-Tsefoge	1,734	700	8,400		
14 Kgomo-Kgomo	1,047	700	8,400		
15 Legonyane	4,352	700	8,400		13,800
16 Sephai	1,292	700	8,400	1,150	
Sub-Total of Klipvoor West	15,089	4,900	58,800		
17 Bollantlokwe	1,768		8,400	1,150	
18 Dikebu incl. Ranteberg	13,600	1,275	15,300	3,675	44,100
19 Lebotlwane North	19,040	1,275	15,300	3,675	44,100
20 Little	2,720	700	8,400	1,150	13,800
21 Mokobyane	1,768	700	8,400	1,150	13,800
22 Rabosula	653	700	8,400	1,150	13,800
23 Sutelong Agricultural	6,392	1,275	15,300	3,675	44,10
24 Tiholwe	1,700	700	8,400	1,150	13,800
25 Dikgophaneng	510	700	8,400	1,150	13,80
26 Makgabetlwane	4,420	700	8,400	1,150	13,80
27 Moiletswane/Buffelsdoorn	5,250	1,275	15,300	3,675	44,10
28 Slagboom	2,380	700	8,400	1,150	13,80
29 Shakung	3,060	700	8,400	1,150	13,80
30 Ga-Hadebi	2,380	700	8,400	1,150	13,80
31 Modiane	. 272	700	8,400	1,150	13,80
32 Ga-Moti	54	700	8,400	1,150	
33 Garantlapane	136	700	8,400	1,150	13,80
34 Botshabelo	884	700	8,400		
35 Diponpong	1,360	700	8,400		
Sub-Total of Klipvoor East	68,347	15,600	187,200	31,950	
TOTAL	114,818	28,525	342,300	57,925	

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

Bulk Water Tariff

	Annual Production	O&M Cost	Reserve for Replacement	Loan Repayment	Total	Bulk Tariff (Unit Cost)
	(KL)	('000R)	(7000R)	(000R)	(000R)	(R/KL)
	(1)	(2)	(3)	(4)	(5)= (2)+(3)+(4)	(6)=(5)/(1)
Čase A	1,257,257	778.38	146.25	0	924.63	0.74
Case B	3,352,686	2075.67	279.44	1931.06	4286.17	1.28

Retail Water Tariff

	Annual Water Sales	Bulk Water Purchase	O&M Cost	Loan Repayment	Total	Retail Tariff (Unit Cost)
	(KL)	('000R)	(1000R)	(000R)	(1000R)	(R/KL)
	(7)	(8)=(1)x(6)	(9)	(10)	(11)= (8)+(9)+(10	(12)=(11)/(12)
Case A	1,068,669	924.63	342.30	0	1266.93	1.19
Case B	2,849,783	4286.17	695.10	6242.87	11224.14	3.94

	Consu	nption	Monthl	y Tariff	Share of	of Income
ľ	Average	Low-Income	Average	Low-Income	Average	Low-Income
İ	(kl/m/hh)	(kl/m/hh)	(R/m/hh)	(R/m/hh)	1,167R/m	332R/m
	(13)	(14)	15)=(12)x(13	(16)=(12)x(14	(15)/1,167	(16)/332
Case A	5.10	5.10	6.05	6.05	0.5%	1.8%
Case B	13.87	5.10	54.64	20.09	4.7%	6.1%

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: Klipvoor

		Stage		ST	STAGE 1 (Service Level A)	rvice Lev	(Y)			S	TAGE 2	STAGE 2 (Upgrade)	_		-
		Year	-	63	3	4	~	Sub-	٥	7	8	6	10	Sub-	Total
	Ilem		1998	1999	2000	2001	2002	Total	2003	2004	2005	2006	2007	Total	
Case C Total	11		553	4,400	49,032	93,453	39,489	186,925	345	2,485	36,360	88,320	31.649	159,159	346,084
Rulk	(1)Direct Construction Cost		·	,	17,618	27,126	098'6	54,604	,	•	3,908	4,579	821	9,308	63,912
<u></u>	(2)P&G	(1)x 15%	1	,	2,643	4,069	1.479	8,191		1	286	687	133	1396	9,587
	(3) Base Cost	(2)+(2)	1	•	20,261	31,194	11,339	62,795	•	1	4,494	5,265	945	10,704	73,499
	(4)Environing Fee	(3)x 10%		1,570	1,570	1,570	1,570	6,279	•	302	508	268	268	1,070	7,350
	(5)Miscellaneous	(1)x 2%	•	546	246	•	•	1,092	1	93	83	1	•	186	1,278
	(6)Institutional Support	N	314	314	314	314	314	1,570	*	\$	\$	54	*	88	1,837
	(7)Sub-Total	(3)+(4)+(5)+(6)		2,430	22,691	33,078	13,223	71,736	\$4	414	4,909	5,586	1,266	12,228	83,964
	(8)Physical Contingency	(3)x 15%		1	3,039	4,679	1,701	9,419	•	•	674	96	142	1,606	11,025
	(9)Price Escalation(10%/a)			510	8,517	17,523	9,111	35,693	41	393	6,384	8,659	2,243	17,720	53,413
	(10)Sub-Total	(8)+(8)	31	510	11,556	22,202	10,812	45,112	41	393	7,058	9,448	2,385	19,326	64,438
	Total	60+6	345	2,940	34,247	55,280	24,035	116,848	8	807	11,967	15,035	3,651	31,554	148,402
	.	14%		412	4.795	7.739	3,365	16,359	13	113	1,675	2,105	511	4,418	20,776
	Grand Total		•••	3,352	39,041	63.020	27,400	133,207	108	920	13.642	17,140	4,162	35,972	169,178
Retail	(1)Direct Construction Cost			1	4,404	13,213	4,404	22,021	•	,	4,083	12,250	4,083	20,417	42,438-
	(2)P&G	(1)x 15%	•	1	199	1,982	661	3,303	•	•	613	1,838	613	3,063	6388
	Cost	(2)+(2)	1	,	5,065	15,194	5,065	25,324		•	4,696	14,088	4,696	23,480	43,804
	ig Fee	(3)x 10%	1	633	633	633	633	2,532	•	287	287	587	287	2,348	4,830
	(5)Miscellaneous	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	(6)Institutional Development	(3)x 2.5%		127	127	127	127	633	117	117	117	117	117	287	1,220
4	(7)Sub-Total	(3)+(4)+(5)+(6)	127	36	5,825	15,954	5,825	28,490	117	70,	5.400 0.400	14,792	5,400	26,414	54,904
	(8)Physical Contingency	(3)x 15%		1	760	2,279	760	3,799	•	1	ğ	2,113	40,	3,522	7321
	(9)Price Escalation(10%/a)	×(8)+(2)	13	36	2,179	8,462	4,020	14,833	22	899	6,981	22,956	9,729	40,426	55,259
	(10)Sub-Total	(8)+(8)	13	36	2,939	10,741	4,779	18,632	ሯ	88	7.686	25,070	10,434	43,948	62,580
	Total	(3)+(10)	139	919	8,764	26,696	10,00	47,122	208	1,373	13,086	39 862	15,834	70,362	117.484
	VAT	14%	19	129	1,227	3,737	1,485	6,597	8	192	1,832	5,581	2,217	9.851	16,448
	Grand Total		159	1,048	9,991	30,433	12,089	53,719	237	1,565	14,918	45,442	18,051	80,213	133,932
Yard	(1)Direct Construction Cost		•	•	,	•	1		•	•	3,192	9,575	3,192	15,958	15,958
Connectio	Connection (2)Price Excalation(10%/a)	X(I)	•	•	•	•	٠	•	•	•	3,650	13,002	5.087	21,739	21,739
		(1)+(2)	•	•	•	•	•	•	•	•	6,841	22.577	8,278	37,697	37,697
	-	14%		•	1	1	•	٠	•	•	958	3,161	1,159	5,278	5,278
	Grand Total		•	٠	•	•	•	•	•	•	7.799	25,738	9,437	42,974	42,974

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

~	¥4.	Data	Cont	Stag	e 1	Stag	
	Item	Project	Cost	(RDP C		(Loan/Ow	n Fund)
Total		346,084	100.0%	186,925	100.0%	159,159	100.0%
Bulk	(1)Direct Construction Cost	63,912	(43.1%)	54,604	(46.7%)	9,308	(29.5%)
Supply	(2)P&G	9,587	(6.5%)	8,191	(7.0%)	1,396	(4.4%)
7	(3)Base Cost	73,499	(49.5%)	62,795	(53.7%)	10,704	(33.9%)
	(4)Engineering Fee	7,350	(5.0%)	6,279	(5.4%)	1,070	(3.4%)
	(5)Miscellaneous	1,278	(0.9%)	1,092	(0.9%)	186	(0.6%)
	(6)Institutional Support	1,837	(1.2%)	1,570	(1.3%)	268	(0.8%)
	(7)Sub-Total	83,964	(56.6%)	71,736	(61.4%)	12,228	(38.8%)
ļ	(8)Physical Contingency	11,025	(7.4%)	9,419	(8.1%)	1,606	(5.1%)
	(9)Price Escalation(10%/a)	53,413	(36.0%)		(30.5%)	17,720	(56.2%)
	(10)Sub-Total	64,438	(43.4%)	45,112	(38.6%)	19,326	(61.2%)
	Total	148,402	(100.0%)	•	(100.0%)		(100.0%)
	VAT	20,776	1	16,359		4,418	
	Grand Total	169,178	48.9%	133,207	71.3%	35,972	22.6%
Retail	(1)Direct Construction Cost	42,438	(36.1%)		(46.7%)		(29.0%)
Supply	(2)P&G	6,366	(5.4%)		(7.0%)		(4.4%)
	(3)Base Cost	48,804	(41.5%)	25,324	(53.7%)	E .	(33.4%)
	(4)Engineering Fee	4,880	(4.2%)		(5.4%)	4	(3.3%)
	(5)Miscellaneous	•	(0.0%)		(0.0%)		(0.0%)
	(6)Institutional Development	1,220	(1.0%)		(1.3%)		(0.8%)
	(7)Sub-Total	54,904	(46.7%)		(60.5%)		(37.5%)
	(8)Physical Contingency	7,321	(6.2%)		(8.1%)		(5.0%)
ł	(9)Price Escalation(10%/a)	55,259	(47.0%)		(31.5%)		(57.5%)
	(10)Sub-Total	62,580	(53.3%)	L.	(39.5%)		(62.5%)
	Total	117,484	(100.0%)	•	(100.0%)		(100.0%)
	VAT	16,448		6,597		9,851	
	Grand Total	133,932	38.7%		28.7%	<u> </u>	50.4%
Yard	(1)Direct Construction Cost	15,958	(42.3%)			15,958	(42.3%)
Connection	(2)Price Escalation(10%/a)	21,739	(57.7%)			21,739	(57.7%)
1	Total	37,697	(100.0%)	-	İ		(100.0%)
	VAT	5,278	· .	-		5,278	
	Grand Total	42,974	12.4%	<u> </u>	0.0%	42,974	27.0%

		Project	Cost	Stag (RDP (•	Stag (Loan/Ow	
Bulk Supply	•	169,178	100.0%	133,207	78.7%	35,972	21.3%
Retail Supply		133,932	100.0%	53,719	40.1%	80,213	59.9%
Yard Connection		42,974	100.0%	•	0.0%	42,974	100.0%
Total		346,084	100.0%	186,925	54.0%	159,159	46.0%

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

-					,, ,				(Unit: . 4	
					Year	1		3		200
		ltem			Total	1998	1999	2000	2001	200
_	otal				129,326	502	3,636	36,838	63,829	24,51
E		(1)Direct Construction Cost			54,604	-1	•]	17,618	27,126	9,86
1	•	(2)P&G	(1)x	15%	8,191	•	•	2,643	4,069	1,47
İ			(1)+(2)		62,795	- 1	-	20,261	31,194	11,33
ı		(4)Engineering Fee	(3)x	10%	6,279	-1	1,570	1,370	1,570	1,57
		(5)Miscelluneous	(1)x	2%	1,092	•	516	546		
ı		(6)Institutional Support	х(3)	2.5%	1,570	314	314	314	314	3
ı		(7)Sub-Total	(3)+(4)+(5	9)+(6)	71,736	314	2,430	22,691	33,078	13,2
1		(8)Physical Contingency	(3)x	15%	9,419	-	•	3,039	4,679	1.70
1		Total	(7)+(8)	,	81,155	314	2,430	25,730	37,757	14,9
١		VAT	ì	14%	11,362	44	340	3,602	5,286	2,0
L		Grand Total			92,517	358	2,770	29,332	43,043	17,0
ſ	Retail	(1)Direct Construction Cost			22,021	-	- 1	4,404	13,213	4,4
- [(2)P&G	(1)x	15%	3,303	-	-	661	1,932	6
1		(3) Base Cost	(1)+(2)		25,324	-	-	5,065	15,194	5,0
- 1		(4)Engineering Fee	(3)x	10%	2,532	-	633	633	633	6
۱		(5)Miscelluneous	l ``		-	•	-	-	-	
۱		(6)Institutional Development	(3)x	2.5%	633	127	127	127	127	1
İ		(7)Sub-Total	(3)+(4)+(5)+(6)	28,490	127	760	5,825	15,954	5,8
		(8)Physical Contingency	(3)x	15%	3,799	-	-	760	2,279	7
		Total	(7)+(8)		32,288	127	760	6,584	18,233	6,5
- {		VAT	l' ' ' '	14%		18	106	922	2,553	ġ
		Grand Total	ļ		36,809	144	866	7,506	20,786	7,5
В	Total				197,416	697	4,911	53,800	101,286	36,7
•	Bulk	(1)Direct Construction Cost	T		63,912	-		21,526	31,704	10,6
1		(2)P&G	x(1)	15%	9,587	-		3,229	4,756	1,6
- 1		(3)Base Cost	(1)+(2)		73,499		_	24,755	36,460	12,2
		(4)Engineering Fee	(3)x	10%	1	-	1,837	1,837	1,837	1,8
I		(5)Miscelluneous	(1)x	2%	• • •	•	639	639	-	-
-		(6) Institutional Support	(3)x			367	367	367	367	3
		(7)Sub-Total	(3)+(4)+(83,964	367	2,844	27,599	38,665	14,4
		(8) Physical Contingency	(3)x	15%	1		1 .	3,713	5,469	1,2
-		Total	(7)+(8)		94,989	367	2,844	31,313	44,134	16,
		VAT	(7,47	14%		51	398	4,384	6,179	2,
		Grand Total	1		108,288	419	3,242	35,697	50,312	18,6
	Retail	(1)Direct Construction Cost			42,438			8,488	25,463	8,
- 1		(2)P&G	(1)x	15%				1,273	3,819	1.
		(3)Base Cost	(1)+(2)		45,804	-		9,761	29,282	9.
		(4)Engineering Fee	(3)x	10%			1,220	1,220	1,220	3,
- 1		(5)Miscelluneous				-		_		
		(6)Institutional Development	(3)x	2.59	1,220	244	244	244	244	
		(7)Sub-Total	(3)+(4)+(1	244		11,225	30,746	11,
		(8) Physical Contingency	(3)x		L		1	1,464	4,392	1.
		Total	(7)+(8)		62,225	244	1,464	12,689	35,139	12,
		VAT	1,7,6,	149		34	1	1,776	4,919	ī,
		Grand Total		**/	70,936	278		14,465	40,058	14
	Yard	(1) Direct Construction Cost	1.		15,958			3,192	9,575	3,
	Connection	VAT	1	149				447	1,340	
	CONTRACTOR	Grand Total	1	1.47	18,192	Ι.		3,638	20,915	3,
~	(Cost for \$1-				Year		5 7			
	(Cost for Up	-craquis			. reat	200		 	 -	
	D. 11.		1		16771	·	·	6,364	7,269	
	Bulk				15,771	61				1,
	Retail				34,128	134	803	6,959	19,272	6,
	Yard Comme	Kilon	1		18,192	L	. 1	3,638	10,915	3,

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

(Unit:	,000Rand)
10	,

	Itam	Projec	Cost	Stag	e 1	Stag	e 2
	ltem	riojec	CUSL	(RDP C	Grant)	(Loan/Ow	n Fund)
l'otal		197,416	100.0%	129,326	100.0%	68,090	100.0%
Bulk	(1)Direct Construction Cost	63,912	(67.3%)	54,604	(67.3%)	9,308	(67.3%)
Supply	(2)P&G	9,587	(10.1%)	8,191	(10.1%)	1,396	(10.1%)
	(3)Base Cost	73,499	(77.4%)	62,795	(77.4%)	10,704	(77.4%)
	(4)Engineering Fee	7,350	(7.7%)	6,279	(7.7%)	1,070	(7.7%)
	(5)Miscellaneous	1,278	(1.3%)	1,092	(1.3%)	186	(1.3%)
	(6)Institutional Support	1,837	(1.9%)	1,570	(1.9%)	268	(1.9%)
	(7)Sub-Total	83,964	(88.4%)	71,736	(88.4%)	12,228	(88.4%)
	(8)Physical Contingency	11,025	(11.6%)	9,419	(11.6%)	1,606	(11.6%)
	Total	94,989	(100.0%)	81,155	(100.0%)	13,834	(100.0%)
	VAT	13,298		11,362	<u> </u>	1,937	1
	Grand Total	108,288	54.9%	92,517	71.5%	15,771	23.2%
Retail	(1)Direct Construction Cost	42,438	(68.2%)	22,021	(68.2%)	20,417	(68.2%)
Supply	(2)P&G	6,366	(10.2%)	3,303	(10.2%)	3,063	(10.2%)
	(3)Base Cost	48,804	(78.4%)	25,324	(78.4%)	23,480	(78.4%)
	(4)Engineering Fee	4,880	(7.8%)	2,532	(7.8%)	2,348	(7.8%)
	(5)Miscellaneous	-	(0.0%)		(0.0%)	-	(0.0%)
	(6)Institutional Development	1,220	(2.0%)	633	(2.0%)	587	(2.0%)
	(7)Sub-Total	54,904	(88.2%)	28,490	(88.2%)	26,414	(88.2%)
	(8)Physical Contingency	7,321	(11.8%)	3,799	(11.8%)	3,522	(11.8%)
	Total	62,225	(100.0%)	32,288	(100.0%)	29,936	(100.0%)
	VAT	8,711		4,520		4,191	
	Grand Total	70,936	35.9%	36,809	28.5%	34,128	50.1%
Yard	(1)Direct Construction Cost	15,958				15,958	
Connection	VAT	2,234	1	-		2,234	1
	Grand Total	18,192	9.2%	-	0.0%	18,192	26.7%

	Projec	l Cost	Stag (RDP.C		Stag (Loan/Ow	
Bułk Supply	108,288	100.0%	92,517	85.4%	15,771	14.6%
Retail Supply	70,936	100.0%	36,809	51.9%	34,128	48.1%
Yard Connection	18,192	100.0%	· .	0.0%	18,192	100.0%
Total	197,416	100.0%	129,326	65.5%	68,090	34.5%

Stage 1	Bulk Supply	1st Tier	92,517	71.5%	46.9%		
	Retail Supply	1st Tier	36,809	28.5%	18.6%	1st Tier	
	Totai		129,326	100.0%	65.5%	129,326	65.5%
Stage 2	Bulk Supply	2nd Tier	15,771	23.2%	8.0%	2nd Tier	
	Retail Supply	3rd Tier	34,128	50.1%	17.3%	15,771	8.0%
	Yard Connection	3rd Tier	18,192	26.7%	9.2%	3rd Tier	
	Total		68,090	100.0%	34.5%	52,320	26.5%
Total			197,416		100.0%		

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

Water Personal and	Vene	c	-	2	33	47	5	9	۲.	×	Φ.	2	11	2	3	**
Tourist Demand and	3	1001	8661	8	2000	2001	2002	2003	2002	2005	2006	2007	2008	2002	2010	2011
A Service ever						ľ		***************************************	NaSSen	-Serve Level A-			Ç.	Service	Level B	
B. Water Demand											1			0	317 010	11.4 218
b-1)Population			٠	•	•	•	83,436	114,818	114,818	114,818	114,818	114,818	014,910	900	114040	***
b-2)Consumption							4			317.	3446	3.445		9 185	9.185	9.185
b-3)Water Demand (AADD)			•	•	•		256	C 14.0		791.9	2 167	5.167	13.778	17.2	13.778	13,778
b-4)Water Demand (SPDD)	6-3) x 1.5 XI./d				, ,	' (913,624 1,257,257									3,352,686
P-5)/Anna water / maucion			ı								i	į	1			-
C. Bulk Water Tariff	RAKI						6.73	0.73	0.73	0.73	0.77 2.74	0,73		1.27	1.6	
Income Statements	Year	0 001	1001	1000	200	2001	\$ 200Z	2003 2003	2004	2005	2006	2007	2008	2002	2010	2011
D Desertite	8	1227													1	į
4.1) Wester Solar	(S. A. X.)		٠	•	•	•	68	916	816	918	918	918	4.258	4,258	4.258	
d-2) Revenue Total			•	٠	1	•	667	870	976	876	8/6	870	4,258	4,258	Ş	ğ
E. Expenses	(Unit Cost)	3	(point)				Š	į	į			214	023	67.5	270	570
e-1) Raw Water Cost	0.17 R/KL	66 x			•	•	g ş	1 3	5	Š	3	Ş	1.601	1.622	1,644	1,666
e-2) O&M Cost	*****	(cax	•	•	•		} ?	, ç	233	239	246	35	969	717	£5.	761
-Power	0.15 KNL		•		• •	•	*	8	3	63	\$	69	168	168	168	891
Chemical	0.03 K/KL		•				155	214	214	214	214	214	570	570	570	575
-Valures			•	•		•	4	8	8	8	S	Ş	168	168	168	3
-Maintenance Cost and other	1,00 K/KL		•	•			3	3	282	702	8	20%	2,173	2,192	2,234	2,230
e-3)Expenses Total Net, Operating Income	e1)+e2)	A STATE OF THE STA	100 mm				708	80	3	32	នា	Ħ	2007	390%	7,044	702
		ľ	-	,	۶	,	ľ	۲	7	~	٥	QT	=	27	13	7
Cash Flow Statements	Year (a)	1 907	800	, 86	2000	2,001	2,002	2,003	2,004	2,005	2,006	2,007	2,008	2,009	2010	2,011
F. Inflow							٤	130	111	971	119	111	2.087	7006	2, 044	2,022
f-1)Net Operating Income				. 64.	20 323	44 043	17011	·	•	Ι,	•	•	•	•		•
f-2)Grant (RDF Fund)			000		700'67	1	4764	19	472	6.364	7,269	1,604	•	•	•	•
f-3)Loan	20			• 1	, ,	•	•	y v	13	8	ĥ	3	2,	\$1	٠	\$
1.4 unieres Cenerace f-5)Inflow Total	ę		358	2,770	29,332	43,043	17,119	200	617	0,510	7,415	1,750	2,128	2,117	2,105	2,092
G, Outflow			900	i c			17011	59	23	436.4	7,269	1.66	•	•	٠	•
g-1)CAPEX+Replacement	S		8		700,84		240614	; .	•	•	1	•	1,931	1,931	1,931	1,931
8-2) Loan Kepayment (LAVEA)	, , , , , , , , , , , , , , , , , , ,		•	•		٠	•	٠	•	•	•	•	•	•	•	•
go)onday term Lown Interes	2		358	2,770	29,332	43,043	17,013	3	477	6,364	7,269	1,604	7,937	1.031	1,931	1,037
Charles and the second and the secon	The Contract of the Contract o	Mayor to a local office and a second	\$	3	Barrell and	0		146	146	346	146	€.	18	186	174	8
out.	(Managed Andrews And	designation becomes after the factor of	0	0	0	0	108	251	386	\$42	687	833	1,030	1,216	1,3%	1,55
Loan outstanding Process	20 vears							19	538	6,945	14,770	17,555				
Interest	86							S	43	256	1.182	1.404				

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

ADD) 9,183 114,818 11,277 1,3778 13,778 13,778 13,778 13,778 13,778 13,778 13,778 13,778 13,778 1,392 4,392 4,392 4,392 4,392 4,392 4,392 4,392 4,392 4,392 1,712 1,736 168 168 168 168 168 168 168 168 168 16	2015 2015 114,818 13,738 13,738,686 1,318 2,015	2016 9,185 13,778 13,735,686 33, 2016 2016 4,392 4,392 4,392 1,787 882 882 168 1,787 882 882 882 882 883 883 884	2017 114,818 1 13,738 20,185 3,352,686 3,3 20 20 20,20 4,392 4,392 4,392 1,314 1,314 1,814	11 1	2019 2019 2019 114,818 114, 9,185 9 12,778 13 2,352,686 3,352 2019 4,526 4 4,526 4 4,526 4 570 1,869 1	2020 2020 2020 2020 2020 2020 2020 202	114,818 11,778 13,778 13,572,686 2,4,526 4,526 5,700 5	2022 9,185 13,778 3,352,686 4,526 4,526 4,526 4,526 1,958 1,053	2023 114,818 9,135 13,778 3,352,686 2,22 2023 2023 4,660 4,660 4,660 5,70	2024 9,185 11,4,818 13,252,686 2,2024 1,660 4,660 4,660 4,660 4,660 1,117	1:	2026 9,185 13,778 1,352,686 2,056 4,666 4,666 2,090 1,185 1,688	2027 9,185 114,818 13,778 2027 2027 2,666 4,666 2,126 1,221 1,221 1,221 1,221 1,221 1,221 1,221 1,221
ADD) 9,183 9,185 9,185 PDD) 13,778 13,778 13,778 13,778 Auction 3,352,686 3,352,686 Auction 3,352,686 3,352,686 Auction 3,352,686 3,352,686 Auction 1,352,686 3,352,686 Auction 1,27 1,31 1,31 Auction 1,289 4,392 4,392 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,68 1,68 1,68 1,68 1,68 1,68 1,68 1,68	4,392 4,392 4,392 4,392 4,392 4,392 6,392 6,392 6,392 6,392 6,392 6,392 7,392 8,56 1,68 1,68 1,68 2,337	بيمين المحمل ال	6 .	عبيمان أحساما		518 518 518 518 518 518 518 518 518 518		9,185 13,778 13,778 1,352,686 25 2022 4,526 4,526 4,526 1,958 1,958	- اممام	بينا المحام	i alamata a a a a a a a a a a a a a a a a a		14,818 9,185 13,778 13,778 4,666 4,666 4,666 4,666 1,236 1,2
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ADD) 9.185 9.185 114,818 114,818 ADD) 113,778 13,778 13,778 Auction 3,352,686 3,352,686 3,352,686 Auction 1,352,686 3,352,686 3,352,686 Auction 1,352,686 3,352,686 3,352,686 Auction 1,27	4,392 4,392 4,392 4,392 4,392 6,00 1,761 856 168 570 1,61 168 168 570 1,761 168 570 1,761 168 570 1,761 168 570 1,761 168 570 1,761 168 570 1,761 168 570 1,761 168 570 1,761 168 168 178 178 178 178 178 178 178 178 178 17	برميد يا المحمل	e	منتمان المحسلمد	سيسي امتدامر	منتا اهمامت	يينين استمامر	9,185 13,778 13,778 1,352,686 4,526 4,526 6,526 1,958 1,958	۔ ۔ اممام	بنيا المحام	سييمي ما اعددداه	حمره و و أهواه	9,185 13,778 2007 4,666 4,666 4,666 1,206
ADD) 9,185 9,185 9,185 PDD) 13,778 13,778 13,778 Auction 3,352,686 3,352,686 Auction 1,352,686 3,352,686 Auction 1,352,686 3,352,686 Auction 1,27 1,31 1,31 Auction 1,288 4,392 4,392 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,712 1,736 Auction 1,689 1,68 1,68 Auction 1,689 1,68 1,68 Auction 1,689 2,281 2,306 Auction 1,699 2,110 2,086 Auction 1,999 2,110 2,086 Auction 1,999 2,110 2,086 Auction 1,999 2,110 2,086	9,185 13,752,686 3,352,686 1,31 2,015 4,392 4,392 4,392 6,392 1,761 1,76	برمين امدمان		منتجاب المسلمد	سيستام بمامد	منتا اممامت	معتديا استعدامت	9.185 13.778 1.352,686 2.202 2.202 4,526 4,526 1,958 1,958	- اممام	بنبيا المحام	سيميم ما اعددداه	9,135 13,778 352,686 1,39 2,090 1,135 1,135 1,135	9,185 13,778 1,599 1,660
ADD) 9,183 9,183 7,403 PDD) 13,778 13,778 13,778 duction 3,32,686 3,352,686 duction 3,32,686 3,352,686 duction 15 15 151 131 15 15 16 173 d,258 4,392 4,392 d,258 4,392 4,392 d,258 4,392 4,392 d,258 1,392 4,392 d,258 1,392 1,392 d,268 1,689 1,712 1,736 d,689 1,712 1,736 d,689 1,689 1,689 d,689 1,689 1,689 d,699 2,281 2,306 d,690R 2,012 2,013 d,000R 2,012 2,013 d,000R 2,012 2,013 d,000R 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,013 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,012 2,014 d,000R 2,000R 2,014 d,000R 2,	7,173 1,352,686 1,3152,686 1,315 2,015 570 1,701 856 1,68 1,68 1,68 1,68 2,337	برمان امدمان		منتمان المحسلمد	سيست المنطور	منتا اممامر	منتيا استخدامت	13.778 1.352.686 1.352.686 22 22.22 4.526 4,526 7.00 570 1.958 1.053	- اممام	منتا المحام	سيميم ماعددات	13,778 352,686 1,39 2026 4,660 4,660 2,090 1,185 168	13,778 4,666 4,666 1,250
duction 3,32,7686 3,352,686 3,352,686 (duction 1,327,686 3,352,686 3,352,686 (duction 1,327,131 1,31 1,31 1,31 1,31 1,32 1,32 1,328 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,392 1,393	3,352,686 1,31 1,31 1,31 1,32 4,392 4,392 570 1,761 856 168 168 2,337	برمان المدامات		منتسامد	تناماها		متنا استخدامت	1,352,686 1,352,686 4,526 4,526 4,526 1,958 1,958	- اممام	منتا المحاما	سيمند منسماء اعتداد	2026 4,660 4,660 2,090 1,135 1,135	202 202 202 202 202 202 202 203 203 203
(1,000R) 2012 2013 (1,000R) 2012 2013 (1,000R) 2012 2013 (1,000R) 1,012 (1,000R) 2,012 (1,000R) 2,012 (1,000R) 2,012 (1,000R) 2,013 (1,000R) 2,013 (1,000R) 2,013	44	1.31 19 2016 4,392 4,392 570 1,787 882 168 570 570	20 2017 4,392 4,392 570 1,814 908 168	1.35 2018 2018 4,526 4,526 570 1,841 936	1.35 2019 4,526 4,526 4,526 1,869 964 168	23 2020 2020 4,526 4,526 570 1,898 993	24, 2021 4,526 4,526 4,526 570 1,928 1,928	11.35 22.22 2.526 4,526 4,526 1,958 1,958	202 2023 2023 4,660 7,000	11.39 2072 4,680 4,680 2,022 1,117	2025 2025 4,660 4,660 2,055 1,155 1,155 1,550	1,39 2025 2036 2,000 2,000 1,185 168 168	202 202 30 30 30 30 30 30 30 30 30 30 30 30 30
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(1,000R) 2012 2013 4,258 4,392 4,258 4,392 4,258 4,392 570 570 1,689 1,712 784 807 168 168 570 570 570 570 570 1,089 1,099 2,110 0me 1,999 2,110	44 - "	2016 4,392 4,392 570 1,787 882 168 570 570	2017 4,392 4,392 570 570 908 1,814	2018 4,526 4,526 570 570 936	2019 4,526 4,526 570 1,869 964 168	2020 4,526 4,526 4,526 570 1,898 993 168	2021 4,526 4,526 570 570 1,928	2022 4,526 4,526 1,958 1,958	2023 4,660 4,660 570 570	2022 4,660 4,660 2,022 2,022 1,117	2025 4,666 4,666 2,056 1,151	2036 4,660 2,060 1,185 168	2027 4,686 4,686 1,221 1,221 1,231
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Sales 4,258 4,392 1		4,392 4,392 570 1,787 882 168 570	4,392 4,392 1,314 808 168 168	4,526 4,526 570 1,841 936	526 4,526 570 1,869 168 168	4,526 4,526 1,898 168	4,526 4,526 1,928 1,022 1,023	570 1,958 1,053	98,4 98,7 98,7 98,7 98,7 98,7 98,7 98,7	8.00.2 2.02.2 11.1	6. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8. 8.	2,0%0 1,185 168	8 8 3 1 3 2 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3
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15 10 000R) 2,012 2,013 1,999 2,110		9	gr.	25	22	23	7	 x	8	LZ.	28	શ	ድ
RDP Fund)	2.015	2,016	2,017	2,018	2.019	2,020	2,021	2.022	2,023	7,024	١	2.026	2,027
yersting Lacome 1,999 4,110 (RDP Fund)	1961	3000	0000	2,115	2.087	2.058	2,029	1,998	2,100	2,068	2,034	2,000	1,964
(RDP Fued)		3	Ì	; '	. '		•	•	•	•	•	•	•
	•		• •			•	•		•	•	٠	•	•
	. :		7,5	35	4	×	\$	E	•	•	1	•	;
eration of the contract of the	•	5	2 1.43	2.750	2.133	2,114	2,094	2,071	2,100	2,066	2,034	2,000	88.7
f-Sjaftow Total 2,077 6,192 4,104 C. Outflow		3	1	ì							,	•	•
a-1XAPEX+Replacement	1	•	7,194	1	•	•	• ;	1,998		. 631	10.1	8	1.931
k-2)Losa Repayment (CAPEX) 1,931 1,931 1,931	1,931	1,931	1,931	1,931	1,931	1,931	1,931	7.2.	2, 2,	18	0	40	•
• ;				7 0 47	1 041	7.037	7.037	3.920	\$7	1,040	1,940	1,934	1,937
I COL	7	1,937	27/1	210	707	183	3	1.358		A PARTY OF THE PAR	A	98	35
Surplus (2007) 100 Company of the co	2.452	1897	169	916	1,118	1,301	4	394			6ç	23	ŝ

Loan outstanding Principal

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

Foreign Fore	1993 1990 2000 2001 2002 2004 2005 2006	ection ruter Ratio duction es	,	2001	1	1 99	9	,000	2002	2003	3	3005	2000	2007	8	Š	3.5	1
Comparison Com	March Marc	id cornection of for water Ratio or Production Tradiff			5			•		-	3	3334						١
Comparison Com	State Stat	id thold Connection of for water Ratio or Production Tauliff		1441	150	<u>}</u>	3337				Service	Level A		Î	\ \ \ \	Servee L	} \$ \$	
March Marc	manual manual	old xmection. or water Ratio Production Sales						,										
December December	Companies Comp	tion ter Ratio							A7.4 L9	114 ×1X	114,818	114.818	114.313	114,818	114,81.8	114,515	114,818	
National Control National Co	Comparison Com	tion ter Ratio action			٠			•		200 1	14 885	16.885	16.885	16.885	16,885	16,885	16,385	50.00
Part Part	Proceedings LCD Processing LCD Processing Pro	tion ter Ratio action			•			•	7,7,77	7000	2000		'	•	15,198	5.13	15,198	25,23
Part Part	Figure F	ter Ratio			i		•		, ;	, ;	. 6	· \$	Ş	ş	8	8	8	3 5
	State Stat	ter Ratio	6						8	3	3	3 5	3 44 6	1 445	9.185	9.135	9,135	91.6
	State Stat	ter Ratio	A 14.4						228	3,445	2	7		¥ Y		15.0%	15.0%	15.0%
March Production Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay 1.0 Kild Pay Pay 1.0 Kild Pay P	Mark Production P.5) x x 8 x 1.4 M. M.	dion	1						15.0%	15.0%	15.0%	5	7.7.C	3000		7.808	7,808	7.808
Wear Foundation Poly (ask 1.25)/12/12/12/12/12/12/12/12/12/12/12/12/12/	Variable Variable	edion	7 17.3			,		•					77	3 1	200	184 CSC W	2255	135.686
Variet Probabilistics Variet State Variet Sta	Worker States Worker States TASSI 1,086,669 1,008,609 1,008 1,009 1,0	6			,		ı			, .				/0//0	3,352,000	3,32,000	2000	27.07.
Accordance Acc	Aver Sales Aver Factor Aver F				. 1	,	,					1,068,669		1,068,669	2,840,783	204, 700	CO 1 1 1000	
Control Line NAL L13 L13 <t< td=""><td>### Final Part </td><td>Retail Water Tariff</td><td>S KL/a</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>•</td><td></td></t<>	### Final Part Part	Retail Water Tariff	S KL/a														•	
Control of the cont	March Hard March Mar	-1) Besail Water Tariff							-	1 13	KT 1	1.13	1.13	1.18		, N	8	7
Coloniary Colo	Particle Particle		K/X						0.40	9 5	3	8	20.5	6.02				
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State Control Contro			R/month/Ho	plonosa					33.00	35.00	33.65	2000	4	Ş	l	Ė	13	
	State Stat	9		٥	-	2	3	4	5	ø	7	es)	•	07		1 8	Ş	8
		(Q000 t)		1001	886	6661	2002	2001	2002	2003	2002	2003	ğ	2002	Ì	\$45°		
Substitution (CAPPOrion) Substitution (CAPP	State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State Cont Portion State									1.18	: (•	476	1960	4064	4.953	4,953	4,953
1,00% 1,00% 2,00% 2,00% 2,00% 2,00% 7,20	1,006 1,506 20,786 7,506 1,206 7,007 2,006 7,205 7,2	A section of the Control Boat (co.)			•		•		822	1,260	1280	7,200	000	7	55.0	3.343	2342	7
1,006 1,506 20,786 7,270 7,2	1,008 1,009 2,000 2,001 2,004 2,004 2,009 2,00	1-1) Water Sales (Con 1 Sales)					,	•	4.467	6,019	6,019	6,019	6,019	100	1 25.	7 305	7 705	7.20
1,008 1,000 2,001 2,002 2,003 2,004 2,005 2,00	1,00% 1,00	7-17) Works Futher Carried Car				•	•		5,289	7,270	7,279	17.77	1/2/	¥,	24.			
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155 342	155 342 342 342 342 342 343 405								89	918	918	918	916	OTA.	2 9	9	ý	Ş
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1,00% 1,009 2,000 2,001 2,002 2,003 2,004 2,005 2,009 0,10 11 12 13 13 14 866 7,506 20,786 7,506 2,0786 7,506 114 866 7,506 20,786 7,506 114 866 7,506 20,786 7,506 114 866 7,506 20,786 7,506 114 866 7,506 20,786 7,506 114 866 7,506 20,786 7,506 114 803 10,507 30,187 10,507 2,307 2,308 2,309 144 866 7,506 20,786 7,506 114 803 10,507 30,187 10,507 2,307 2,309 2,329 2,329 144 866 7,506 20,786 7,506 114 803 10,507 30,187 10,507 2,307 2,309 2,329 2,329 2,329 144 866 7,506 20,786 7,506 114 803 10,507 30,187 10,507 2,309 2,329 2,	1,048 1,050 2,000 2,001 2,002 2,003 2,004 2,005 2,005 2,007 2,009	3.3) Maintenance & Admin. Cont						1	822	1,260	1,260	1,260	7,260	7,260	_			
1,00% 1,00% 2,000 2,001 2,002 2,003 2,004 2,005 2,009 2,007 2,008 2,009 2,010 1,00% 1,00% 2,000 2,010 1,00% 2,000 2,010 1,00% 2,000 2,010 1,00% 2,000 2,010 1,00% 2,000 2,000 2,010 1,00% 2,00% 2,000 2,000 2,000 1,00% 2,000	1,008 1,000 2,000 2,001 2,002 2,003 2,004 2,005 2,000 2,007 2,008 2,000 2,000 1,008	e-d) Expenses Total	A STATE OF THE STA	Control of the Contro	al commenced		The second secon	Serve and the server of		6,019	61079	60.09	\$600	₹ •	. iš		1	
1,000R 1,097 1,098 1,599 2,000 2,001 2,002 2,003 2,004 2,005 2,005 2,007 2,008 2,010 2,	1,000R 1,097 1,098 1,099 2,000 2,001 2,002 2,003 2,004 2,005 2,005 2,009 2,	Act Operating theorem and the second	لا فالقيدلية الإنجاب يتقليفها بمنصرية	Company and the second	methode state or state of the s	The state of the s									l	İ	-	
1,000R) 1,097 1,098 1,099 2,000 2,001 2,002 2,003 2,004 2,005 2,00	1,000R) 1,097 1,098 1,999 2,000 2,001 2,003 2,004 2,005 2,004 2,005 2,004 2,005 2,004 2,005 2,004 2,005 2,004 2,005 2,004 2,005 2,007 2,00	Total Move Statements		0	-	7	3	4	S	۰	-	**	^ {				2010	20.
The mont 144 866 7,506 20,786 7,506 11,974 6,019 6,019 6,019 1,646 2,342 2,344	The mont 144 866 7,506 20,786 1,506 1040 6,019 6,019 6,019 1,646 2,342 2,342 2,342	(1.000R)		1,007	1,908	1.99	88	200	2002	2003	7007	C007	207		۱			
The control of the co	The mont 144 866 7,506 20,786 11,974 6,243 6,548 10,941 18,123 5,987 2,348 7,508 11,974 6,243 6,548 10,941 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,348 10,041 18,123 5,987 2,329 2,329 2,329 10,041 18,1041									•	970	6.010	6.039	1.646		13.74	13.42	2342
S% 7,500 20,786 11,974 6,243 6,548 10,941 18,223 5,987 2,347 2,349	5% 1,200 21,300 21,000 21,000 11,370 4,106 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	(-1) Net Operating Income				•	• ;	• }	9,4	0,012	770	· ·	•	•				
5% 5% 5% 5% 5% 20,786 11,074 6,243 6,548 10,941 18,223 5,987 2,347 2,348 2,349 2, CAPEX) CAPEX Interest 7% 144 866 7,506 20,786 7,506 134 803 10,597 30,187 10,597 2,329 2,3	5% 5% 5.06 20,786 11,974 6,243 6,548 10,941 18,223 5,987 2,348 2,348 5,548 10,941 18,223 5,987 2,348 2,348 5,248 5,243 6,243 6,243 6,243 6,243 6,243 6,243 6,244 10,597 2,348	F.2) Grant (RUP Pund)			<u>∓</u>	ž	, 8	SC 125	B ₁	•		4 105	11.370	4,106	•	٠	•	
5% 144 866 7,506 20,786 11,974 6,243 6,548 10,941 18,223 5,987 2,347 2,348 2,349 2, CAPEX) CAPEX) Interest 7% 144 866 7,506 20,786 7,506 134 803 10,597 30,187 10,597 2,329	S% 144 866 7,506 20,786 11,974 6,343 6,548 16,941 18,223 5,987 2,347 2,348 mont CAPEX) Interest 7% 144 866 7,506 20,786 7,506 134 803 10,597 30,187 10,597 2,329 2,329 1,0597 1	E3) Loan					•	•	•			\$ 2 5	833	ñ	~	v	•	
144 866 7,506 20,786 11,974 0,20 10,597 20,167 10,597 2,329	Mont CAPEX) Mont CAPEX) Mont CAPEX) Mont CAPEX) Mont	st Generated	8,		•	•	• ;			1	27.5	10047	78.223	5 087		2,348	2,349	2,35
Mont 10,597 30,167 10,597 20,189 2,329 2,3	Mont 144 866 7,506 20,786 1,506 124 803 10,597 30,187 10,597 2,329 2,329 (CAPEX) 10,597 10,59	f-5) Inflow Total			744	800	7,506	20,780	+/6/17	3								
CAPES) CAPES) CAPES) CAPES) CAPES) CAPES The rest 144 866 7,506 134 803 10,507 2,137 2,1	Mont 144 866 7,500 20,730	3. Outflow				:	1	, at the	* 6.84	3	S.	10.507	30.187	10.597	'	•	•	
CAPEX) [Marred 7% 144 866 7,506 20,786 7,506 134 803 10,597 30,187 10,597 2,329 2,329 2 [Marred 7% 10,597 30,187 10,597 2,329 2,329 2,329 2,329 2,329 2,329 2,329 3,32	CAPEX) Interest 7% 144 866 7.506 20,786 7.506 134 803 10,597 30,187 2,329 2,329 Interest 7% 144 866 7.506 20,786 7.506 134 803 10,597 30,187 2,329 2,329 Interest 7% 144 866 7.506 20,786 7.506 134 803 10,597 30,187 10,50	g-1) CAPEX+Replacement			4	8	8	80/33	3	5	} '	1	•	<u>:</u>		2,329	2,329	233
Interest 7% 144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,507 2,329 2,32	Interest 7% 144 866 7,506 7,506 134 803 10,597 30,187 2,329 2,329 1,594 1,006 1,009 1,000				•		•	•	•		•	•	•	•	•	•	•	
14. 86. 120. 100. 100. 100. 100. 100. 100. 100	801 10 901 901 901 901 901 901 901 901 90		\$.			• ;	• ;			,	e Va	10 507	30 187	10.597		2,320	2,329	2,32
The second secon	The second secon				142	8	7,506	20,730	00C/		*		750	197			8	3 (1
			A second	A Charles Alberta Commercial	J	D	Commence Commence	No the presents	, o +	- TO	3	277.71	4 701	5			147	ä

Loen cutstanding														37%			<u>(4)</u>
CAPEX Principal Interest	8, 8	20 years 8%									4,108 4,108 4,44 4,44	15,805 1,264 17,069	21,175 1,694 22,869				
Affordability Year	<u> </u>		0 1997	1993	1990	3000	2001	2002	6 2003	2004	\$ 5002 \$	2002 9	2007	11 2008	2002	13 2010	2 E
Monthly Expenditure														,	i		Ş
Average Lower Income	851.03 251.03	R/HH/M R/HH/M						39.02	39.02	39.02	39.02	39.02	8.00 8.00 8.00	35.51 13.06	13 S	8 8 8 8	13.00 13.00
Inflation 0% Economic Growth Rate 0.9 %/a Household Income Avenge R/month Lower Income 331.8 Avenge Income	Avenge 331.3	0%	332 236	332 21.67	332 [[116]	332	332	332	332	332	332 3367	332 1167	333	372	332 1167	332 7.167	332
Water Purchase/Income (Affordability Check) 0.0% Lower Income	ordsbilky Cl	heck)	0.0%	0.0%	0.0%		%0.0 %0.0	33%	11.8%	11.8%	33%	33%	11.8% 33.9%	3.0%	3.9% 3.0%	3.9%	3,0%
				İ													

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

Water Demand and Year D.	2012	2013	2014	2015	303.	2017	2018	2019	2020	2021	2022	2023	2024	ğ	3026	2027
kd shoid Councetion nd I for water Ratio							,	and anne								
rd Connection n for water Ratio Production							•									
oid mrection or water Ratio Production									ı							
sotion rater Ratio duction			:			•	914 516	114 610	114 618	114 818	114.818	114.518	114.818	114,818	114,818	114,818
ection vater Ratio duction	114,818	114,818	114,318	114,515	114,515	114,010	070%11	070477	7000	400	300 71	14.000	14 885	16.885	16.885	16.835
ection rater Ratio duction	16,885	16,885	16,885	16,885	16,385	16,885	16,885	10,885	10,385	10,000	70'00	7000	00000	90.	806.55	16.108
	15,198	15,198	15,198	15,198	15,198	15,198	15,198	15,198	15,198	15,198	961'ST	501,CI	67,51	0.17	Š	Ş
	9	Ş	8	8	8	8	S	3	8	8	8	₹	3	3	3	3
	0.185	0 185	0.185	9.185	9.185	9,185	9,185	9,185	9,185	9,185	9,185	9,185	9,185	9,185	9,185	S .
			2000	200	7	14.0 A	15.0%	15.0%	15.0%	15.0%	15.0%	15,0%	15.0%	15.0%	150%	15.0%
Production	25,05	85	25.5	200		2000	1 000	909.	1 800	1 808	7 808	7.808	7 808	7.808	7,808	7,808
Production		7.808									•	707 454	707 656 6	77.7 6.76	220 625	237 032 5
			3,352,686	3,352,686 3			•					0007000	0000000			787 018 0
	849,783 2		2,849,783	2,849,783 2	2,849,783 2	2,849,783	2,849,783 2	2,849,783 2	2,849,783	2,849,783	2849,783	704%, 703	700 Yes	CO1 " (400°7		
															Ċ	
- 4.00 cm (1.00 cm (2	\$	2.60	2.60	2.60	260	700	2.65	265	2.65	2.65	2.65	2.70	279	270	2.2	3
Or) Notati water Land					i											
aurug			:	:	Ģ.	۶	1.6	3	ĸ	77	£1	35	22	228	প্ত	ድ
Income Statements	a ş	or t	7 6	7	301	, E	2018	2010	2020	2021	303	2023	2024	2025	2026	7202
T. D.	7107	CIO7	Ping													;
L. Mevenue	1904	× 0.87	5 087	5.087	S (M)	< 087	5.223	5.221	5.221	5,221	5.221	5,355	5,355	5,355	5,355	5,355
d-1) Water Sales (Cost Portion)	2	8 6	36	3	200	133	2 331	2331	2,331	2,331	2.331	2339	2,339	2,339	2,330	2339
d-2) Reserve Fland / Amortisation	7	7777	7777	7757		1	****	1 55.4	2 663	2 553	7 557	7 604	7 604	7.694	7.694	7.694
d-3)Rovenue Total	7.205	7,400	7.400	1.404	8	× ×	4000	4000	1	*						
Е. Ехрепнез					i		,	, , ,	36.	1.26	36.4	0,1	9	200	1.30	1.30
c-1) Bulk Water Tariff	1.27	1.31	1.31	131	131	ij	3.	3	7	3		477	1	934	3	4
c-2) Bulk Water Purchase c-1)x b-8)	4,238	4,392	4,392	4,392	4,392	4,392	4,526	250	07'.	or C	800	8	3	Š	ğ	ò
6-3) Maintenance & Admin. Cost	695	569	\$60	565	868	\$	\$60	ŝ	ŧ	8	8	C S	S		356 5	336 3
and Dunamate Total	4.053	5.087	5.087	5,087	5,087	5,087	5,221	5,223	5,223	5,221	5,227	5,355	5,255	505,0	, 555 C	CCC.C
Net Operating Income	24.2		· [3]	732	न्तर	222	Trest !!	77	कर.		2301	2339	2.00	2330	2,339	7.39
							į	\$	\$	24	36	8	22	8	क्ष	8
Cash Flow Statements	₹ 5	91 6	77	2 6	2 6	8 5	1 2 5	1 00	30.0	2021	2022	, 107	199	202	2,026	2.027
(1,000K)	7017	7017	105	CIAT	2,010											
r. Indom	4	4			•	2 332	2.731	2,331	2331	2,331	2,331	2,339	2,339	2,339	2,339	2,339
(-1) Net Operating Income	2,342	7767	77	4,54	47,64	4	100				, '	•	•	•	,	•
(-2) Grant (RDP Fund)	•	•	•	•	•	•	•	•	•	, ,		•	,	,	•	٠
f-3) Loan		•	•	• '	•	•	•	, ;	٠:		5	•	ř	y	17	95
[4] Interest Conerated 5%	*	٠	2	2	9	9	01	T :	1 :	1	3 ;	i i	į	3 26.6	7 25	23.5
f-5) Inflow Total	2,351	2,332	2,332	2,332	2,332	2,332	2,341	2,347	2,542	2,343	4,543	4.0.4	4100	4.00	2	
G. Outflow													•	•	٠	•
g-1) CAPEX+Replacement	•	•	•	•	•	•	•	' ;	•	• 000	9200	. 02.2	1 230	230	2 130	2.320
g-2) Loan Repayment (CAPEX)	2320	2,329	2329	2,329	2,329	2320	2320	2329	2,329	2,323	C2C77	G(T)	(3Cm)	4	,	Ì
e-3) Short Term Loan Interest 7%		•	•	•	•	•	•		•	• ;	• (• •	, ,	, ,	040 4	062
rad)Outflow Total	2,329	2,329	2,329	2,329	2,329	2,329	2,320	2,329	2,320	2,329	2,329	2320	2,329	V 2007	A757	V2.C.2
A CONTRACTOR OF THE PROPERTY O	7				Sand Control of the Control	The state of the s	A	7	7	D	1	9	1	9	A Company	

CAPEX Principal Interest	20																
Affordability	Year	15 2012	16 2013	2014	18 2015	19 2016	20 2017	21 2018	22 2019	23	2021	2022	26 2023	27, 2024	202 2025	3036 3036	8 28
Monthly Expenditure																	
Averge Lower Income	est.co	35.51	36.07	36.07	36.07	36.07	36.07	36.76 13.52	36.76	36.76 13.52	36.76 13.52	36.76	37.45	37.45	37.45	8.83 E. E.	37.45 15.71
Inflation Economic Growth Rate Household Income Lower Income 3 Average Income	Inflation 0% mic Growth Rate 0% Avenge 331.8	0% 8% 332 1167 1167	332 7	332 2.2.167	332 (XXXX)	332	332	332	332	332 2 167	332 332	332 2107	32 3447	335 1167	335 246	332	332
Water Porchase/Income (Affordability Ch. 3.9% 4.0% 4.0% 4.0% Assesse Income	(Affordability Champion (A)	3.9%	4.0%	3.1%	4.0% 3.1%	*.0%	4.0%	4.1% 324	4.1% \$2\$	4.1% 32%	326	4.1%	4.2% 34.4%	4.2% 3.2%	42% 3346	42% 32%	32%

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

114,818 114,	ection water Partio duction os II	180	1001	1990	3000	2001	2002	2003	2002	2005 1 cvel A-	2006	2007	2008	2000 	2010	2011
Comparison Com	nection water Ratio oduction les lff					ľ				Level A-				Server 1]	
Characteristics Characteri	nection water Ratio oduction 16s fff ff	Q:				,										
Common	1 hection water Ratio oduction los lff fff	Q :								!						
Headment Headment	nection water Ratio oduction its fff ff ading	Q :					, ,	9.0	9.0	013 717	212 715	114 818	114.818	114.818	114,818	114,818
Characteristics	i hection water Ratio oduction los fiff	O :	•	٠	•		65,430	114,010	010,011	010471	070747	300	700 71	78.87	74.885	76.885
Vive Procession LLD Vive	nection water Ratio oduction los iff	Q :	•	•	•	•	12,270	16,885	10,385	10,035	10,000	10,000	70007	200'07	0000	16.108
Permission Pay Act Permission Pay Permission Pa	water Ratio oduction los HT LT	Q:	•	•	•	•	•	•		• ;	• ;	• ;	3	81.0	Š.	\$ 1
Principal Prin	water Ratio oduction ios iff	1:					ጽ	ደ	ድ	8	8	8	8	3	8 ;	3 4
votated for water Ratio votated for water Rat	water Ratio oduction los lff lff ading		1	•	•	٠	2.503	3,445	3.445	3,445	3,445	3.4.5	9,185	01.6	C 1/2	3 5
State Stat	water realing						50.53	15.0%	15.0%	15.0%	15.0%	15.0%	15.0%	200	200	8
Water Parkers Parkers	oduction los lff ading	3	,	•	•	•	2.128	2,928	2,923	2928	2,928	300				7,808
Marker Production Decision	oduction los lff fff ading	.	•	1	1					_						3352,686
Water Sale P-7) x 365 KLA	id II ading	4	•	•		•						~				2840.733
West-Tasiff R/QL West-Tasiff R/QL West-Tasiff R/QL West-Tasiff Cost R/month/Roushfold West-Tasiff Cost R/month/Roushfold West-Tasiff Cost R/month/Roushfold West-Tasiff Cost R/month/Roushfold West-Tasiff Cost R/month/Roushfold West-Tasiff Cost R/month/Roushfold West-Tasiff R/QCL West-Tasi	iff ading	/a	1	•	,	•						*Androne"				
WingerTariff StyCL WingerTariff StyCL WingerTariff StyCL WingerTariff StyCL WinderTariff br>ading							,	,		;	;	8	3	101	101	
Act Act	guipe						1.13	1.13	1.18	1.18	T.10	91.	CA.C			
State Color Particular State S	ading	3x30 R/month/Ho	usebold				6.02	6.02	6.02	6.02	0.03 20.03	6.03				
Continents Year 100 1 1 1 1 1 1 1 1	Year	verth/Mousehold														
Accordance Acc			-	ç	-	4	2	٥	4	×	٥	01	11	걲	ជ	7
Febres (Cox Portion) **Paral Americanies**	(QVVV 1/	1001		8	2000	2001	2002	2002	200Z	2005	2006	2002	2008	2000	2010	2011
Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample Cost Portion Sample			l											Š	Ş	1,00
Per End functional control and	1) Water Sales (Cost Portion)		•	•	•	•	822	780	1,260	1,200	1.200	28		COX.	000	
######################################	2) Booth Dark (Americal)		•		•		•		٠	•	,	•	6,247	6,247	ते ठ	1
Water Tariff Wa	(7) Negative Times (fall commerce)		,	•	•	•	976	1,262	1,261	1,261	1,261	1,261	11,200	11,200	11,200	11,200
Water Taniff R/XL R/XL 0.73	2) A EVENTAGE 1 OLDS															
Water Purchase	8	k	•		•	٠	0,73	0,73	5.0	6.73	0.73 57.0	c,	127	127	17	
155 342	200	3					667	918	913	816	918	918	4,258	4,258	4.258	Ŋ
### Statement of 1260 1260 1260 1260 1260 1260 1260 1260	į						ž,	ž	35	33	35	3,2	\$65	\$69	\$	\$
## Statemental Liotoff 1	5) Mauricinary of Autum. Com			•	•	•	822	1.260	1,260	1,260	1,260	7,260	4,053	4.053	4.053	4.0%
Statementel 1,000R 1,000R	d) Expenses Loid		Andrews of the second		ANTONOMA CONT.	Series and series	*		Section of the sectio		Section of Land		6247	23	6247	6247
w Statemente (1,000R)			A STATE OF THE STA												ľ	ľ
perating Locate (RDP Pund) Perating Locate (RDP Pund) REProposement St. St. St. St. St. St. St. St. St. St.	ash Flow Statemental 1,000R)	0	ŀ	63	3	•	8	٥	7	**	•	2	#	ដ	3	4.
Paralling Libocatic Paralling Libocatic		1,997	1,998	1,999	2000	7001	7007	2,003	705 705	2,005	306	2007	2,00%	2,000	2,010	2011
(NDP Pund) (NDP Pund)	Inflow								•	•	•	•	7	727	6 247	6267
144 866 7,506 20,786 7,500 124 803 10,507 30,187 10,507 6,253 6,253 6,254 144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,507 6,243 6,	1) Not Operating Income		•	•	• ;	•	\$;	-		-•	∢	4			5	•
144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,507 6,243 6,243 6,2 144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,507 6,243 6,2	2) Grant (RDP Pund)		<u>₹</u>	3	, §	20,786	7	• ;	• 4		1 00 00	200			•	•
144 866 7,506 20,786 7,600 139 809 10,604 30,104 10,604 6,253 6,253 6,253 6,2 144 866 7,500 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,243 6,2 104 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,243 6,2 104 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6	3) Loan		•	1	•	•	•	Į,	§ '	(A)	3	70.7	• •	. r	•	· ex
144 866 7,506 20,786 7,600 139 800 10,004 30,139 10,007 0,000 0,00	st Generated		•	•	•	•	• ;	9	n ;	٠. ز	0 3	0 707	0 kg %	, 36 X	, X. X	6.354
144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,24	5) Inflow Total		4	866	7,500	20,786	2,600	5	Š	10,004	30,7	1000	2	4		ļ
144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,243 6,2 144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,2 140 866 7,506 20,786 7,506 134 803 10,507 10	. Outflow				;		i i	į	8	50501	20100	10.507	-	,	٠	•
144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,24	-1) CAPEX+Replacement		<u> </u>	8	7,50	20.78	8	1	ŝ	ACON.	Š	, KC 24	£ 7.47	6.743	. P. 9	6.243
144 866 7,506 20,786 7,506 134 803 10,507 30,187 10,597 6,243 6,24			•	1		•	•		•	•	•	_	}	· '	, ·	•
144 866 7,506 20,786 134 803 10,597 30,187 0,243			•	•	•		•	•	•	• !	• !				27.43	47.47
The state of the s	-4)Ourflow Total		744	866	7,506	20,786	7,506	134	803	10,597	30,787	76001	1	6.70	27.	2
0.7 10.7 11.5 11.9 12.0 1.40 1.40 1.40 1.40 1.40 1.40		The second secon	0	0	0	•	Z.	•	•	•			Š	1	•	1 9
	n in der eine Gebergebergebeitet der betrieben der besteht der besteht der der der der der der der der der der		0	0	0	0	3	8	ş	77	119	120	e e	4	à	Ş

Loan outstanding														100%			(£)
CAPEX Principal Interest	ងត្ត	20 years 8%							इ इ.	848 2623 2023	11,621 930 12,530	42.737 3.419 46,156	56.754 0.1.284 0.1.284				
Affordability Y.	Year		0 1997	1998	1990 1990	3 2000	2001	5 2002	6 2003	7 2004	\$ 2002	° 9007	2007	2008	2000	30.00 20.00 20.00	2011
Monthly Expenditure Averge Lover Income	68LG 53CG	SSLCD KAHAM ZSLCD KAHAM						6.02 6.02	6.02	6.02 6.02	6.02 6.03	6.02 6.02	8.8	\$4.52 20.04	20.02 20.04	8 8 8 8	\$5.52 \$0.02
Indusion 10%	ion 0% ale 0% Average 331.8	0% %/a Avenge R/month 331.8	392 2.167.201	332 2.7.167	332 336	33 170	332	332	332 13167	332	332	33. "July"	33	332	332	322 1.16 0	332
Water Purchasofinosine (Affordability Check) Lower Income (25LCD) According Income	fordability Check) (25LCD) (6ELCD)		*600	0.0% 0.0%		.000 .000		1.8% 0.5%	1.8%	1.8%	1.8% 0.5%	1.8% 0.5%	1.8%	6.0%	6.0%	6.0%	6.0%

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

Tariff Forecast A. Service Level		3	9		2	Ŷ	3	7.7	1	3	\$	ĵ	3	3	} }	ì	
A. Service Level		2012	2013	2014	2015	2016	2017	2018	2010	2020	2021	333	3023	2024	202	9	202
	 	,							-Service Level	kel B							
															:		
L. IVBoundetion		114.818	114.818	114.818	114.818	114.818	114,318	114,518	114,818	114,818	114,818	114,818	114,818	114,818	114,318	114,818	114,510
traje opulation.		200 70	700 71	300 71	YEN YE	14 88¢	16.285	16.885	16.885	16.885	16.885	16.885	16,385	16,885	16,885	16,835	16,885
PC)NO. Of HOUSENOID		70,007	70007	0000	10000	200120		40. 35	801.91	16.108	801.51	15.108	14 10R	15.108	15.198	15,198	15.193
b-3)No. of Yard Connection		15,198	15,198	15.198	861.CI	15,198	87.CT	25,130	067107	2	2	Ş	Ş	S	8	9	8
b-4)Consumption		8	ŝ	8	8	€.	3	3	8	3	3	3	4	2010	0 185	0.185	0.185
b-S)Water Demand b	P1) x P4)	9,185	9,185	9,185	9,185	9,185	9,185	7,185	3	cor's	× ×	COT'X	31,4	34.4	200	7	20
r water Ratio		15.0%	15.0%	150%	15.0%	15.0%	15.0%	15.0%	15.0%	15,0%	15.0%	15,0%	15.9%	4000	50	2000	2 5
	b-5) x 1-6	7,808	7.808	7,808	7,806	7,808	7,808	7,808	7,808		7,808			7,808	7,308	808	88.
Production	b.5) x 365 3.352.686	352.686		3,352,686		٠.	3,352,686	3,352,686	3,352,686	•		٠.	•			3,352,686	3,332,030
	P-7 x 365 2849,783	849.783					2,849,783	2849,783	2,849,783	2,849,783	2,849,783 2	2,849,783 2	2.849,783	2,849,783	2,849,733	2,849,783	2,840,783
S. D. Retail Water Tanff		3.03	398	3.98	3.98	3.98	8	4.02	402	4.02	4.02	4,02	4.07	4.07	6.4	¢.07	0.4
	\$1)x 25lod																
ading				•													
Income Statements	Year	33	91	17	18	19	ន	77	77	23	25	អ	ន	13	28	8	8
(B)000 L)	1	2012	2013	2014	2015	2016	2017	2018	2010	2020	2021	2022	2023	2024	2025	žž,	202
D. Revenue															1		1
d-1) Water Sales (Cost Portion)		4,953	5.087	5,087	5,087	5,087	5,087	5,221	27.	S. E.	, ii		2,32	5,355	6 6	3	
d-2) Reserve Pund / Amortisation		6,247	\$25	6,255	6,255	6,255	6,255	6 <u>13</u> 5	6,235	6,235	6,235	6.235	6,243	6,243	0.243	0	7
d-3)Revenue Total		11,200	11,342	11,342	11,342	11,342	11,342	11,456	11,456	11,456	11,456	17,456	7.00	77,500	17,590	77,599	77,590
E. Expenses														:	;	,	,
e-1) Bulk Water Tariff		177	13	15.1	1.31	1.31	1.31	1.35	1.35	135	1,35	1.35	33	1.30	£.	î i	
9	e-1)x h-8)	4.258	4.392	4392	4,392	4,392	4,392	4,526	4,526	4.526	4,526	4.526	4,660	4,600	4,000 000	000	000,4
5	()	8	569	969	\$65	695	\$60	695	\$69	\$6	695	\$	888	\$	8	\$69	\$
(A) (C) (C) (C) (C) (C) (C) (C) (C) (C) (C		E >0 F	5 087	. 087	5 047	5.00	5.087	5 22 1	5.227	5,221	5,221	5,227	5,355	5,355	5,355	5,355	5,355
N. Operating Legislation (624)		25.7	5775	1 1	357.9	\$25	C255	6235	\$6.23	\$235	6238	्रक्क	6245	.624	3		620
Cond + / The Cond + Cond to		Ý	ž	į	×.	ç	£	21	72	ន	র	ม	82	7.7	ន	ક્ષ	×
AMELINGING A, UNIVERSITY OF A, UNIVERSITY OF A	_	2012	2013	2,014	2,015	2016	2,017	2,018	2010	7,020	2,021	2,022	2.023	2,024	2,025	2,026	202
F. Inflow										: :	,	,	•				6767
f-1) Not Operating Income		6247	6,235	6,255	6,255	6,255	6,255	6,235	6,235	623	\$23	3,50	0	0.243	0	, 10,00	
f-2) Grant (RDP Fund)		•	,	•	•	•	•	•	•	•	•	•	•	•	•	•	•
(-3) Loan			•	•	•	•	•	•	•	•	•	Ť	• !	• ;	• ;	' ;	. 8
(4) Interest Generated	838	90	٥	앜	11	77	74	3 5	IJ	91	25	92	17	18	61	2	R
(-5) Inflow Total		6.255	6,264	6,265	6,266	6,267	6,269	6,230	6,250	6,250	6,251	6,257	6,260	6,26.	6,762	6263	6,76,
G. Outflow		į															
g-1) CAPEX+Replacement		•	•	•	• ;	• !	•	• •	• (• ;	,	' ;		1 676 4	. x 443	• YY	, AC A
g-2) Loan Repsyment (CAPEX)		6,243	6,243	6.243	6243	6243	6,243	0.243	0,743	9	0,043	9	5		\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	•	1
g-3) Short Term Loan Interest	£	• :	• !	• !	• ;	• •	, ;	. ;		• • • • • • • • • • • • • • • • • • • •			6769	2747	6.743	6743	6.243
g-4)Ouffor Total		6,243	43 6,243	6.243	6,243	0.243	0,645 	0.243	0,000		Orest Contractions	Carlo Carlo	S 60	100	10	WC.	71

(4/4)	% 2022	56.46 20.76	33	6.3% 4.8%
	3036	36.55 36.55		6.3% 6.8%
	28 2025	\$6.46 20.76	332	6.3%
	27 2024	56.46 20.76	332	6.1% 2883
	20 2023	56.46 20.76	332 2007	6.3%
	2022	55.77 20.50	312 3167	6.2%
	2021	55.77 20.50	332	6.2% 4.8%
	2020 2020	55.77 20.50	332 32667	6.2%
	2012	55.77 20.50	332 (1)167	6.2%
	2018	20.50	332 (1167)	6.2%
	20 2017	55.21 20.30	332	6.1%
	19 2016	20.30	332	6.1%
	18	55.21 20.30	302	6.1%
	17	55.21	332 34167	6.1%
	30,74	55.21	32.	6.1%
	15	28.52	332 (1307.	6.0%
ន	88	66	0% 231.8	

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9.2%

2. Capital Cost (Loan) Factor FIRR 1.0 9.2% 4. Water Demand Factor FIRR 0.8 5.7% 0.9 7.5% 1.0 9.2% Sensitivity Analysis FIRR N.A. 0.4% 3.7% 6.6% 9.2% L. Tariff Collection 3. O&M Cost Factor FII Factor 60% 70% 80% 90% 100% 1200 0111 \$ \$ \$ £ 883 813 8 (Unit: 000R)
Real Interest Rate and NPV 8 %8≔! ΣŠ .510 352 352 688 3.5% VPV 3,092 3,092 2,987 2,885 2,787 2.762 2.667 2.575 2.485 10.808 >dv. 1=3% -338 -10,343 -18,520 2,137 4,389 4,408 4,418 4,440 Net Benefit 4,429 4,408 4,387 4,364 4,432 4,432 (9)=(8)-(4) 7,295 7,295 7,409 7,409 7,409 7,409 7,694 Benefit 2.56 2.68 2.65 0.00 (RACL) Bencfit C 2,849,783 2,849,783 2,849,783 2,849,783 2,849,783 2,849,783 2,849,783 1,068,669 1,068,669 2,849,783 2,849,783 00 776.581 2,849,783 2,849,783 1,068,669 2,849,783 2,849,783 2,849,783 Demand (KL) 1,068,669 999,890,1 Anual Water 9 6.859 2.866 2.887 2.977 3.002 3,026 2,909 Total Cost (5)= (1)+(2) 15,769 695 695 695 89 89 89 Admin, Cost Retail € 2,383 2,411 2,439 2,468 2,497 2,528 2,560 2,592 2,626 2,171 2,192 2,214 2,236 2,259 2,282 2,306 2,331 2,357 561 778 792 799 807 2,696 Loan for Retail Bulk O&M 0 4,106 4,106 19,582 CAPEX 0 Loan for Bulk CAPEX 472 6,364 7,269 1,998 10,962 2 Ξ 13 2010 14 2011 15 2012 16 2013 17 2014 18 2015 19 2016 20 2017 22 2019 23 2020 6 2003 7 2004 8 2005 9 2006 10 2007 11 2008 12 2009 26 2023 27 2024 28 2025 2018 2022 3 2000 4 2001 5 2002 0 1997 1 1998 2 1999 Joia! Year

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

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

(Unit: 000R)

9.0%

FUR=

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	Unemployme nt	Unemploy	ment Rate			
	T		Total	Black	Colourd	Indians	White
North West	973,000	325,000	33.4%	37.4%	17.6%	12.6%	7.9%
Mpmalanga	1,147,000	376,000	32.8%	35.8%	27.8%	4.4%	6.0%
					İ	1	1

[&]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 Cases 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 led or 496 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: Klipvoor

Direct Cost Breakdown

(Unit:,000Rand)

Direct Cost Breakdown	n									(Unit: ,0001	Kanoj
	Total		1.	abour		Materi	ls	Plant		Fue1	
Item		amount	%	(Skilled)	(Unskilled)	amount	%	amount	%	amount	%
35¢ A	76,465	19,593				15,893		34,944		6,035	
Bulk	54,604	13,856				12,614		23,192		4,942	
- Intake and Pump Station	303	76	25%	61	15	45	15%	167	55%	15	- 59
- Raw Water Pipeline	50	13	25%	10	3	13	25%	20	40%	5	109
- WTW and Pump Station	4,950	1,238	25%	990	248	743	15%	2,723	55%	248	59
- Bulk Supply Pipelines	44,186	11,047	25%	4,419	6,628	11,047	25%	17,674	40%	4,419	109
- Regional Reservoirs	4,100	1,230	30%	984	245	615	15%	2,050	50%	205	59
- Pump Stations	1,015	254	25%	203	51	152	15%	558	55%	51	59
Retail	21,861	5,737				3,279		11,752		1,093	!
- Service Reservoir	5,435	1,631	30%	1,304	326	815	15%	2,718	50%	272	5
- Reticulation Pipelines	15,882	3,971	25%	794	3,176	2,382	15%	8,735	55%	794	5
- Standpipes	544	136	25%	27	109	82	15%	299	55%	27	5
Yard Connection				Ι		<u> </u>	<u> </u>	<u> </u>	1		<u> </u>
Case B	122,308	31,607				23,770	L	59,605		8,327	
Belk	63,912	16,363				15,010		28,131	Ì	5,407	
- Intake and Pump Station	454	114	25%	91	23	68	15%		55%	L I	5
- Raw Water Pipeline	50	13	25%	10	3	13	25%		40%		10
- WTW and Pump Station	10,000	2,500	25%	2,000	500	2,500			55%		5
- Bulk Supply Pipelines	44,186	11,047	25%	4,419	6,628	11,047	25%		40%	, ,	10
- Regional Reservoirs	7,700	2,310	30%	1,848	462	1,155			50%		5
- Pump Stations	1,522	381	25%	304	76		4		55%		5
Retail	42,438	11,254		1	İ .	6,366	1	22,696	l	2,122	١.
- Service Reservoir	12,890	3,867	30%		773	1 -7	15%	1 -	50%		5
- Reticulation Pipelines	29,004	7,251	25%			4,351	15%		55%		5
- Standpipes	544	136	25%						55%		5
Yard Connection	15,958	3,990	25%	798	3,192	2,394	15%	8,777	55%	798	5

Converted Direct Cost

	Total		L	bour		Materia	ls	Plant		Fuel	
Item		amount	96	(Skilled)	(Urskilled)	amount	%	amount	%	amount	%
Conversion Factor				100%	30%	100%		100%		70%	
Case A	67,094	12,032	77:3			15,893		34,944		4,225	
Bulk	48,089	8,823				12,614		23,192		3,459	
- Intake and Pump Station	288	65	25%	61	5	45	15%	167	55%	11	5
- Raw Water Pipeline	47	- 11	25%	10	1	13	25%	20	40%	4	109
- WTW and Pump Station	4,703	1,064	25%	990	74	743	15%	2,723	55%	173	59
- Bulk Supply Pipelines	38,221	6,407	25%	4,419	1,988	13,047	25%	17,674	40%	3,093	104
- Regional Reservoirs	3,866	1,058	30%	984	74	615	15%	2,050	50%	144	59
- Pump Stations	964	218	25%	203	15	152	15%	558	55%	36	59
Retail	19,005	3,209				3,279		11,752		765	
- Service Reservoir	5,125	1,402	30%	1,304	98	815	15%	2,718	50%		5
- Reticulation Pipelines	13,420	1,747	25%	794	953	2,382	15%	8,735	55%	1	5
- Standpipes	460	60	25%	27	33	82	15%	299	55%	19	5
Yard Connection	-	<u> </u>	<u> </u>				<u> </u>	<u> </u>	<u> </u>		<u> </u>
Case B	108,514	19,310					<u> </u>		1		<u> </u>
Bulk	57,906	10,979		8,672	1	15,010	1	28,131		3,785	1
- Intake and Pump Station	431	98	25%	91	7	68	15%		55%		5
- Raw Water Pipeline	47	.11	25%	10	1	13	25%		40%	1	10
- WTW and Pump Station	10,500	2,150	25%	2,000	150	2,500	15%	1	55%		5
- Bulk Supply Pipelines	38,221	6,407	25%	4,419	1,988	11,047	25%		40%		10
- Regional Reservoirs	7,261	1,987	30%	1,848	139	1,155	15%	3,850	50%	270	5
- Pump Stations	1,446	327	25%	304	: 23	228	15%	837	55%	53	5
Retail	37,123	6,576		4,571		6,366		22,696		1,485	
- Service Reservoir	12,155	3,326	30%	3,094	232	1,934	15%	6,445	50%	451	5
- Reticulation Pipelines	24,508	3,190	25%	1,450	1,740	4,351	15%	15,952	55%	1,015	1 :
- Standpipes	460	60	25%	27							
Yard Connection	13,485	1,755	259	798	957	2,394	15%	8,777	559	559	1 :

Table C.4-2: Calculated Project Cost at 1997 Constant Price: Klipvoor (1/2)

(Unit: 000Rand) 2002 2000 2001 1998 1999 Total. Item 2,796 28,455 48,973 18,729 386 99,338 Case A Total 15,601 23,877 8,610 Bulk 48,089 (1)Direct Calculated Cost 3.582 1,292 2,340 (1)x 15% 7,213 (2)P&G 17,941 27,459 9,902 55,302 (1)+(2)(3)Base Cost 1,383 1,383 1,383 (3)x 10% 5,530 1,383 (4)Engineering Fee (1)x 2% 962 481 481 (5)Miscellaneous 277 277 (3)x 2.5% 277 277 1,383 277 (6)Institutional Developme 29,118 11,561 63,176 277 2.140 20,081 (3)+(4)+(5)+(6) (7)Sub-Total 4,119 1,485 8,295 2,691 (3)x 15% (8)Physical Contingency 277 2,140 22,773 33,236 13,046 71,472 Grand Total (1)Direct Calculated Cost 19,005 3,801 11,403 3,801 Retail 570 1.710 570 2,851 (2)P&G (1)x 15% 4,371 4,371 13,114 21,856 (1)+(2)(3)Base Cost 546 546 546 546 2,186 (3)x 10% (4) Engineering Fee (5)Miscellaneous 109 109 109 109 109 (3)x 2.5% 546 (6)Institutional Support 13,769 5,027 656 5,027 24,588 109 (3)+(4)+(5)+(6) (7)Sub-Total 656 1,967 656 (8) Physical Contingency (3)x 15% 3,278 5,683 5,683 15,736 27,866 109 656 **Grand Total** 3,858 42,568 78,801 28,207 546 Case B Total 153,979 9,386 19,806 28,714 Bulk (i)Direct Calculated Cost 57,906 2,971 4,307 1,408 (2)P&G (1)x 15% 8,686 33,021 10,793 22,777 (1)+(2) 66,592 (3)Base Cost 1,665 1,665 1,665 (3)x 10% 6,659 1,665 (4)Engineering Fee 579 579 1,158 (1)x 2% (5)Miscellancous 333 333 333 333 333 (6)Institutional Developme (3)x 2.5% 1,665 12,791 35,019 76,074 333 2,577 25,354 (3)+(4)+(5)+(6) (7)Sub-Total 4,953 1,619 3,417 (3)x 15% 9,989 (8) Physical Contingency 14,410 2,577 39,972 86,063 333 28,771 Grand Total 7,425 22,274 7,425 Retail (1)Direct Calculated Cost 37,123 1,114 3,341 1,114 5,568 (1)x 15% (2)P&G 25,615 8,538 8,538 42,692 (3)Base Cost (1)+(2)1,067 1,067 1,067 1,067 (3)x 10% 4,269 (4)Engineering Fee (5)Miscellaneous 213 213 213 1,067 213 213 (3)x 2.5% (6)Institutional Support 26,896 9,819 9,819 (7)Sub-Total 48,028 213 1,281 (3)+(4)+(5)+(6) 3,842 1,281 1,281 6,404 (8) Physical Contingency (3)x 15%30,738 11,100 54,432 213 1,281 11,100 **Grand Total** 2,697 2,697 8,091 (1)Direct Calculated Cost 13,485 8,091 2,697 2,697 Connection Grand Total 13,485 Level B-A 6,736 1,354 14,591 56 437 5,998 Bulk 15,002 5,417 104 625 5,417 26,566 2,697 8,091 2,697 13,485 Yard Consection 9,478 161 1,062 14,112 29,828 54,641

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

			···	٦ ا	2	8	او	,000Rand) 10
	Item		Total	2003	2004	2005	2006	2007
ase C(Higher S	<u> </u>		54,641	161	1,062	14,112	29,828	9,478
Bulk	(1)Direct Calculated Cost		9,817			4,205	4,837	775
Duik	(2)P&G	(1)x 15%			-	631	726	116
	1.7	(I)+(2)	11,290			4,836	5,563	892
	(4)Engineering Fee	(3)x 10%		-	282	282	282	282
	(5)Miscellaneous		196		98	98		
	(6)Institutional Developme	(3)x 2.5%	282	56	56	56	56	50
	(7)Sub-Total	(3)+(4)+(5)+(6)		56	437	5,273	5,901	1,23
	(8)Physical Contingency	(3)x 15%		-	-	725	834	13
<u> </u>	Grand Total		14,591	56	437	5,998	6,736	1,36
Retail	(1)Direct Calculated Cost		18,118	- 1	-	3,624	10,871	3,62
İ	(2)P&G	(l)x 15%	2,718	-	•	544	1,631	54
	(3)Base Cost	(1)+(2)	20,836	-	•	4,167	12,502	4,16
	(4) Engineering Fee	(3)x 10%	2,084	-	521	521	521	52
	(5)Miscellaneous		-	-]	-	-	-	
	(6)Institutional Support	(3)x 2.5%	521	104	104	104	104	10
	(7)Sub-Total	(3)+(4)+(5)+(6		104	625	4,792	13,127	4,79
	(8)Physical Contingency	(3)x 15%		•	-	625	1,875	62
ļ	Grand Total	<u> </u>	26,566	104	625	5,417	15,002	5,41
Yard	(1)Direct Calculated Cost		13,485	•	-	2,697	8,091	2,69
Connect	ion Grand Total	<u>L</u>	13,485	•		2,697	8,091	2,69

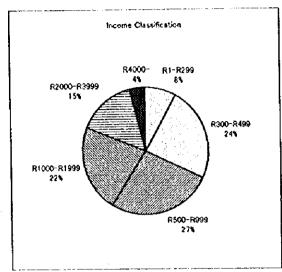
Table C.4-3: EIRR Analysis (Case C-1): Klipvoor

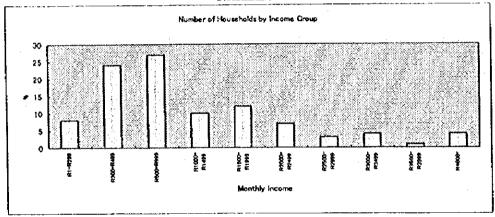
(26,041)	(26,041) (43,512) (16,773) (1,073) (1,036) (23,736) (7,908) 12,158 11,790
	19.65
108	108 108 108 108 108 108 108 108 108
0 0	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
28,455	28.455 48.973 19.445 1.281 2.189 30.970 30.970 2.866 2.866
0	1 2 8 8 8 8 8 8
	2, 17, 2, 17, 2, 1, 2, 1, 2, 1, 2, 1, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2, 2,
48 073	48,973 18,729 1,062 14,112 29,828 9,478
	5 2002 7 2004 8 2005 9 2006 11 2008

Figure C.5-1: Income Classification: Klipvoor

1. Monthly Household Income

•		(R/month)
Income	%	Average
R1-R299	8%	134
R300-R499	24%	390
Lower	32%	326
R500-R999	27%	648
R1000-R1999	22%	1,399
Middle	49%	980
R2000-R3995	15%	2,523
R4000-	4%	4,800
Higher	19%	3,002
Total	100%	1,167





2. Household Income by Occupation

Income	Total	Employee Dom.	Worl	Worker	Self Empl.	Driver	Teacher	Pensioner	Others
R1-R299	7	0	0	2	2	0	0	1	2
R300-R499	19	7	1		0	0	0	11	0
Lower	. 26	7	1	2	2	0	0	12	2
R500-R999	32	17	6	1	1	1	0	2	. 4
R1000-R1999	23	18	1	(1	1	. 1	0	1
Middle	55	35	7	1	2	2	1	2	5
R2000-R3999	. 15	14	0	1	0	0	. 0	0	0
R4000-	4	4	0	(0	0	. 0	. 0	0
Higher	19	18	0	. 1	0	0	0	0	0
Total	100	60	8	4	4 4	2	1	14	7

Source: Questioner Survey by JICA Study Team (1997)



