

TABLES

Table J-1.1 Affordability & Capacity to Pay

	1988	1991	1993	1994	1997	2000	2003	2006	2009	2012	2015	Willingness to pay Capacity to pay	
Water tariff (SL)													
domestic	20	0.50	1.25	2.00	3.00	4.50	6.75	10.13	13.16	14.48	15.93	4.2	7.15
domestic	30	0.65	2.00	3.00	4.50	6.75	10.13	15.19	19.74	21.72	23.89	6.3	16.75
domestic	60	1.25	3.00	5.00	7.50	11.25	16.88	25.31	37.97	49.36	64.17	15.8	17.25
domestic	>60		6.00	9.00	13.50	20.25	30.38	45.56	59.23	65.15	71.67	19.0	20.7
Middle income household													
Average family income (SL/month)				20,500	20,500	23,375	24,328	25,106	25,908	26,736	27,590	20,500	20,500
Water consumption per person (lpcd)				170	170	200	200	200	210	210	215	170	170
Water consumption per family (m/month)				30.60	30.60	36.00	36.00	36.00	37.80	37.80	38.70	31	31
Water charge (m/month)				91.80	137.70	243.00	364.50	546.75	746.31	820.95	924.54	194	513
% of income				0.45%	0.67%	1.03%	1.50%	2.18%	2.88%	3.07%	3.35%	0.94%	2.50%
Low income household													
Average family income (SL/month)				5,665	5,665	6,515	6,723	6,938	7,159	7,388	7,624	5,665	5,665
Water consumption per person (lpcd)				110	110	170	170	170	180	180	190	110	110
Water consumption per family (m/month)				19.80	19.80	30.60	30.60	30.60	32.40	32.40	34.20	20	20
Water charge (m/month)				39.60	59.40	206.55	309.83	464.74	639.70	703.67	817.04	84	142
% of income				0.70%	1.05%	3.17%	4.61%	6.70%	8.94%	9.52%	10.72%	1.47%	2.50%

	(A)	(B)	(C)	(D)
	Willingness to pay (SL/month)	Avg water charge (SL/month)	Avg. increment (B/C)	Weighted average increment (CxD)
Middle income household	150	91.80	1.63	0.75
Low income household	140	39.60	3.54	0.9
Weighted average tariff increment based on willingness to pay				Total 2.1

Average tariff based on willingness to pay

Domestic consumption class	Existing tariff (SL/m ³)	Tariff @		
		Willingness to pay (A)	% of total consumption (B)	Weighted tariff (AxB)
20	2.0	2.1	4.2	2.53
30	3.0	2.1	6.3	1.08
60	7.5	2.1	15.8	2.69
>60	9.0	2.1	19.0	1.14
Average domestic tariff SL/m ³				7.44
Average domestic tariff \$US/m ³				0.18

Table J-1.2 Marginal Cost Calculation

marginal cost = incremental production costs (A) + incremental capital investment costs for increased capacity (B)

(A) Incremental production costs

DAWSSA five year plan 1996-2000

	Annual production ⁽¹⁾ (MCM)	(a) increment	Production cost ⁽²⁾ (000 SL)	(b) increment	(a/b) Marginal cost (SL/m ³)
1994	209		73,500		
1995	222	13	95,879	22,379	1.72
1996	222	0	119,600	23,721	
1997	230	8	131,562	11,962	1.50
1998	240	10	144,720	13,158	1.32
1999	250	10	159,375	14,655	1.47
2000	250	0	175,316	15,941	

JICA Study team estimates

	Annual production ⁽³⁾ (MCM)	(a) increment	Production cost ⁽⁴⁾ (000 SL)	(b) increment	(a/b) Marginal cost (SL/m ³)
1994	209		73,500		
1995	218	9	95,879	22,379	2.49
1996	241	23	132,218	36,339	1.58
1997	254	13	153,707	21,489	1.65
1998	259	5	161,394	7,686	1.54
1999	266	7	172,834	11,440	1.63
2000	274	8	195,839	23,005	2.88

incremental production cost

- (1) production identified by DAWSSA for 1996-2000 planing period
- (2) production costs identified by DAWSSA for 1996-2000 planning period
- (3) JICA study team estimates of actual production required to meet consumption
- (4) DAWSSA estimates adjusted to reflect increased production

(B) Incremental capital costs

the next increment in production over 218 MCM requires use of the recently developed Barada Spring Wellfield.

total ivesment costs to develop the well field 173 million SP
total production capacity provided is 23 MCM

the incremental cost is 7.5 SP/m³
0.18 \$US/ m³

Total marginal cost = (A) + (B) = 0.22 \$US/ m³

Table J-1.3 Estimated Economic Benefits

Year	Leakage Reductions (A1.1+A2.)		New Sources (A3.2+B2.)		Metering (A1.2+B1.)		Total benefit (US\$ 000's)
	Incremental water (000's m ³)	Unit value (US\$)	Gross benefits (US\$ 000's)	Incremental water (000's m ³)	Unit value (US\$)	Gross benefits (US\$ 000's)	
1997	4,500	0.22	990	2,710	0.18	488	2,520
1998	9,510	0.22	2,092	4,298	0.18	774	5,294
1999	10,020	0.22	2,204	11,918	0.18	2,145	8,675
2000	12,460	0.22	2,741	20,424	0.18	3,676	12,667
2001	14,890	0.22	3,276	24,869	0.18	4,476	15,316
2002	17,310	0.22	3,808	50,579	0.18	9,104	21,794
2003	19,550	0.22	4,297	51,373	0.18	9,247	23,393
2004	21,510	0.22	4,732	51,373	0.18	9,247	24,128
2005	21,430	0.22	4,715	51,373	0.18	9,247	24,416
2006	25,950	0.22	5,709	51,373	0.18	9,247	25,945
2007	25,950	0.22	5,709	51,373	0.18	9,247	25,945
2008	25,950	0.22	5,709	51,373	0.18	9,247	25,945
2009	25,950	0.22	5,709	51,373	0.18	9,247	25,945
2010	26,500	0.22	5,830	51,373	0.18	9,247	26,066
2011	26,500	0.22	5,830	51,373	0.18	9,247	26,066
2012	26,500	0.22	5,830	51,373	0.18	9,247	26,066
2013	26,500	0.22	5,830	51,373	0.18	9,247	26,066
2014	26,500	0.22	5,830	51,373	0.18	9,247	26,066
2015	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2016	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2017	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2018	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2019	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2020	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2021	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2022	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2023	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2024	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2025	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2026	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2027	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2028	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2029	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2030	26,840	0.22	5,905	51,373	0.18	9,247	26,141
2031	26,840	0.22	5,905	51,373	0.18	9,247	26,141
Total	823,740		-	1,604,613		-	816,710
							4,354,223

Table J-1.5 EIRR Meter Replacement

Project identification: A-1.2 & A-1.3

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project	Increase			Capital	O & M	Total costs	
1997	220,000,000	220,000,000		0.17		8,855,300	1,771,060	1,771,060	(1,771,060)
1998	225,578,000	220,000,000	5,578,000	0.17	948,260	1,771,060	37,000	1,808,060	(859,800)
1999	231,156,000	220,000,000	11,156,000	0.17	1,896,520	1,771,060	37,000	1,808,060	88,460
2000	236,734,000	220,000,000	16,734,000	0.17	2,844,780	1,771,060	37,000	1,808,060	1,036,720
2001	242,312,000	220,000,000	22,312,000	0.17	3,793,040	1,771,060	37,000	1,808,060	1,984,980
2002	247,890,000	220,000,000	27,890,000	0.17	4,741,300		37,000	37,000	4,704,300
2003	247,890,000	220,000,000	27,890,000	0.17	4,741,300		37,000	37,000	4,704,300
2004	247,890,000	220,000,000	27,890,000	0.17	4,741,300		37,000	37,000	4,704,300
2005	247,890,000	220,000,000	27,890,000	0.17	4,741,300		37,000	37,000	4,704,300
2006	247,890,000	220,000,000	27,890,000	0.17	4,741,300		37,000	37,000	4,704,300
2007	247,890,000	220,000,000	27,890,000	0.17	4,741,300	1,771,060	37,000	1,808,060	2,933,240
2008	247,890,000	220,000,000	27,890,000	0.17	4,741,300	1,771,060	37,000	1,808,060	2,933,240
2009	247,890,000	220,000,000	27,890,000	0.17	4,741,300	1,771,060	37,000	1,808,060	2,933,240
2010	247,890,000	220,000,000	27,890,000	0.17	4,741,300	1,771,060	37,000	1,808,060	2,933,240
2011	247,890,000	220,000,000	27,890,000	0.17	4,741,300	1,771,060	37,000	1,808,060	2,933,240
Total			334,680,000		56,895,600	17,710,600	518,000	18,228,600	38,667,000

AIC (\$US) = 0.05

EIRR = 51.6%

Sensitivity Analysis

Internal rate of return	%
1. Base case	51.6%
2. Costs +10%	46.4%
3. Benefits -10%	51.6%
4. Benefits lagged 1 year	35.8%
5. 2 and 3	46.4%
6. 2 and 4	32.6%
7. 2, 3 and 4	32.6%

Table J-1.6 EIRR, Leakage Reduction Program

Project identification: A-2, leakage control, DMA, pressure control, master metering

Year	Water Sales (m ³)				Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)	Sensitivity Analysis Internal rate of return %	
	With project	Without project	Increase	Capital			O & M	Total costs	Internal rate of return %			
									1. Base case			2. Costs +10%
1997	222,000,000	222,000,000	0	5,118,000	0.22	720,548	10,000	35,000	(35,000)			
1998	225,310,000	222,000,000	3,310,000	25,000	0.22	940,005	10,000	2,180,000	(1,459,452)	42.6%		
1999	226,410,000	222,000,000	4,410,000	2,170,000	0.22	1,201,639	10,000	2,180,000	(1,219,995)			
2000	227,520,000	222,000,000	5,520,000	753,000	0.22	1,488,987	103,000	856,000	345,639	38.4%		
2001	228,840,000	222,000,000	6,840,000	1,320,000	0.22	1,776,336	132,000	132,000	1,356,987			
2002	230,160,000	222,000,000	8,160,000	1,660,000	0.22	2,063,684	136,500	136,500	1,639,836	37.9%		
2003	231,480,000	222,000,000	9,480,000	2,063,684	0.22	2,351,033	136,500	136,500	1,927,184			
2004	232,800,000	222,000,000	10,800,000	2,351,033	0.22	2,638,381	136,500	136,500	2,214,533	31.7%		
2005	234,120,000	222,000,000	12,120,000	2,638,381	0.22	2,925,730	136,500	136,500	2,501,881			
2006	235,440,000	222,000,000	13,440,000	2,925,730	0.22	3,213,078	136,500	136,500	2,789,230	34.3%		
2007	236,760,000	222,000,000	14,760,000	3,213,078	0.22	3,500,427	136,500	136,500	3,076,578			
2008	238,080,000	222,000,000	16,080,000	3,500,427	0.22	3,787,775	136,500	136,500	3,363,927	29.3%		
2009	239,400,000	222,000,000	17,400,000	3,787,775	0.22	4,075,124	136,500	136,500	3,651,275			
2010	240,720,000	222,000,000	18,720,000	4,075,124	0.22	4,362,472	136,500	136,500	3,938,624	29.1%		
2011	242,040,000	222,000,000	20,040,000	4,362,472	0.22	4,649,821	136,500	136,500	4,225,972			
2012	243,360,000	222,000,000	21,360,000	4,649,821	0.22	4,937,169	136,500	136,500	4,513,321			
2013	244,680,000	222,000,000	22,680,000	4,937,169	0.22	5,224,518	136,500	136,500	4,800,669			
2014	246,000,000	222,000,000	24,000,000	5,224,518	0.22	5,511,866	136,500	136,500	5,088,018			
2015	247,320,000	222,000,000	25,320,000	5,511,866	0.22	5,800,215	136,500	136,500	5,375,366			
2016	248,640,000	222,000,000	26,640,000	5,800,215	0.22	6,088,564	136,500	136,500	5,662,715			
2017	249,960,000	222,000,000	27,960,000	6,088,564	0.22	6,376,912	136,500	136,500	5,950,064			
2018	251,280,000	222,000,000	29,280,000	6,376,912	0.22	6,665,261	136,500	136,500	6,237,412			
2019	252,600,000	222,000,000	30,600,000	6,665,261	0.22	6,953,609	136,500	136,500	6,524,761			
2020	253,920,000	222,000,000	31,920,000	6,953,609	0.22	7,241,958	136,500	136,500	6,812,109			
2021	255,240,000	222,000,000	33,240,000	7,241,958	0.22	7,530,306	136,500	136,500	7,100,458			
2022	256,560,000	222,000,000	34,560,000	7,530,306	0.22	7,818,655	136,500	136,500	7,388,806			
2023	257,880,000	222,000,000	35,880,000	7,818,655	0.22	8,107,003	136,500	136,500	7,677,155			
2024	259,200,000	222,000,000	37,200,000	8,107,003	0.22	8,395,352	136,500	136,500	7,965,503			
2025	260,520,000	222,000,000	38,520,000	8,395,352	0.22	8,683,700	136,500	136,500	8,253,852			
2026	261,840,000	222,000,000	39,840,000	8,683,700	0.22	8,972,049	136,500	136,500	8,542,200			
2027	263,160,000	222,000,000	41,160,000	8,972,049	0.22	9,260,397	136,500	136,500	8,830,549			
2028	264,480,000	222,000,000	42,480,000	9,260,397	0.22	9,548,746	136,500	136,500	9,118,897			
2029	265,800,000	222,000,000	43,800,000	9,548,746	0.22	9,837,094	136,500	136,500	9,407,246			
2030	267,120,000	222,000,000	45,120,000	9,837,094	0.22	10,125,443	136,500	136,500	9,695,594			
Total			476,490,000	5,118,000		103,726,256	4,223,500	7,126,500	94,386,756	EIRR = 42.6%		

A/C (\$US) = 0.01

Table J-1.7 EIRR, Reinforcement of Water Quality Laboratory

Project identification: A-3.1

Year	Contract services	In house testing lab			Net benefits (SUS)
	Costs	Capital	O & M	Total costs	
1997	-	750,000		750,000	(750,000)
1998	483,000		50,000	50,000	433,000
1999	483,000		50,000	50,000	433,000
2000	483,000		50,000	50,000	433,000
2001	483,000		50,000	50,000	433,000
2002	483,000		50,000	50,000	433,000
2003	483,000		50,000	50,000	433,000
2004	483,000		50,000	50,000	433,000
2005	483,000		50,000	50,000	433,000
2006	483,000		50,000	50,000	433,000
2007	483,000		50,000	50,000	433,000
2008	483,000		50,000	50,000	433,000
Total	5,313,000	750,000	550,000	1,300,000	4,013,000

EIRR = 57.3%

Table J-1.8 EIRR, Reinforcement of Ibn Anasakr Wells

Project identification: A-3.2

2,500,000 (m³)

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	1,336,000	-	668,000	(668,000)
2000	220,000,000	220,000,000	-	0.17	-	668,000	-	668,000	(668,000)
2001	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2002	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2003	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2004	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2005	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2006	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2007	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2008	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2009	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2010	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2011	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2012	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2013	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2014	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2015	222,500,000	220,000,000	2,500,000	0.17	425,000	66,800	90,000	156,800	268,200
2016	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2017	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2018	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2019	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2020	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2021	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2022	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2023	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2024	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
2025	222,500,000	220,000,000	2,500,000	0.17	425,000	-	90,000	90,000	335,000
Total			62,500,000		30,625,000	1,402,800	2,250,000	3,652,800	6,972,200

AIC (SUS) = 0.06

EIRR = 22.4%

Sensitivity Analysis

Internal rate of return	%
1. Base case	22.4%
2. Costs +10%	21.8%
3. Benefits -10%	19.6%
4. Benefits lagged 1 year	18.8%
5. 2 and 3	19.1%
6. 2 and 4	18.4%
7. 2, 3 and 4	16.2%

Table J-1.9 EIRR, Reinforcement of Kadam Railway Wells

Project identification: A-3.2

2,280,000 (m³)

Area:

Damascus City

Year	Water Sales (m ³)		Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project			Increase	Capital	O & M	
1999	220,000,000	220,000,000	0.17	-	1,290,000	-	645,000	(645,000)
2000	220,000,000	220,000,000	0.17	-	645,000	-	645,000	(645,000)
2001	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2002	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2003	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2004	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2005	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2006	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2007	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2008	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2009	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2010	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2011	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2012	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2013	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2014	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2015	222,280,000	220,000,000	0.17	2,280,000	64,500	65,000	129,500	258,100
2016	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2017	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2018	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2019	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2020	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2021	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2022	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2023	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2024	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
2025	222,280,000	220,000,000	0.17	2,280,000	-	65,000	65,000	322,600
Total				9,690,000	1,354,500	1,625,000	2,979,500	6,710,500

AIC (\$US) = 0.05

EIRR = 22.3%

Sensitivity Analysis

Internal rate of return	%
1. Base case	22.3%
2. Costs +10%	21.9%
3. Benefits -10%	19.7%
4. Benefits lagged 1 year	18.8%
5. 2 and 3	19.3%
6. 2 and 4	18.5%
7. 2, 3 and 4	16.5%

Table J-1.10 EIRR, Reinforcement of Fringe Wells

Project identification: A-3.2

1,760,000 (m³)

Area:

Damascus City

Year	Water Sales (m ³)		Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project			Increase	Capital	O & M	
1999	220,000,000	220,000,000	-	0.17	1,120,000	-	560,000	(560,000)
2000	220,000,000	220,000,000	-	0.17	560,000	-	560,000	(560,000)
2001	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2002	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2003	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2004	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2005	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2006	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2007	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2008	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2009	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2010	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2011	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2012	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2013	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2014	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2015	221,760,000	220,000,000	1,760,000	0.17	56,000	50,000	106,000	193,200
2016	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2017	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2018	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2019	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2020	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2021	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2022	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2023	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2024	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
2025	221,760,000	220,000,000	1,760,000	0.17		50,000	50,000	249,200
Total			44,000,000		7,480,000	1,176,000	2,426,000	5,054,000

AIC (SUS) = 0.06

EIRR = 20.0%

Sensitivity Analysis

Internal rate of return	%
1. Base case	20.0%
2. Costs +10%	19.6%
3. Benefits -10%	17.6%
4. Benefits lagged 1 year	17.0%
5. 2 and 3	17.2%
6. 2 and 4	16.7%
7. 2, 3 and 4	14.8%

Table J-1.11 EIRR, Kassoun Mountain Foot, Informal Area Distribution

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	-	-	-	(788,750)
2000	220,000,000	220,000,000	-	0.17	-	-	-	-	(788,750)
2001	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2002	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2003	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2004	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2005	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2006	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2007	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2008	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2009	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2010	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2011	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2012	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2013	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2014	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2015	222,480,175	220,000,000	2,480,175	0.17	421,630	315,500	4,000	319,500	102,130
2016	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2017	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2018	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2019	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2020	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2021	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2022	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2023	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2024	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
2025	222,480,175	220,000,000	2,480,175	0.17	421,630	4,000	4,000	4,000	417,630
Total			62,004,375		10,540,744	1,893,000	100,000	1,993,000	8,547,744

Project identification: B-1.1 Area: 2,480,175 (m²) Damascus City

Sensitivity Analysis	
Internal rate of return	%
1. Base case	23.4%
2. Costs +10%	23.4%
3. Benefits -10%	21.1%
4. Benefits lagged 1 year	19.6%
5. 2 and 3	21.1%
6. 2 and 4	19.6%
7. 2, 3 and 4	17.9%

AIC (SUS) = 0.03 EIRR = 23.4%

Table J-1.12 EIRR, Tishreen Informal Area Distribution

Year	Water Sales (m ³)		Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)	
	With project	Without project			Increase	Capital	O & M		Total costs
	Sensitivity Analysis								
								Internal rate of return %	
1999	220,000,000	220,000,000	-	0.17	1,319,915	659,958	659,958	12.3%	
2000	220,000,000	220,000,000	-	0.17	659,958	659,958	659,958	12.2%	
2001	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.8%	
2002	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2003	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2004	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2005	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2006	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2007	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2008	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2009	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2010	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	10.7%	
2011	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500	9.3%	
2012	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2013	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2014	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2015	221,128,215	220,000,000	1,128,215	0.17	263,983	3,500	267,483		
2016	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2017	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2018	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2019	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2020	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2021	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2022	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2023	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2024	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
2025	221,128,215	220,000,000	1,128,215	0.17		3,500	3,500		
Total			28,205,375		4,794,914	1,583,898	87,500	1,671,398	

AJC (SUS) = 0.06 EIRR = 12.3%

Table J-1.13 EIRR, Jobar Surrounding Al Aksab Mosque - Informal Area Distribution

Project identification: B-1.3

1,876,465 (m²)

Area:

Damascus City

Year	Water Sales (m ³)			Economic costs (\$US)			Net benefits (\$US)		
	With project	Without project	Increase	Unit value (\$US)	Gross benefits (\$US)	Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	2,294,600	-	1,147,300	(1,147,300)
2000	220,000,000	220,000,000	-	0.17	-	1,147,300	-	1,147,300	(1,147,300)
2001	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2002	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2003	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2004	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2005	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2006	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2007	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2008	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2009	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2010	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2011	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2012	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2013	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2014	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2015	221,876,465	220,000,000	1,876,465	0.17	318,999	458,920	6,000	464,920	(145,921)
2016	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2017	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2018	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2019	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2020	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2021	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2022	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2023	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2024	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
2025	221,876,465	220,000,000	1,876,465	0.17	318,999	-	6,000	6,000	312,999
Total			46,911,625		7,974,976	2,753,520	150,000	2,903,520	5,071,456

AIC (\$US) = 0.06

EIRR = 11.6%

Sensitivity Analysis

Internal rate of return	%
1. Base case	11.6%
2. Costs +10%	11.6%
3. Benefits -10%	10.2%
4. Benefits lagged 1 year	10.2%
5. 2 and 3	10.1%
6. 2 and 4	10.1%
7. 2, 3 and 4	8.8%

Table J-1.14 EIRR, East-West Tabaleh Informal Area Distribution

Year	Water Sales (m ³)		Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)	
	With project	Without project			Increase	Capital	O & M		Total costs
1999	220,000,000	220,000,000	0.17	-	3,968,800	1,984,400	1,984,400	-2.3%	
2000	220,000,000	220,000,000	0.17	-	1,984,400	1,984,400	1,984,400	-2.6%	
2001	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.3%	
2002	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.6%	
2003	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.3%	
2004	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.6%	
2005	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.3%	
2006	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.6%	
2007	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.3%	
2008	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2009	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2010	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2011	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2012	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2013	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2014	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2015	220,924,910	220,000,000	0.17	157,235	793,760	10,000	803,760	-3.8%	
2016	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2017	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2018	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2019	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2020	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2021	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2022	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2023	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
2024	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-2.8%	
2025	220,924,910	220,000,000	0.17	157,235		10,000	10,000	-3.8%	
Total				3,930,868	4,762,560	250,000	5,012,560	(1,081,693)	

AIC (SUS) = 0.22 EIRR = -2.3%

Table J-1.1.5 EIRR, Mokhayam Yarmouk Informal Area Distribution

Year	Water Sales (m ³)			Unit value (\$US)		Economic costs (\$US)			Net benefits (\$US)	
	With project	Without project	Increase	Gross benefits	Capital	O & M	Total costs	Net benefits	Internal rate of return	%
	220,000,000	220,000,000	-	0.17	5,079,329		2,539,663	(2,539,663)	18.5%	
1999	220,000,000	220,000,000	-	0.17	2,539,663		2,539,663	(2,539,663)	18.5%	
2000	220,000,000	220,000,000	-	0.17	2,539,663		2,539,663	(2,539,663)	18.4%	
2001	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.6%	
2002	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	15.8%	
2003	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2004	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2005	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2006	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2007	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2008	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2009	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2010	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2011	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2012	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2013	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2014	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2015	226,283,110	220,000,000	6,283,110	0.17	1,015,865	12,800	1,028,665	39,464	14.2%	
2016	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2017	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2018	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2019	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2020	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2021	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2022	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2023	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2024	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
2025	226,283,110	220,000,000	6,283,110	0.17		12,800	12,800	1,055,329	16.5%	
Total		157,077,750			6,095,190	320,000	6,415,190	20,288,028		

Project identification: B-1.5

6,283,110 (m³)

Area:

Damascus City

AIC (\$US) = 0.04

EIRR = 18.5%

Table J-1.16 EIRR, Asalic-Kadam & Naher Esheh-Dahadil Informal Area Distribution

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	Without project		Increase			Capital	O & M	Total costs	
	With project	Without project							
1999	220,000,000	220,000,000		0.17		5,455,440		2,727,720	(2,727,720)
2000	220,000,000	220,000,000		0.17		2,727,720		2,727,720	(2,727,720)
2001	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2002	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2003	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2004	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2005	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2006	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2007	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2008	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2009	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2010	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2011	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2012	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2013	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2014	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2015	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2016	222,701,365	220,000,000	2,701,365	0.17	459,232	1,091,088	14,000	1,105,088	(645,856)
2017	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2018	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2019	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2020	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2021	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2022	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2023	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2024	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
2025	222,701,365	220,000,000	2,701,365	0.17	459,232		14,000	14,000	445,232
Total			67,534,125		11,480,801	6,546,528	350,000	6,896,528	4,584,273

AIC (SUS) = 0.10 EIRR = 5.3%

Sensitivity Analysis	
Internal rate of return	%
1. Base case	5.3%
2. Costs +10%	5.2%
3. Benefits -10%	4.1%
4. Benefits lagged 1 year	4.6%
5. 2 and 3	4.1%
6. 2 and 4	4.4%
7. 2, 3 and 4	3.4%

Table J-1.17 Al Quazzz & Shaghour Basateen Informal Area Distribution

Project identification: B-1.7

780,370 (m²)

Area:

Damascus City

Year	Water Sales (m ³)			Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase	Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	1,985,000	-	992,500	(992,500)
2000	220,000,000	220,000,000	-	992,500	-	992,500	(992,500)
2001	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2002	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2003	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2004	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2005	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2006	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2007	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2008	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2009	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2010	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2011	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2012	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2013	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2014	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2015	220,780,370	220,000,000	780,370	397,000	2,500	399,500	(266,837)
2016	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2017	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2018	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2019	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2020	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2021	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2022	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2023	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2024	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
2025	220,780,370	220,000,000	780,370	-	2,500	2,500	130,163
Total			19,509,250	2,382,000	62,500	2,444,500	872,073

AIC (SUS) = 0.13

EIRR = 3.0%

Sensitivity Analysis

Internal rate of return	%
1. Base case	3.0%
2. Costs +10%	2.9%
3. Benefits -10%	1.9%
4. Benefits lagged 1 year	2.4%
5. 2 and 3	1.9%
6. 2 and 4	2.3%
7. 2, 3 and 4	1.3%

Table J-1.18 EIRR, Mezze-Razy & Kafar Souseh Informal Area Distribution

Project identification: B-1.8

2,393,305 (m³)

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	5,663,000	-	2,831,500	(2,831,500)
2000	220,000,000	220,000,000	-	0.17	-	2,831,500	-	2,831,500	(2,831,500)
2001	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2002	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2003	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2004	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2005	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2006	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2007	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2008	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2009	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2010	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2011	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2012	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2013	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2014	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2015	222,393,305	220,000,000	2,393,305	0.17	406,862	1,132,600	15,000	1,147,600	(740,738)
2016	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2017	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2018	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2019	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2020	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2021	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2022	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2023	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2024	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
2025	222,393,305	220,000,000	2,393,305	0.17	406,862	-	15,000	15,000	391,862
Total			59,832,625		10,171,546	6,795,600	375,000	7,170,600	3,000,946

AIC (SUS) = 0.12

EIRR = 3.5%

Sensitivity Analysis

Internal rate of return	%
1. Base case	3.5%
2. Costs +10%	3.4%
3. Benefits -10%	2.4%
4. Benefits lagged 1 year	3.0%
5. 2 and 3	2.4%
6. 2 and 4	2.8%
7. 2, 3 and 4	1.8%

Table J-1.19 Somaryyah Informal Area Distribution System

Project identification: B-1.9

335,070 (m³)

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000		0.17		1,126,500			(563,250)
2000	220,000,000	220,000,000		0.17		563,250		563,250	(563,250)
2001	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2002	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2003	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2004	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2005	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2006	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2007	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2008	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2009	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2010	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2011	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2012	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2013	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2014	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2015	220,335,070	220,000,000	335,070	0.17	56,962	225,300	3,000	228,300	(171,338)
2016	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2017	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2018	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2019	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2020	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2021	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2022	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2023	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2024	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
2025	220,335,070	220,000,000	335,070	0.17	56,962		3,000	3,000	53,962
Total			8,376,750		1,424,048	1,351,800	75,000	1,426,800	(2,752)

AIC (SUS) = 0.17

ERRR = 0.0%

Sensitivity Analysis

Internal rate of return	%
1. Base case	0.0%
2. Costs +10%	-0.2%
3. Benefits -10%	-1.0%
4. Benefits lagged 1 year	-0.4%
5. 2 and 3	-1.1%
6. 2 and 4	-0.6%
7. 2, 3 and 4	-1.6%

Table J-1.20 EIRR, Dummar Wadi Al-Mashare Informal Area

Project identification: distribution system, Dummar Area: 1,083,320 (m²) Damascus City

Year	Water Sales (m ³)				Unit value			Economic costs (\$US)			Net benefits (\$US)		Sensitivity Analysis Internal rate of return %
	With project	Without project	Increase		(\$US)	Gross benefits (\$US)	Capital	O & M	Total costs	Net benefits (\$US)	%		
	220,000,000	220,000,000	0	0.17	37,200,000	1,464,000	732,000	732,000	732,000				
1999	220,000,000	220,000,000	0	0.17	37,200,000	73,200,000	1,464,000	732,000	732,000	732,000	732,000	10.2%	
2000	220,000,000	220,000,000	0	0.17	37,200,000	73,200,000	732,000	732,000	732,000	732,000	732,000	10.1%	
2001	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164	8.3%	
2002	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164	9.0%	
2003	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164	8.8%	
2004	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164	8.9%	
2005	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164	7.6%	
2006	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2007	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2008	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2009	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2010	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2011	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2012	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2013	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2014	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2015	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	292,800	4,000	296,800	296,800	(112,636)		
2016	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2017	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2018	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2019	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2020	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2021	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2022	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2023	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2024	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
2025	221,083,320	220,000,000	1,083,320	0.17	38,416,640	74,416,640	4,000	4,000	4,000	4,000	180,164		
Total			27,083,600		4,604,110		1,756,800	100,000	1,856,800		2,747,310		

AIC (\$US) - 0.07

EIRR - 10.2%

Table J-1.21 EIRR, Kudssya Informal Area Distribution

Project identification: B-1.11

1,518,400 (m³)

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	1,814,000	-	907,000	(907,000)
2000	220,000,000	220,000,000	-	0.17	-	907,000	-	907,000	(907,000)
2001	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2002	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2003	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2004	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2005	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2006	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2007	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2008	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2009	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2010	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2011	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2012	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2013	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2014	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2015	221,518,400	220,000,000	1,518,400	0.17	258,128	362,800	5,000	367,800	(109,672)
2016	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2017	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2018	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2019	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2020	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2021	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2022	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2023	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2024	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
2025	221,518,400	220,000,000	1,518,400	0.17	258,128	-	5,000	5,000	253,128
Total			37,960,000		6,453,200	2,176,800	125,000	2,301,800	4,151,400

AIC (\$US) = 0.06

EIRR = 12.0%

Sensitivity Analysis

Internal rate of return	%
1. Base case	12.0%
2. Costs +10%	11.9%
3. Benefits -10%	10.5%
4. Benefits lagged 1 year	10.5%
5. 2 and 3	10.4%
6. 2 and 4	10.4%
7. 2, 3 and 4	9.1%

Table J-1.22 EIRR, All Informal Area Improvement Schemes

Year	Water Sales (m ³)		Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)	
	With project	Without project			Increase	Capital	O & M		Total costs
	220,000,000	220,000,000	0.17	31,748,080	31,748,080	6,349,616	6,349,616	10.5%	
1999	220,000,000	220,000,000	0.17	731,160	6,349,616	15,960	6,365,576	10.5%	
2000	224,300,941	220,000,000	0.17	1,462,320	6,349,616	31,920	6,381,536	10.5%	
2001	228,601,882	220,000,000	0.17	2,193,480	6,349,616	47,880	6,397,496	9.2%	
2002	232,902,823	220,000,000	0.17	2,924,640	6,349,616	63,840	6,413,456	9.3%	
2003	237,203,764	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000	9.3%	
2004	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000	9.1%	
2005	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000	9.3%	
2006	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000	8.1%	
2007	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2008	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2009	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2010	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2011	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2012	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2013	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2014	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2015	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2016	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2017	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2018	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2019	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2020	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2021	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2022	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2023	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2024	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2025	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2026	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2027	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
2028	241,504,705	220,000,000	0.17	3,655,800	79,800	79,800	3,576,000		
Total			0.17	98,706,596	31,748,080	2,154,600	33,902,680	64,803,916	

AIC (SUS) = 0.06 EIRR = 10.5%

Table J-1.23 EIRR, New Well Centre, Jaramana

Project identification: B-2.1

Area: 3,600,000

Damascus City

Year	Water Sales (m3)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	2,435,000	-	1,217,500	(1,217,500)
2000	220,000,000	220,000,000	-	0.17	-	1,217,500	-	1,217,500	(1,217,500)
2001	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2002	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2003	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2004	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2005	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2006	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2007	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2008	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2009	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2010	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2011	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2012	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2013	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2014	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2015	223,600,000	220,000,000	3,600,000	0.17	612,000	121,750	250,000	371,750	240,250
2016	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2017	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2018	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2019	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2020	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2021	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2022	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2023	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2024	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
2025	223,600,000	220,000,000	3,600,000	0.17	612,000	-	250,000	250,000	362,000
Total			90,000,000		15,300,000	2,556,750	6,250,000	8,806,750	6,493,250

AIC (\$US) = 0.10

EIRR = 13.2%

Sensitivity Analysis

Internal rate of return	%
1. Base case	13.2%
2. Costs +10%	12.2%
3. Benefits -10%	10.7%
4. Benefits lagged 1 year	11.5%
5. 2 and 3	9.6%
6. 2 and 4	10.6%
7. 2, 3 and 4	8.4%

Table J-1.24 ERR, New Well Centre, Kafar Souseh

Project identification: B-2.2

1,690,000 (m³)

Area:

Damascus City

Year	Water Sales (m ³)		Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project			Increase	Capital	O & M	
1999	220,000,000	220,000,000	0.17	-	1,486,000		743,000	(743,000)
2000	220,000,000	220,000,000	0.17	-	743,000		743,000	(743,000)
2001	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2002	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2003	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2004	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2005	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2006	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2007	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2008	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2009	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2010	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2011	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2012	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2013	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2014	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2015	221,690,000	220,000,000	0.17	1,690,000	74,300	110,000	184,300	103,000
2016	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2017	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2018	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2019	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2020	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2021	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2022	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2023	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2024	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
2025	221,690,000	220,000,000	0.17	1,690,000		110,000	110,000	177,300
Total				7,182,500	1,560,300	2,750,000	4,310,300	2,872,200

AIC (\$US) = 0.10

ERR = 10.2%

Sensitivity Analysis

Internal rate of return	%
1. Base case	10.2%
2. Costs +10%	9.4%
3. Benefits -10%	8.1%
4. Benefits lagged 1 year	9.0%
5. 2 and 3	7.3%
6. 2 and 4	8.3%
7. 2, 3 and 4	6.3%

Table J-1.25 EIRR, New Well Center, Tishreen & Kywan

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)	
	With project	Without project	Increase			Capital	O & M	Total costs		Internal rate of return %
	220,000,000	220,000,000	-	0.17	-	773,000	415,000	415,000	(415,000)	
1999	220,000,000	220,000,000	-	0.17	269,892	415,000	26,000	284,000	(14,108)	
2000	221,587,600	220,000,000	1,587,600	0.17	2,646,000	258,000	61,000	319,000	288,820	
2001	222,646,000	220,000,000	2,646,000	0.17	449,820	100,000	151,000	151,000	820,611	
2002	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2003	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2004	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2005	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2006	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2007	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2008	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2009	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2010	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2011	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2012	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2013	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2014	225,715,360	220,000,000	5,715,360	0.17	971,611	15,000	151,000	166,000	805,611	
2015	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2016	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2017	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2018	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2019	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2020	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2021	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2022	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2023	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2024	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
2025	225,715,360	220,000,000	5,715,360	0.17	971,611	151,000	151,000	151,000	820,611	
Total			141,402,240		24,038,381	788,000	3,711,000	4,499,000	19,239,381	

AIC (\$US) = 0.03

EIRR = 78.0%

Table J-1.26 EIRR, New Resource, Dier Al Ashayer

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	Increase					Capital	O & M	Total costs	
	With project	Without project	Increase						
1997	220,000,000	220,000,000	-	0.17	4,880,000	970,000	970,000	(970,000)	
1998	220,000,000	220,000,000	-	0.17	970,000	970,000	970,000	(970,000)	
1999	220,000,000	220,000,000	-	0.17	970,000	970,000	970,000	(970,000)	
2000	220,000,000	220,000,000	-	0.17	970,000	970,000	970,000	(970,000)	
2001	220,000,000	220,000,000	-	0.17	970,000	1,070,000	1,070,000	(1,070,000)	
2002	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2003	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2004	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2005	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2006	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2007	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2008	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2009	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2010	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2011	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2012	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2013	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2014	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2015	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2016	223,200,000	220,000,000	3,200,000	0.17	544,000	242,500	342,500	201,500	
2017	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2018	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2019	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2020	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2021	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2022	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2023	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2024	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2025	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2026	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2027	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2028	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2029	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2030	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2031	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2032	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2033	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2034	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2035	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
2036	223,200,000	220,000,000	3,200,000	0.17	544,000	100,000	100,000	444,000	
Total			112,000,000		19,040,000	5,092,500	3,600,000	8,692,500	10,347,500

AIC (\$US) = 0.08 EIRR = 7.0%

Sensitivity Analysis
 Internal rate of return %

1. Base case 7.0%
2. Costs +10% 6.8%
3. Benefits -10% 6.0%
4. Benefits lagged 1 year 6.5%
5. 2 and 3 5.7%
6. 2 and 4 6.4%
7. 2, 3 and 4 5.4%

Table J-1.27 EIRR, New Resource Shoukry Al Qouwary

Project identification: B-2.4

3,600,000

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	1,740,000	-	870,000	(870,000)
2000	220,000,000	220,000,000	-	0.17	-	870,000	-	870,000	(870,000)
2001	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2002	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2003	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2004	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2005	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2006	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2007	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2008	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2009	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2010	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2011	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2012	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2013	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2014	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2015	223,600,000	220,000,000	3,600,000	0.17	612,000	87,000	150,000	237,000	375,000
2016	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2017	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2018	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2019	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2020	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2021	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2022	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2023	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2024	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
2025	223,600,000	220,000,000	3,600,000	0.17	612,000	-	150,000	150,000	462,000
Total			90,000,000		15,300,000	1,827,000	3,750,000	5,577,000	9,723,000

AIC (SUS) = 0.06

EIRR = 23.6%

Sensitivity Analysis		%
Internal rate of return		
1. Base case		23.6%
2. Costs +10%		22.9%
3. Benefits -10%		20.6%
4. Benefits lagged 1 year		19.7%
5. 2 and 3		19.9%
6. 2 and 4		19.2%
7. 2, 3 and 4		16.9%

Table J-1.28 EIRR, New Resource Kanawat Garden

Project identification: B-2.4

1,690,000

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)	Sensitivity Analysis Internal rate of return %	
	With project	Without project	Increase			Capital	O & M	Total costs			Internal rate of return %
1999	220,000,000	220,000,000	-	0.17	-	746,000	746,000	(746,000)	10.4%		
2000	220,000,000	220,000,000	-	0.17	-	746,000	746,000	(746,000)	9.6%		
2001	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300	8.3%		
2002	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300	9.1%		
2003	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300	7.5%		
2004	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300	8.4%		
2005	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300	6.5%		
2006	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2007	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2008	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2009	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2010	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2011	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2012	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2013	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2014	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2015	221,690,000	220,000,000	1,690,000	0.17	287,300	74,600	107,000	105,700			
2016	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2017	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2018	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2019	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2020	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2021	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2022	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2023	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2024	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
2025	221,690,000	220,000,000	1,690,000	0.17	287,300	107,000	107,000	180,300			
Total			47,350,000		7,182,300	1,566,600	2,675,000	4,241,600			

AIC (SUS) = 0.10

EIRR = 10.4%

Table J-1.29 EIRR, New Resource Beit Jen

Project identification: Beit Jen & Tailbeyeh

19,700,000 (m³)

Area:

Hermou & Zabadian

Year	Water Sales (m ³)				Gross benefits (SUS)			Economic costs (SUS)			Net benefits (SUS)	Sensitivity Analysis Internal rate of return %
	With project	Without project	Increase	Unit value (SUS)	(SUS)	Capital	O & M	Total costs				
1997	220,000,000	220,000,000	-	0.17	-	35,000,000	7,000,000	7,000,000	7,000,000	(7,000,000)	6.5%	
1998	220,000,000	220,000,000	-	0.17	-	7,000,000	7,000,000	7,000,000	7,000,000	(7,000,000)	5.7%	
1999	220,000,000	220,000,000	-	0.17	-	7,000,000	7,000,000	7,000,000	7,000,000	(7,000,000)	5.6%	
2000	220,000,000	220,000,000	-	0.17	-	7,000,000	7,000,000	7,000,000	7,000,000	(7,000,000)	6.1%	
2001	220,000,000	220,000,000	-	0.17	3,349,000	385,000	385,000	7,385,000	385,000	2,964,000	4.8%	
2002	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000	5.3%	
2003	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000	4.5%	
2004	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2005	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2006	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2007	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2008	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2009	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2010	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2011	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2012	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2013	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2014	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2015	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2016	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2017	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2018	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2019	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2020	239,700,000	220,000,000	19,700,000	0.17	3,349,000	1,000,000	385,000	1,385,000	385,000	2,964,000		
2021	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2022	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2023	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2024	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2025	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2026	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2027	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2028	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2029	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2030	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2031	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2032	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2033	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2034	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2035	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
2036	239,700,000	220,000,000	19,700,000	0.17	3,349,000	385,000	385,000	385,000	385,000	2,964,000		
Total			689,500,000		117,215,000	36,000,000	13,860,000	49,860,000	385,000	67,355,000		

AIC (SUS) = 0.07

EIRR = 6.5%

Table J-1.30 EIRR, New Resource Hermon Spring

Project identification: Option 1

24,180,000 (m³)

Area:

Hermon & Zabadani

Year	Water Sales (m ³)		Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project			Increase	Capital	O & M	
1997	220,000,000	220,000,000	0.17	-	54,468,000	-	10,893,600	(10,893,600)
1998	220,000,000	220,000,000	0.17	-	10,893,600	-	10,893,600	(10,893,600)
1999	220,000,000	220,000,000	0.17	-	10,893,600	-	10,893,600	(10,893,600)
2000	220,000,000	220,000,000	0.17	-	10,893,600	-	10,893,600	(10,893,600)
2001	220,000,000	220,000,000	0.17	-	10,893,600	520,000	11,413,600	(1,413,600)
2002	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2003	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2004	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2005	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2006	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2007	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2008	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2009	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2010	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2011	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2012	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2013	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2014	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2015	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2016	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2017	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2018	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2019	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2020	244,180,000	220,000,000	0.17	24,180,000	1,000,000	520,000	1,520,000	2,590,600
2021	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2022	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2023	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2024	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2025	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2026	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2027	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2028	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2029	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2030	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2031	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2032	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2033	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2034	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2035	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
2036	244,180,000	220,000,000	0.17	24,180,000	520,000	520,000	520,000	3,590,600
Total				143,871,000	55,468,000	18,720,000	74,188,000	69,683,000

AIC (\$US) = 0.09

EIRR = 4.7%

Sensitivity Analysis

Internal rate of return	%
1. Base case	4.7%
2. Costs +10%	4.0%
3. Benefits -10%	3.9%
4. Benefits lagged 1 year	4.4%
5. 2 and 3	3.2%
6. 2 and 4	3.7%
7. 2, 3 and 4	2.9%

Table J-1.31 EIRR, New Resource Hermon Spring

Project identification: option 2

24,180,000 (m³)

Area:

Hermon & Zabzani

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)	Sensitivity Analysis
	With project	Without project	Increase			Capital	O & M	Total costs		
1997	220,000,000	220,000,000	-	0.17	-	53,346,000	10,669,200	10,669,200	(10,669,200)	4.9%
1998	220,000,000	220,000,000	-	0.17	-	10,669,200	10,669,200	10,669,200	(10,669,200)	4.1%
1999	220,000,000	220,000,000	-	0.17	-	10,669,200	10,669,200	10,669,200	(10,669,200)	4.1%
2000	220,000,000	220,000,000	-	0.17	-	10,669,200	10,669,200	10,669,200	(10,669,200)	4.1%
2001	220,000,000	220,000,000	-	0.17	-	10,669,200	11,189,200	11,189,200	(11,189,200)	4.5%
2002	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	3.4%
2003	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	3.9%
2004	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	3.1%
2005	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2006	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2007	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2008	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2009	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2010	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2011	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2012	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2013	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2014	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2015	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2016	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2017	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2018	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2019	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2020	244,180,000	220,000,000	24,180,000	0.17	4,110,600	1,000,000	520,000	1,520,000	2,590,600	
2021	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2022	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2023	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2024	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2025	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2026	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2027	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2028	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2029	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2030	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2031	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2032	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2033	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2034	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2035	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
2036	244,180,000	220,000,000	24,180,000	0.17	4,110,600	520,000	520,000	520,000	3,590,600	
Total			846,300,000		143,871,000	54,346,000	18,720,000	73,066,000	70,805,000	

AIC (\$US) = 0.09

EIRR = 4.9%

Table J-1.32 EIRR, New Resource Hermon Spring

Project identification: option 3

24,180,000 (m³)

Area:

Hermon & Zabadani

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1997	220,000,000	220,000,000	-	0.17	-	55,668,000	-	11,133,600	(11,133,600)
1998	220,000,000	220,000,000	-	0.17	-	11,133,600	-	11,133,600	(11,133,600)
1999	220,000,000	220,000,000	-	0.17	-	11,133,600	-	11,133,600	(11,133,600)
2000	220,000,000	220,000,000	-	0.17	-	11,133,600	-	11,133,600	(11,133,600)
2001	220,000,000	220,000,000	-	0.17	-	11,133,600	548,500	11,682,100	(11,682,100)
2002	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2003	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2004	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2005	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2006	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2007	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2008	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2009	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2010	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2011	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2012	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2013	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2014	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2015	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2016	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2017	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2018	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2019	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2020	244,180,000	220,000,000	24,180,000	0.17	4,110,600	1,000,000	548,500	1,548,500	2,562,100
2021	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2022	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2023	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2024	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2025	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2026	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2027	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2028	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2029	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2030	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2031	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2032	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2033	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2034	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2035	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
2036	244,180,000	220,000,000	24,180,000	0.17	4,110,600	548,500	548,500	548,500	3,562,100
Total			846,300,000		143,871,000	36,668,000	19,745,000	76,414,000	67,457,000

AIC (SUS) = 0.09

EIRR = 4.5%

Sensitivity Analysis

Internal rate of return	%
1. Base case	4.5%
2. Costs +10%	3.8%
3. Benefits -10%	3.7%
4. Benefits lagged 1 year	4.2%
5. 2 and 3	3.0%
6. 2 and 4	3.5%
7. 2, 3 and 4	2.8%

Table J-1.33 EIRR, New Resource Rimch

Project identification: Rimchu/Enneh

4,480,000 (m³)

Ares:

Hermon & Zabardani

Year	Water Sales (m ³)			Gross benefits (SUS)			Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase	Unit value (SUS)	Unit value (SUS)	Gross benefits (SUS)	Capital	O & M	Total costs	
1997	220,000,000	220,000,000	-	0.17	-	-	12,030,000	-	2,406,000	(2,406,000)
1998	220,000,000	220,000,000	-	0.17	-	-	2,406,000	-	2,406,000	(2,406,000)
1999	220,000,000	220,000,000	-	0.17	-	-	2,406,000	-	2,406,000	(2,406,000)
2000	220,000,000	220,000,000	-	0.17	-	-	2,406,000	-	2,406,000	(2,406,000)
2001	220,000,000	220,000,000	-	0.17	-	-	2,406,000	140,000	2,546,000	(2,546,000)
2002	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2003	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2004	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2005	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2006	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2007	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2008	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2009	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2010	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2011	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2012	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2013	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2014	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2015	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	601,500	140,000	140,000	621,600
2016	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2017	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2018	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2019	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2020	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2021	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2022	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2023	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2024	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2025	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2026	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2027	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2028	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2029	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2030	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2031	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2032	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2033	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2034	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2035	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
2036	224,480,000	220,000,000	4,480,000	0.17	761,600	761,600	-	140,000	140,000	621,600
Total			156,800,000			26,656,000	12,631,500	5,040,000	17,671,500	8,984,500

AIC (SUS) = 0.11

EIRR = 3.0%

Sensitivity Analysis

Internal rate of return	%
1. Base case	3.0%
2. Costs +10%	2.9%
3. Benefits -10%	2.2%
4. Benefits lagged 1 year	2.8%
5. 2 and 3	2.0%
6. 2 and 4	2.6%
7. 2, 3 and 4	1.9%

Table J-1.34 EIRR, New Resource, Sergaya

Year	Project identification:		new resource Sergaya		2,900,000 (m ³)		Area:		Hermon & Zabudani			
	With project		Without project		Increase		Unit value (\$US)		Gross benefits (\$US)			
	Water Sales (m ³)		Increase		Unit value (\$US)		Gross benefits (\$US)		Economic costs (\$US)			
										Net benefits (\$US)		
										Internal rate of return %		
1997	220,000,000	220,000,000	220,000,000	-	0.17	-	-	8,420,444	1,684,089	1,684,089	(1,684,089)	1.9%
1998	220,000,000	220,000,000	220,000,000	-	0.17	-	-	1,684,089	1,684,089	1,684,089	(1,684,089)	1.6%
1999	220,000,000	220,000,000	220,000,000	-	0.17	-	-	1,684,089	1,684,089	1,684,089	(1,684,089)	1.0%
2000	220,000,000	220,000,000	220,000,000	-	0.17	-	-	1,684,089	1,684,089	1,684,089	(1,684,089)	1.7%
2001	220,000,000	220,000,000	220,000,000	-	0.17	-	-	1,684,089	1,684,089	1,684,089	(1,684,089)	0.8%
2002	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	1.5%
2003	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	0.7%
2004	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2005	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2006	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2007	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2008	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2009	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2010	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2011	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2012	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2013	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2014	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2015	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	421,022	133,000	554,022	(61,022)	
2016	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2017	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2018	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2019	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2020	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2021	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2022	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2023	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2024	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2025	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2026	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2027	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2028	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2029	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2030	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2031	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2032	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2033	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2034	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2035	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
2036	222,900,000	220,000,000	220,000,000	2,900,000	0.17	493,000	493,000	133,000	133,000	133,000	360,000	
Total				101,500,000	0.17	17,255,000	17,255,000	8,841,466	4,788,000	13,629,466	3,625,534	

AIC (\$US) = 0.13 EIRR = 1.9%

Table J-1.35 EIRR, New Resource, Kaboon

Project identification: new resource Kaboon

Area: 2,540,000

Damascus City

Year	Water Sales (m ³)				Economic costs (\$US)			Net benefits (\$US)		Sensitivity Analysis Internal rate of return %
	Without project		Increase		Unit value (\$US)	Gross benefits (\$US)	Capital	O & M	Total costs	
	With project	Without project	Increase	Without project						
1999	220,000,000	220,000,000	-	-	0.17	-	2,078,000	-	1,039,000	13.6%
2000	220,000,000	220,000,000	-	-	0.17	-	1,039,000	-	1,039,000	
2001	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	13.0%
2002	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2003	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	11.5%
2004	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2005	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	11.8%
2006	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2007	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	10.9%
2008	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2009	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	11.4%
2010	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2011	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	9.6%
2012	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2013	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2014	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2015	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	103,900	115,000	218,900	
2016	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2017	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2018	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2019	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2020	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2021	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2022	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2023	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2024	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
2025	222,540,000	220,000,000	2,540,000	431,800	0.17	431,800	-	115,000	115,000	
Total			63,500,000	10,795,000			2,181,900	2,875,000	3,056,900	5,738,100

AIC (\$US) = 0.08

EIRR = 13.6%

Table J-1.36 EIRR, New Resource, Taikadom

Project identification: on-going project # 7

2,960,000 (m³)

Area:

Damascus City

Year	Water Sales (m ³)			Unit value (SUS)	Gross benefits (SUS)	Economic costs (SUS)			Net benefits (SUS)
	With project	Without project	Increase			Capital	O & M	Total costs	
1999	220,000,000	220,000,000	-	0.17	-	110,000	110,000	(110,000)	443.8%
2000	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	402.2%
2001	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	398.1%
2002	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	166.0%
2003	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	360.6%
2004	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	156.2%
2005	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	145.9%
2006	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2007	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2008	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2009	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2010	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2011	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2012	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2013	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2014	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	30,000	473,200	
2015	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2016	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2017	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2018	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2019	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2020	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2021	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2022	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2023	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2024	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
2024	222,960,000	220,000,000	2,960,000	0.17	503,200	15,000	15,000	488,200	
Total			76,960,000		13,083,200	125,000	390,000	515,000	12,568,200

AIC (SUS) = 0.01 EIRR = 443.8%

Table J-1.37 EIRR, Reinforcement of Barada Spring
 Project identification: on-going project # 4

Year	Water Sales (m ³)			Unit value (\$US)	Gross benefits (\$US)	Economic costs (\$US)			Net benefits (\$US)
	With project	Without project	Increase			Capital	O & M	Total costs	
1997	220,000,000	220,000,000		0.17	680,000	8,828,150	320,613	1,765,630	(1,765,630)
1998	224,000,000	220,000,000	4,000,000	0.17	1,360,000	1,765,630	641,227	2,086,243	(1,406,243)
1999	228,000,000	220,000,000	8,000,000	0.17	2,040,000	1,765,630	961,840	2,406,857	(1,046,857)
2000	232,000,000	220,000,000	12,000,000	0.17	2,720,000	1,765,630	1,282,454	2,727,470	(687,470)
2001	236,000,000	220,000,000	16,000,000	0.17	3,400,000	1,765,630	1,603,067	3,048,084	(328,084)
2002	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2003	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2004	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2005	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2006	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2007	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2008	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2009	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2010	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2011	240,000,000	220,000,000	20,000,000	0.17	3,400,000	441,408	1,603,067	1,603,067	1,796,933
2012	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2013	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2014	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2015	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2016	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2017	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2018	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2019	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2020	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2021	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2022	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2023	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2024	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2025	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2026	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2027	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2028	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2029	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2030	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
2031	240,000,000	220,000,000	20,000,000	0.17	3,400,000	1,603,067	1,603,067	1,603,067	1,796,933
Total			640,000,000		108,800,000	9,269,538	51,298,144	60,567,702	48,232,299

Area: Barada springs

20,000,000 (m³)

on-going project # 4

Sensitivity Analysis

Internal rate of return	%
1. Base case	20.2%
2. Costs +10%	18.4%
3. Benefits -10%	16.3%
5. Benefits lagged 1 year	17.2%
5. 2 and 3	14.4%
6. 2 and 4	15.8%
7. 2, 3 and 4	16.1%

AIC (\$US) = 0.09 EIRR = 20.2%

Table J-1.38 EIRR Calculation, Master Plan Project

Year	Economic Benefit (US\$ 000's)	Economic costs (US\$ 000's)			Net Benefits (US\$ 000's)
		Capital	O & M	Total	
1997	2,520	4,216	98	4,314	(1,794)
1998	5,294	19,066	245	19,311	(14,017)
1999	8,675	15,499	837	16,336	(7,661)
2000	12,667	12,324	1,097	13,421	(754)
2001	15,316	12,626	1,451	14,077	1,239
2002	21,794	8,471	1,552	10,023	11,771
2003	23,393	6,760	1,558	8,318	15,075
2004	24,128	2,356	1,563	3,919	20,209
2005	24,416	1,948	1,675	3,623	20,793
2006	25,945	84	1,713	1,797	24,148
2007	25,945	1,770	1,713	3,483	22,462
2008	25,945	1,729	1,713	3,442	22,503
2009	25,945	1,729	1,713	3,442	22,503
2010	26,066	1,467	1,713	3,180	22,886
2011	26,066	1,467	1,713	3,180	22,886
2012	26,066	1,548	1,713	3,261	22,805
2013	26,066	2,413	1,713	4,126	21,940
2014	26,066	341	1,713	2,054	24,012
2015	26,141	1,444	1,713	3,157	22,984
2016	26,141	2,652	1,713	4,365	21,776
2017	26,141	2,170	1,713	3,603	22,538
2018	26,141	1,845	1,713	3,558	22,583
2019	26,141	1,771	1,713	3,484	22,657
2020	26,141	1,890	1,713	3,603	22,538
2021	26,141	1,467	1,713	3,180	22,961
2022	26,141	1,467	1,713	3,180	22,961
2023	26,141	1,467	1,713	3,180	22,961
2024	26,141		1,713	1,713	24,428
2025	26,141		1,713	1,713	24,428
2026	26,141		1,713	1,713	24,428
2027	26,141		1,713	1,713	24,428
2028	26,141		1,713	1,713	24,428
2029	26,141		1,713	1,713	24,428
2030	26,141		1,713	1,713	24,428
2031	26,141		1,713	1,713	24,428
Total	816,710	111,987	54,614	166,321	650,389

Sensitivity Analysis
 Internal rate of return %

1. Base case 34.0%
2. Costs +10% 29.7%
3. 2 and Benefits -10% 25.8%

AIC (SUS) = 0.04 EIRR = 34.0%

Table J-2.1 Incremental Water Sales and Revenue			
Master plan projects total			
Year	Consumption (m ³ 000's)	Unit Value (US\$)	Incremental Water Revenue (US\$ 000's)
1997	13,000	0.11	1,430
1998	27,910	0.11	3,070
1999	43,460	0.11	4,781
2000	58,990	0.11	6,489
2001	70,420	0.11	7,746
2002	81,860	0.11	9,005
2003	91,660	0.11	10,083
2004	97,200	0.11	10,692
2005	100,120	0.11	11,013
2006	108,810	0.11	11,969
2007	109,410	0.11	12,035
2008	109,910	0.11	12,090
2009	110,410	0.11	12,145
2010	111,060	0.11	12,217
2011	111,060	0.11	12,217
2012	111,060	0.11	12,217
2013	111,060	0.11	12,217
2014	111,060	0.11	12,217
2015	111,400	0.11	12,254
2016	111,400	0.11	12,254
2017	111,400	0.11	12,254
2018	111,400	0.11	12,254
2019	111,400	0.11	12,254
2020	111,400	0.11	12,254
2021	111,400	0.11	12,254
2022	111,400	0.11	12,254
2023	111,400	0.11	12,254
2024	111,400	0.11	12,254
2025	111,400	0.11	12,254
2026	111,400	0.11	12,254
2027	111,400	0.11	12,254
2028	111,400	0.11	12,254
2029	111,400	0.11	12,254
2030	111,400	0.11	12,254
2031	111,400	0.11	12,254
Total	3,472,260		381,949

Table J-2.2 FIRR Calculation Master Plan Project

Year	Incremental Water Revenue (US\$ 000's)	Incremental costs (US\$ 000's)			Net Benefits (US\$ 000's)	Sensitivity Analysis Internal rate of return %
		Investment	O & M	Total		
1997	1,430	4,830	98	4,928	(3,498)	9.8%
1998	3,070	25,204	245	25,449	(22,379)	
1999	4,781	17,762	837	18,599	(13,818)	8.3%
2000	6,489	13,765	1,097	14,862	(8,373)	
2001	7,746	14,748	1,451	16,199	(8,453)	8.1%
2002	9,005	8,471	1,552	10,023	(1,018)	
2003	10,083	5,756	1,558	7,314	2,769	8.4%
2004	10,692	2,605	1,565	4,168	6,524	
2005	11,013	2,018	1,675	3,693	7,320	6.8%
2006	11,969	96	1,713	1,809	10,160	
2007	12,035	2,123	1,713	3,836	8,199	
2008	12,090	2,080	1,713	3,793	8,297	
2009	12,145	2,080	1,713	3,793	8,352	
2010	12,217	1,745	1,713	3,458	8,759	
2011	12,217	1,745	1,713	3,458	8,759	
2012	12,217	1,828	1,713	3,541	8,676	
2013	12,217	2,727	1,713	4,440	7,777	
2014	12,217	349	1,713	2,062	10,155	
2015	12,254	1,435	1,713	3,148	9,106	
2016	12,254	1,247	1,713	2,960	9,294	
2017	12,254	2,529	1,713	4,025	8,229	
2018	12,254	2,200	1,713	3,913	8,341	
2019	12,254	2,124	1,713	3,837	8,417	
2020	12,254	2,312	1,713	4,025	8,229	
2021	12,254	1,745	1,713	3,458	8,796	
2022	12,254	1,745	1,713	3,458	8,796	
2023	12,254	1,745	1,713	3,458	8,796	
2024	12,254		1,713	1,713	10,541	
2025	12,254		1,713	1,713	10,541	
2026	12,254		1,713	1,713	10,541	
2027	12,254		1,713	1,713	10,541	
2028	12,254		1,713	1,713	10,541	
2029	12,254		1,713	1,713	10,541	
2030	12,254		1,713	1,713	10,541	
2031	12,254		1,713	1,713	10,541	
Total		127,014	54,614	181,411		

AIC (SUS) = 0.05 FIRR = 9.8%

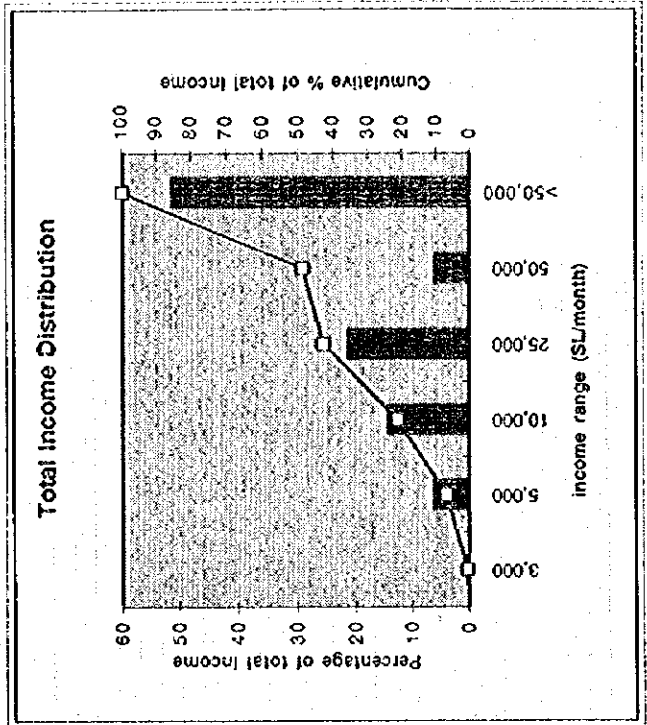
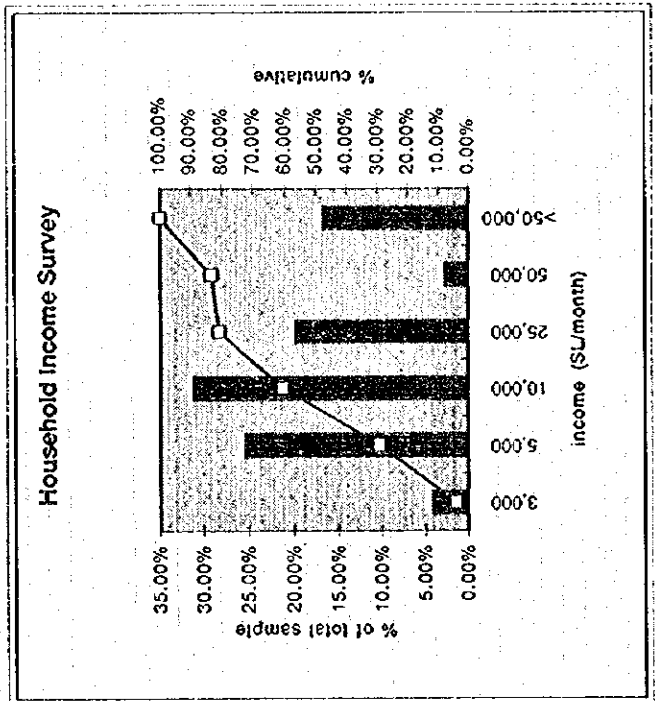
Table J-2.3 Least Cost Comparison

Project	Incremental Water (mcm/yr)	Project Cost (US\$ 000's)	\$/m ³
A-1.1 mains replacement	2.76	25,241	9.15
A-1.2 meter replacement	38.53	11,662	0.30
A-2 leakage reduction	24.08	5,842	0.24
A-3 & B-2 increase water production capacity	23.51	23,231	0.99
B-1 provide distribution in informal areas	22.52	29,418	1.31

FIGURES

Figure J-1.1 Household Income Distribution

Monthly income level	No. of families as % of total		Cumulative no. of families as % of total		Total income	Total income %	Cumulative income	Cumulative income %
	No. of families	% of total	Cumulative no. of families	Cumulative % of total				
3,000	25	4.17%	25	4.17%	50,000	0.5	50,000	0.5
5,000	153	25.50%	178	29.67%	612,000	6.3	662,000	6.8
10,000	187	31.17%	365	60.83%	1,402,500	14.4	2,064,500	21.2
25,000	119	19.83%	484	80.67%	2,082,500	21.4	4,147,000	42.5
50,000	16	2.67%	500	83.33%	600,000	6.2	4,747,000	48.7
>50,000	100	16.67%	600	100.00%	5,000,000	51.3	9,747,000	100.0
Total			600		9,747,000			





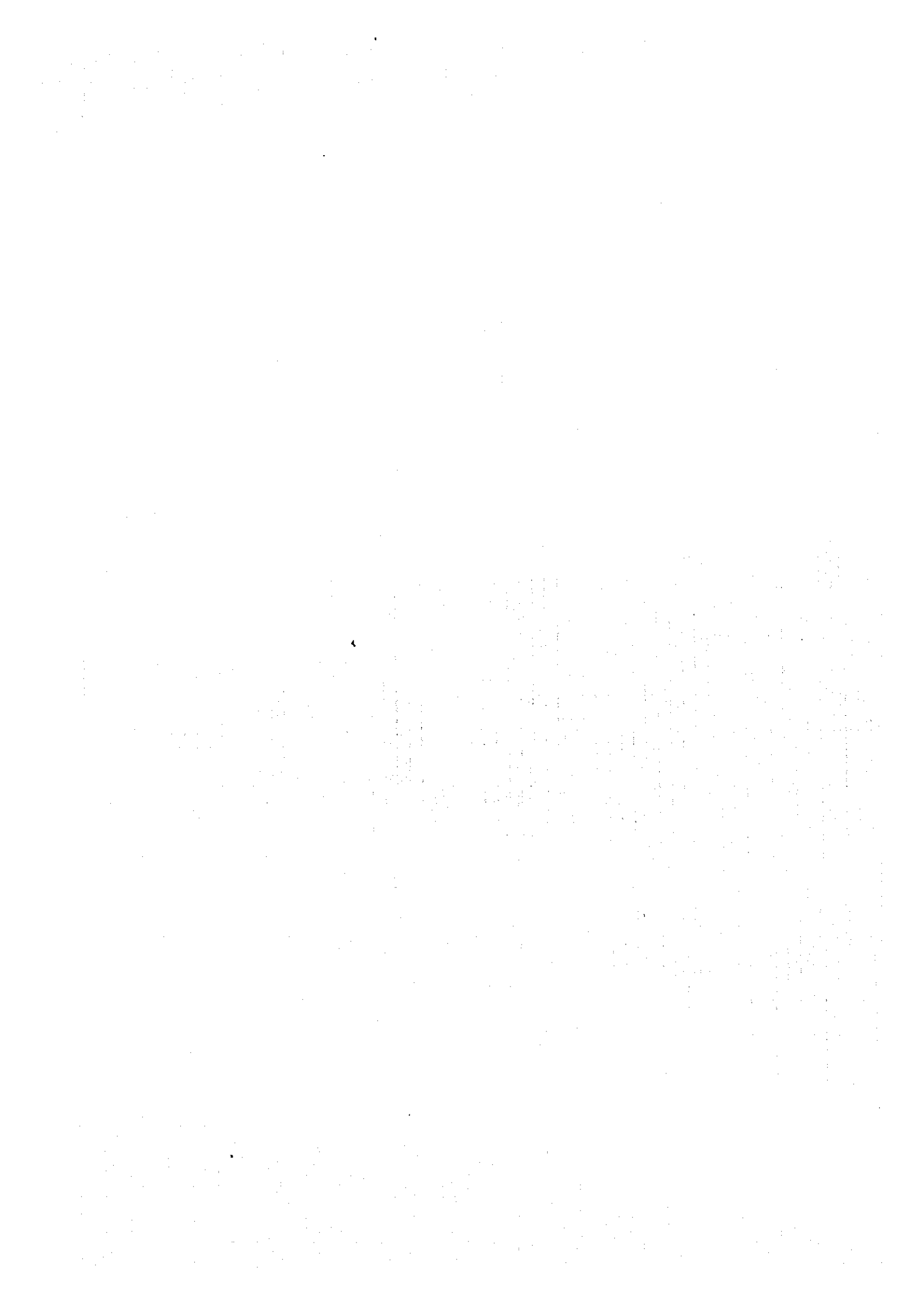




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