

Supporting Report for Chapter 4

“Municipal Water Network Rehabilitation”

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Economic and Financial Analysis

Table 4.5.2-1 Financial/Economic Analysis of South Amman Water Networks Rehabilitation Project

Hydraulic Analysis (m³/yr)																				
Item	Allocation	Water Qty	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Water Produced		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Losses		440,400	0	0	0	0	188,283	413,521	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400
Municipal Water	1.00	440,400	0	0	0	0	188,283	413,521	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.05	0.05	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	22,180	24,811	22,180	22,020	22,020	22,020	22,020	22,020	22,020	22,020	22,020	22,020	22,020	22,020
Quantity Delivered			0	0	0	0	166,283	413,521	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400	440,400
Quantity Whose Bills are Collected			0	0	0	0	161,103	398,710	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380
Industrial Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.05	0.05	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.05	0.05	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

Financial Analysis (\$ID at 2001 Prices)																				
Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Costs																				
Local Components	59%	1,831,414	\$47,345	1,094,690	1,094,690	1,094,690	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Components	40%	411,935	\$8,855	117,710	117,710	117,710	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		4,243,399	\$16,200	1,212,400	1,212,400	1,212,400	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Operating Costs			\$16,200	1,212,400	1,212,400	1,212,400	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399
O & M Costs			0	0	0	0	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875
Total Costs			\$16,200	1,212,400	1,212,400	1,212,400	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399	4,243,399
Revenues																				
Municipal Usage Qty (m ³)			0	0	0	0	161,103	398,710	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380
Municipal Tariff (\$ID/m ³)			0.411	0.425	0.426	0.449	0.463	0.476	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491	0.491
Municipal Revenues (\$ID)			0	0	0	0	167,840	188,285	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322
Industrial Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Tariff (\$ID/m ³)			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (\$ID)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Tariff (\$ID/m ³)			0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010	0.010
Irrigation Revenues (\$ID)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues (\$ID)			0	0	0	0	167,840	188,285	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322	205,322
Net Cash Flow (\$ID)			-606,200	-1,212,400	-1,212,400	-1,212,400	117,165	135,330	155,447	155,447	155,447	155,447	155,447	155,447	155,447	155,447	155,447	155,447	155,447	155,447
Discounting (Df=5%)			0.95238	0.90703	0.86184	0.82270	0.78353	0.74622	0.71068	0.67684	0.64461	0.61391	0.58468	0.55684	0.53032	0.50507	0.48102	0.45811	0.43630	0.41559
Total Qty Whose Bills are Collected (m ³)			0	0	0	0	161,103	398,710	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380	418,380
PIR	-0.7%																			
NPV (\$ID)	-1,864,352		\$77,333	-1,099,682	-1,047,116	-997,444	91,802	188,986	110,475	105,213	100,203	95,431	90,887	86,559	82,437	78,511	74,778	71,233	67,821	64,530
PV of Total Costs (\$ID)	4,300,813		\$77,333	1,099,682	1,047,116	997,444	39,078	17,217	35,445	33,757	32,150	30,619	29,161	27,772	26,450	25,190	23,993	22,848	21,760	20,720
PV of Total Bills Collected Qty (m ³)	4,704,149		0	0	0	0	262,934	298,061	297,335	293,176	289,691	286,849	284,616	282,978	281,876	281,310	281,246	281,645	282,538	283,538
Unit Water Price (\$ID/m ³)	0.00																			

Economic Analysis (JD at 2001 Prices)

Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																			
Local Costs		3,673,465	525,641	1,851,281	1,851,281	1,851,281	525	525	525	525	525	525	525	525	525	525	525	525	525
Foreign Costs		411,985	58,855	117,710	117,710	117,710	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		4,091,470	584,496	1,168,991	1,168,991	1,168,991	525	525	525	525	525	525	525	525	525	525	525	525	525
Cumulative Costs			584,496	1,753,487	2,922,478	4,091,470	4,091,995	4,092,520	4,093,045	4,093,570	4,094,095	4,094,620	4,095,145	4,095,670	4,096,195	4,096,720	4,097,245	4,097,770	4,098,295
O & M Costs			0	0	0	0	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875	49,875
Total Costs			584,496	1,168,991	1,168,991	1,168,991	50,400	50,400	50,400	50,400	50,400	50,400	50,400	49,875	49,875	49,875	49,875	49,875	49,875
Benefits																			
Municipal Usage Qty (m ³)			0	0	0	0	388,283	413,521	440,408	440,408	440,408	440,408	440,400	440,400	440,400	440,400	440,400	440,400	440,400
Unit Benefits of Municipal Water (JD/m ³)			0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Municipal Benefits (JD)			0	0	0	0	285,388	305,938	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694
Industrial Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Industrial Water (JD/m ³)			2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (JD)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Irrigation Water (JD/m ³)			8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283	8.283
Irrigation Benefits (JD)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits (JD)			0	0	0	0	285,388	305,938	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694	323,694
Net Cash Flow (JD)			-584,496	-1,168,991	-1,168,991	-1,168,991	234,988	253,538	273,294	273,294	273,294	273,294	273,294	273,819	273,819	273,819	273,819	273,819	273,819
Discounting (DR=1.0%)			0.90909	0.82045	0.75131	0.68301	0.62092	0.56447	0.51318	0.46651	0.42418	0.38554	0.35049	0.31863	0.28966	0.26333	0.23939	0.21763	0.19794
Total Qty Delivered (m ³)			0	0	0	0	388,283	413,521	440,408	440,408	440,408	440,408	440,400	440,400	440,400	440,400	440,400	440,400	440,400
EBR																			
NPV (JD)	3.8%		-531,360	-946,109	-878,281	-798,437	345,909	343,116	340,243	327,444	315,493	303,367	291,088	278,647	266,036	253,263	240,428	227,531	214,574
PV of Total Costs (JD)			3,485,143	531,360	946,109	878,281	798,437	31,294	28,449	25,863	23,512	21,375	19,421	17,665	16,092	14,747	13,514	12,381	11,348
PV of Total Qty Delivered (m ³)			2,682,835	0	0	0	0	241,093	235,422	229,995	224,698	219,423	214,158	208,903	203,658	198,423	193,198	187,973	182,748
Unit Water Price (FJD/m ³)			1.299																

Table 4.5.2-2 Financial/Economic Analysis of Madaba Water Networks Rehabilitation Project

Hydraulic Analysis (m³/yr)																			
Item	Allocation	Water Qty	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Produced		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saved		601,950	0	347,315	516,602	552,700	569,281	586,359	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951
Municipal Water	1.00	601,950	0	347,315	516,602	552,700	569,281	586,359	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	34,732	48,294	44,216	39,860	35,182	30,191	30,191	30,191	30,191	30,191	30,191	30,191	30,191	30,191	30,191	30,191
Quantity Delivered			0	347,315	516,602	552,700	569,281	586,359	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951	603,951
Quantity Whose Bills are Collected			0	312,584	488,308	518,494	529,431	551,178	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753
Industrial Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial Analysis (JD at 2011 Prices)																			
Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																			
Local Components	100%	864,531	518,719	345,812	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Components	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		864,531	518,719	345,812	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Costs			518,719	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531	864,531
O & M Costs			0	2,278	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417
Total Costs			518,719	868,090	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948	867,948
Revenues																			
Municipal Usage Qty (m ³)			0	312,584	488,308	518,494	529,431	551,178	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753
Municipal Tariff (JD/m ³)			0.294	0.303	0.312	0.321	0.331	0.341	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351	0.351
Municipal Revenues (JD)			0	94,857	152,305	163,856	175,189	187,856	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417
Industrial Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Tariff (JD/m ³)			1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (JD)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Tariff (JD/m ³)			0.818	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810	0.810
Irrigation Revenues (JD)			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues (JD)			0	94,857	152,305	163,856	175,189	187,856	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417	201,417
Net Cash Flow (JD)			-518,719	-253,434	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531	-864,531
Discounting (DR=5%)			0.95238	0.90703	0.86394	0.82270	0.78353	0.74622	0.71061	0.67694	0.64461	0.61351	0.58368	0.55494	0.52722	0.50046	0.47461	0.44961	0.42541
Total Qty Whose Bills are Collected (m ³)			0	312,584	488,308	518,494	529,431	551,178	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753	573,753
EBR	20.4%																		
NPV (JD)		1,801,469	-494,018	-219,872	128,615	331,583	334,588	337,631	340,715	343,834	346,982	350,161	353,374	356,622	359,906	363,226	366,581	369,971	373,395
PV of Total Costs (JD)		855,129	-494,018	-219,872	128,615	331,583	334,588	337,631	340,715	343,834	346,982	350,161	353,374	356,622	359,906	363,226	366,581	369,971	373,395
PV of Total Bills Collected (m ³)		7,734,830	0	281,522	421,818	418,731	414,823	411,297	407,755	404,318	400,982	397,744	394,502	391,354	388,299	385,335	382,461	379,676	376,979
Unit Water Price (FJD/m ³)		311																	

Economic Analysis (JD at 2001 Prices)

Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																			
Local Costs		835,483	581,290	334,193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Costs		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		835,483	581,290	334,193	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Costs			581,290	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483	835,483
O & M Costs		0	2,270	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417
Total Costs			581,290	338,491	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417	3,417
Benefits																			
Municipal Usage Qty (m ³)		0	347,315	536,602	552,700	569,281	586,359	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958
Unit Benefits of Municipal Water (JD/m ³)		0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Municipal Benefits (JD)		0	255,277	394,402	406,234	418,421	430,974	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903
Industrial Usage Qty (m ³)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Industrial Water (JD/m ³)		2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (JD)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Irrigation Water (JD/m ³)		8.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283
Irrigation Benefits (JD)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits (JD)		0	255,277	394,402	406,234	418,421	430,974	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903	443,903
Net Cash Flow (JD)		-501,290	-31,195	390,985	402,817	415,004	427,557	440,488	440,488	440,488	440,488	440,488	440,488	440,488	440,488	440,488	440,488	440,488	440,488
Discounting (DR=1.0%)		0.90909	0.82645	0.75131	0.68301	0.62092	0.56447	0.51318	0.46651	0.42418	0.38554	0.35049	0.31863	0.28966	0.26333	0.23939	0.21763	0.19794	0.17994
Total Qty Delivered (m ³)		0	347,315	536,602	552,700	569,281	586,359	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958	603,958
EBR																			
NPV (JD)	45.5%		-455,718	-87,103	283,753	275,130	257,685	241,345	226,038	205,499	186,889	169,827	154,388	140,352	127,593	115,994	105,449	95,863	87,148
PV of Total Costs (JD)			455,718	278,075	2,567	2,234	2,122	1,929	1,753	1,594	1,445	1,317	1,198	1,089	990	900	818	744	676
PV of Total Qty Delivered (m ³)			0	217,057	483,157	377,501	355,479	330,954	309,922	281,747	256,134	232,949	211,881	192,457	174,945	158,059	144,581	131,457	118,438
Unit Water Price (FJD/m ³)			159																

Table 4.5.2.3 Financial/Economic Analysis of Karak Water Networks Rehabilitation Project

Hydraulic Analysis (m ³ /yr)																			
Item	Allocation	Water Qty	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Water Produced		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Saved		321,150	0	236,615	251,521	267,367	284,211	302,117	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150
Municipal Water	1.00	321,150	0	236,615	251,521	267,367	284,211	302,117	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	23,661	22,637	21,389	19,895	18,127	16,058	16,058	16,058	16,058	16,058	16,058	16,058	16,058	16,058	16,058	16,058
Quantity Delivered			0	236,615	251,521	267,367	284,211	302,117	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150	321,150
Quantity Whose Bills are Collected			0	212,953	228,884	245,978	264,317	283,990	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093
Industrial Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Water	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Losses (%)			0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Physical Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Administrative/Managerial Losses (%)			0.12	0.10	0.09	0.08	0.07	0.06	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05	0.05
Administrative/Managerial Losses			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Delivered			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Quantity Whose Bills are Collected			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Financial Analysis (JD at 2011 Prices)																			
Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																			
Local Components	89%	651,027	651,027	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Foreign Components	11%	82,655	82,655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes	0%	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		734,682	734,682	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Cumulative Costs		734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682	734,682
O & M Costs		0	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824
Total Costs		734,682	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824
Revenues																			
Municipal Usage Qty (m ³)		0	212,953	228,884	245,978	264,317	283,990	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093
Municipal Tariff (JD/m ³)	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394	0.394
Municipal Revenues (JD)	0	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719
Industrial Usage Qty (m ³)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Industrial Tariff (JD/m ³)	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
Industrial Revenues (JD)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Tariff (JD/m ³)	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818	0.818
Irrigation Revenues (JD)	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Revenues (JD)	0	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719	84,719
Net Cash Flow (JD)	-734,682	62,895	71,365	80,893	91,632	103,737	117,379	132,697	149,859	168,877	189,855	212,913	238,161	265,610	295,360	327,519	362,198	399,507	439,556
Discounting (DR=5%)	0.95238	0.90703	0.86384	0.82270	0.78353	0.74622	0.71061	0.67664	0.64431	0.61351	0.58426	0.55654	0.53032	0.50559	0.48234	0.46048	0.43991	0.42063	0.40263
Total Qty Whose Bills are Collected (m ³)	0	212,953	228,884	245,978	264,317	283,990	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093	305,093
IRR	13.1%																		
NPV (JD)	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235	816,235
PV of Total Costs (JD)	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766	739,766
PV of Total Bills Collected (m ³)	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129	4,083,129
Unit Water Price (FJD/m ³)	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181	181

Economic Analysis (JD at 2001 Prices)

Item	Percent	Amount	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Costs																			
Local Costs		614,656	614,656	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
Foreign Costs		82,655	82,655	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Duty & Taxes		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Costs		697,311	697,311	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350	350
Cumulative Costs		697,311	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061	697,061
O & M Costs		0	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824	2,824
Total Costs		697,311	697,311	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174	3,174
Benefits																			
Municipal Usage Qty (m ³)		0	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615
Unit Benefits of Municipal Water (JD/m ³)		0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735	0.735
Municipal Benefits (JD)		0	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912
Industrial Usage Qty (m ³)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Industrial Water (JD/m ³)		2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740	2.740
Industrial Benefits (JD)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Irrigation Usage Qty (m ³)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Unit Benefits of Irrigation Water (JD/m ³)		0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283	0.283
Irrigation Benefits (JD)		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Benefits (JD)		0	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912	173,912
Net Cash Flow (JD)		-697,311	170,738	181,694	193,341	205,321	218,882	232,871	232,871	232,871	232,871	232,871	232,871	232,871	232,871	232,871	232,871	232,871	232,871
Discounting (DR=10%)		0.90909	0.82645	0.75131	0.68301	0.62092	0.56447	0.51318	0.46651	0.42418	0.38554	0.35049	0.31863	0.28966	0.26333	0.23939	0.21763	0.19784	0.17974
Total Qty Delivered (m ³)		0	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615	236,615
EBR																			
NPV (JD)	28.8%		-631,930	141,106	136,510	132,054	127,737	123,553	119,508	108,638	98,788	89,782	81,620	74,311	67,556	61,414	55,831	50,756	46,142
PV of Total Costs (JD)		659,767	631,930	2,623	2,385	2,168	1,971	1,792	1,629	1,481	1,346	1,224	1,112	100	88	74	67	61	50
PV of Total Qty Delivered (m ³)		2,534,505	0	185,549	182,972	182,615	178,473	170,537	164,801	149,819	136,185	123,817	112,561	102,528	93,028	84,589	76,881	69,892	63,538
Unit Water Price (FJD/m ³)		261																	