

Appendix 1.2 Annual Budgetary Schedule by Urban Water Supply Schemes (1/2)

City Code	Code	Urban Name	(1990)							(2000)										Total (US\$'000)
			93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	
U-	1	110.0	Nairobi	468,922	108,715						209,698	274,305							1,061,640	
U-	2	211.1	Karuri	9,063														2,907	11,970	
U-	3	211.4	Kiambu	1,702				4,768								2,616			9,087	
U-	4	212.1	Gatunda & Ngenda															314	314	
U-	5	213.1	Limuru					9,213										4,953	14,167	
U-	6	214.1	Ruiru			6,513												3,166	9,678	
U-	7	214.4	Thika						10,386									10,953	21,339	
U-	8	215.1	Githunguri					3,154										1,814	4,968	
U-	9	216.6	Kikuyu			12,732												2,134	14,866	
U-	10	221.1	Wanguru						580									599	1,179	
U-	11	222.2	Sagana						2,168									1,394	3,562	
U-	12	222.3	Kerugoya	4,985											3,365				8,350	
U-	13	223.2	Kutus						2,785									2,105	4,891	
U-	14	231.4	Kandara															482	482	
U-	15	232.3	Maragua	10,437														4,629	15,066	
U-	16	233.4	Kangema						538									671	1,208	
U-	17	234.3	Murang'a	7,059												4,319			11,378	
U-	18	235.1	Makuyu	3,123														1,669	4,792	
U-	19	241.3	Oi Kalou						6,781									3,933	10,714	
U-	20	254.2	Karatina						1,534									2,350	3,883	
U-	21	256.1	Othaya					3,022										1,978	5,000	
U-	22	257.0	Nyeri			29,242								21,102					50,344	
U-	23	311.2	Mariakani			2,872												1,749	4,621	
U-	24	313.2	Kilifi						4,543							5,102			9,645	
U-	25	314.3	Watamu	3,305														1,846	5,151	
U-	26	314.4	Malindi						48,865									15,304	64,369	
U-	135	314.6	Mamburū	2,510														1,970	4,479	
U-	27	321.1	Kwale						2,903										4,755	
U-	28	323.1	Kisumu						3,137									1,852	4,773	
U-	29	324.1	Msambweni					13,361	13,361			9,378		9,378					45,479	
U-	136	324.5	Lungalunga						1,520									835	2,355	
U-	30	331.0	Witu					3,348										2,055	5,403	
U-	31	333.2	Lamu					23,867									13,666		37,534	
U-	32	340.0	Mombasa	279,229	45,554						58,946	57,846							441,575	
U-	137	351.1	Taveta		4,992													2,226	7,219	
U-	33	352.4	Voi						4,874									2,794	7,669	
U-	34	353.2	Wundanyi														935		935	
U-	35	362.3	Bura & Madogo						643									304	947	
U-	36	363.3	Hola					4,245									2,604		6,850	
U-	37	364.1	Claren					1,984										1,005	2,989	
U-	38	411.8	Runyenyeni					1,526			162	162		162		162		162	2,337	
U-	39	412.1	Siakago																0	
U-	40	413.7	Embu						4,246									4,603	8,849	
U-	41	421.1	Isiolo					36,212	36,212		16,030	16,030		16,030		16,030		16,030	152,573	
U-	42	421.2	Oi Doiwo Ng'iro	5,245														3,078	8,323	
U-	138	422.1	Garbatula			3,164		8,437	9,491									19,297	40,389	
U-	139	423.1	Meru			3,373												2,087	5,460	
U-	43	431.4	Kitul	5,591												3,824			9,415	
U-	44	433.2	Mutomo																0	
U-	45	434.4	Mwingi	10,244														5,897	16,141	
U-	46	441.1	Machakos			47,363								30,749					78,112	
U-	47	441.2	Mituboni	12,533														7,759	20,293	
U-	48	442.3	Athi River						12,571									7,087	19,658	
U-	49	444.3	Uasin/Thawa			773												340	1,113	
U-	50	445.1	Kangundo	12,392														7,145	19,537	
U-	140	445.2	Tala			5,599												2,837	8,437	
U-	51	447.4	Nunguni						1,016									483	1,498	
U-	141	448.1	Wote					2,024										1,240	3,263	
U-	52	448.3	Emali			1,182												509	1,691	
U-	53	449.4	Mtito Andei & Kibwezi	12,803														6,734	19,537	
U-	142	451.1	North Horr			13,916								4,051		4,051			22,017	
U-	54	452.2	Kargi			5,731		15,282	17,192					9,525		9,525		9,525	66,779	
U-	143	453.1	Korr					16,713	16,713				11,691		11,691				56,810	
U-	55	454.1	Marsabit			15,265		40,707	45,796		18,992	18,992		18,992		18,992			177,736	
U-	56	455.2	Sololo			5,494		14,650	16,481					13,327		13,327			63,277	
U-	57	456.1	Moyale					19,246	19,246					14,891		14,891			68,275	
U-	58	461.4	Meru			26,059												17,484	43,544	
U-	59	463.1	Nkubu						2,808									1,831	4,639	
U-	60	464.1	Chogoria	1,260														456	1,716	
U-	61	464.3	Chuka						2,645										1,513	4,158
U-	62	467.2	Maua					2,502											1,326	3,827
U-	63	513.1	Mudo Gasho			12,914										3,351	3,351		19,616	
U-	64	515.2	Ijara			8,055												1,324	10,682	
U-	65	515.3	Kotile			11,732												1,948	15,628	
U-	66	515.4	Masalani					1,678										691	2,370	
U-	67	519.1	Garissa						6,554									6,363	12,918	
U-	68	521.1	Mandera						1,423									1,713	3,136	
U-	69	523.1	Elwak			50,695								12,393		12,393			75,481	
U-	70	524.2	Rhamu						1,839									1,026	2,866	
U-	71	532.4	Wajir			15,702		41,872	47,106		16,897	16,897		16,897		16,897			172,266	
U-	72	536.2	Buna			9,375		24,999	28,124		6,455	6,455		6,455		6,455		6,455	94,774	
U-	73	537.2	Bute			12,044												3,167	18,378	

Appendix 1.2 Annual Budgetary Schedule by Urban Water Supply Schemes (2/2)

City Code	Code	Urban Name	(1990)							(2000)										Total (US\$'000)
			93	94	95	96	97	98	99	00	01	02	03	04	05	06	07	08	09	
U- 74	611.2	Munga						2,037										1,564	3,601	
U- 75	611.5	Keroka						3,612										1,616	5,228	
U- 144	612.2	Nyamira + Kebirigo						7,587										4,003	11,590	
U- 76	615.0	Kisii						3,958	15,234							8,356			27,548	
U- 77	617.1	Ogembo	1,205															529	1,734	
U- 78	622.1	Maseno						10,141										5,410	15,551	
U- 79	622.3	Kisumu & + Kiboswa				72,722								32,118					104,840	
U- 80	623.2	Ahero	3,978															1,891	5,869	
U- 81	625.2	Muhoroni				4,880												2,753	7,633	
U- 145	632A	Bondo						2,814										1,358	4,172	
U- 82	633.2	Yala						1,696										830	2,526	
U- 83	634.1	Siaya						10,313								5,662			15,975	
U- 84	635A	Ukwala						1,276										639	1,914	
U- 85	641.1	Homa Bay						8,135								4,386			12,521	
U- 86	644.3	Migori				3,577												1,870	5,446	
U- 146	646.3	Kehancha + Tarang'anya	3,255															1,501	4,757	
U- 147	646.8	Nyabikaye				18,866										4,090		4,090	27,046	
U- 148	647.4	Oyugis						3,386										1,552	4,938	
U- 87	648.1	Kendu Bay						1,946										1,024	2,970	
U- 149	649A	Awendo/Sare	3,617															1,645	5,263	
U- 88	711.1	Oloitokitok						4,045										2,987	7,032	
U- 89	712.1	Ngong				8,354												6,254	14,608	
U- 90	713.1	Kajiado				11,952										7,790			19,742	
U- 91	713.5	Namanga				3,164												2,502	5,666	
U- 92	714.1	Magadi							6,362									4,325	10,688	
U- 93	723.1	Sotik				2,986												1,493	4,481	
U- 94	725.5	Kericho						15,176								9,057			24,233	
U- 95	726.1	Kipkelion						1,264										818	2,083	
U- 96	727.1	Londiani						57,107										1,529	58,636	
U- 97	731.5	Nanyuki							10,436								8,179		18,615	
U- 150	733.4	Rumuruti				7,335												1,868	9,203	
U- 98	733.9	Nykururu							13,396								9,659		23,055	
U- 99	743.2	Gilgil						6,344						31,910				5,004	43,257	
U- 100	744.1	Naivasha						21,497						10,478				17,022	48,997	
U- 101	746.1	Njoro				1,195		15,746										10,358	27,299	
U- 102	747.3	El Burgon				1,633		14,703										10,029	26,365	
U- 103	747.5	Molo						1,472	11,822									8,114	21,409	
U- 104	749.0	Nakuru				121,012									91,009				212,021	
U- 105	752.1	Narok							22,755							8,188			30,943	
U- 106	752.5	Nairugle Ngao							1,068									706	1,774	
U- 151	754.4	Kilgoris						2,597										1,686	4,282	
U- 152	755.1	Lokorian						2,277										1,457	3,734	
U- 107	762.3	Kilalo							19,614								15,143		34,757	
U- 108	762.4	Kimilini/Saboti+Spr.Kita	2,106															1,857	3,963	
U- 109	763.5	Endebess/Kwanza	1,670															742	2,412	
U- 153	771.2	Moi's Bridge				1,870												1,064	2,934	
U- 154	772.4	Turbo						3,487										1,993	5,480	
U- 110	772.5	Eldoret				80,661								55,230					135,891	
U- 111	774.6	Burnt Forest						1,302										789	2,091	
U- 112	812.5	Kabarnet	24,186														3,138		27,324	
U- 113	814.3	Maji Mazuri				3,179												2,002	5,180	
U- 114	814.5	Eldama Ravine							21,849									4,703	26,552	
U- 115	815.1	Mogotio							4,716									1,295	6,011	
U- 155	816.2	Marigat						1,635										913	2,549	
U- 116	822.4	Iten+Tambach				945			7,556							4,225			12,727	
U- 117	831.3	Nandi Hills						2,655										1,352	4,008	
U- 118	832.2	Kapsabet+Baroton						7,091										4,726	11,817	
U- 119	841.4	Maralal						9,496										6,544	16,040	
U- 120	842.4	Wamba				21,550		21,550						12,953		12,953		12,953	81,960	
U- 121	843.6	Baragoi				33,273		33,273						19,046		19,046		19,046	123,684	
U- 122	853.5	Lodwar						32,748	32,748	16,771		16,771		16,771		16,771		16,771	132,580	
U- 123	861.1	Kapenguria/Makutano				5,340										3,580			8,920	
U- 156	911.4	Mawale + Malakisi	2,201															1,118	3,319	
U- 124	912.4	Bungoma							15,892								10,879		26,771	
U- 125	913.1	Kimilili				4,407												2,911	7,318	
U- 126	914.2	Webuye						11,840										8,198	20,038	
U- 157	916.1	Chaptala	1,754															939	2,693	
U- 127	921.5	Busia							8,111							5,976			14,087	
U- 158	922.2	Nambale							1,398									821	2,219	
U- 128	931.3	Luanda																1,759	1,759	
U- 129	932.5	Vitiga+Majengo				3,416												1,670	5,086	
U- 130	933.1	Kaimosi																	0	
U- 131	934.3	Khayoga	1,209															565	1,774	
U- 132	935.4	Kakamega						18,509								10,657			29,166	
U- 133	939.2	Butero							1,438									758	2,196	
U- 134	93A.4	Mumias						9,036										4,460	13,496	
TOTAL			896,767		871,642		654,913		556,658		343,950		428,527		455,158		369,964		371,610	4,949,189

Appendix 1.3 Annual Budgetary Schedule by Sewerage Development (2/2)

City Code	Code	Urban Name	(1990)					(2000)										Total (US\$ 000)		
			93	94	95	96	97	98	99	00	01	02	03	04	05	06	07		08	09
U-	74	611.2	Manga					58											15	73
U-	75	611.5	Keroka					151											60	212
U-	144	612.2	Nyamira + Koblirigo					733											382	1,115
U-	76	615.0	Kisil							3,056										9,238
U-	77	617.1	Ogembo		69											6,181			25	94
U-	78	622.1	Maseno						1,102										637	1,740
U-	79	622.3	Kisumu & + Kiboswa				23,131								14,055					37,185
U-	80	623.2	Ahero		636														296	931
U-	81	625.2	Muhoroni				574												350	924
U-	145	632.4	Bondo						210										88	298
U-	82	633.2	Yala						158										67	226
U-	83	634.1	Siaya						1,267								689			1,956
U-	84	635.4	Ukwala						65										28	94
U-	85	641.1	Homa Bay						1,647										857	2,504
U-	86	644.3	Migori				544												285	829
U-	146	646.3	Kehancha + Tarang'anya		240														98	338
U-	147	646.8	Nyabikaye				226												47	321
U-	148	647.4	Oyugis						240										98	338
U-	87	648.1	Kerdu Bay						199										102	300
U-	149	649.4	Awendo/Saro		271														109	380
U-	88	711.1	Oloitokitok						459										414	873
U-	89	712.1	Ngong				1,575												1,286	2,861
U-	90	713.1	Kajiado				636										576			1,212
U-	91	713.5	Namanga				512												460	972
U-	92	714.1	Magadi							299									272	572
U-	93	723.1	Soik				388												191	578
U-	94	725.5	Kericho						3,001							6,716				9,718
U-	95	726.1	Kipkelion						166										106	272
U-	96	727.1	Londiani						239										155	394
U-	97	731.5	Nanyuki							2,199									5,745	7,943
U-	150	733.4	Rumuruti				179												114	294
U-	98	733.9	Nyahururu							1,255									857	2,113
U-	99	743.2	Gilgil						1,370										1,180	2,551
U-	100	744.1	Naivasha						7,075										5,855	12,930
U-	101	746.1	Njoro						859										745	1,604
U-	102	747.3	El Burgon						1,166										1,008	2,175
U-	103	747.5	Molo						1,026										889	1,916
U-	104	749.0	Nakuru				30,086								25,386					55,472
U-	105	752.1	Narok							1,515									1,487	3,002
U-	106	752.5	Nairagio Ngare							50									40	90
U-	151	754.4	Kilgoris						333										248	581
U-	152	755.1	Lolkorian						172										130	302
U-	107	762.3	Kisumu							9,426									6,652	16,078
U-	108	762.4	Kiminiini/Saboti+Spr.Kita		103														43	146
U-	109	763.5	Endebess/Kwarusa		165														67	233
U-	153	771.2	Moi's Bridge				222												132	353
U-	154	772.4	Turbo						305										184	489
U-	110	772.5	Eldoret				17,496								13,972					31,468
U-	111	774.6	Burnt Forest						156										96	252
U-	112	812.5	Kabarnet		709														494	1,203
U-	113	814.3	Maji Mazuri				395												274	669
U-	114	814.5	Eldama Ravine							426									295	720
U-	115	815.1	Mogotio							222									152	374
U-	155	816.2	Marigat						198										103	300
U-	116	822.4	Iten+Tambach							455									243	698
U-	117	831.3	Nandi Hills						97										50	146
U-	118	832.2	Kapsabet+Baraton						1,137										797	1,934
U-	119	841.4	Mzalai						1,499										1,159	2,658
U-	120	842.4	Wamba				158		158						83				83	566
U-	121	843.6	Baragoi				138		138						71				71	490
U-	122	853.5	Lodwar						404			132		132					132	1,338
U-	123	861.1	Kejenguria/Makutano				961												694	1,654
U-	156	911.4	Mkwali + Malakisi		244														126	370
U-	124	912.4	Dungoma							2,795									6,704	9,499
U-	125	913.1	Kimilili				627												456	1,084
U-	126	914.2	Webuye						2,526										6,078	8,603
U-	157	916.1	Chaptais		223														123	346
U-	127	921.5	Busia							1,413									975	2,388
U-	158	922.2	Nambale							182									98	281
U-	128	931.3	Luanda							271									164	435
U-	129	932.5	Vihiga+Majengo				339												158	497
U-	130	933.1	Kaimosi							34									11	45
U-	131	934.3	Khayoga		34														14	48
U-	132	935.4	Kakamega						7,761										4,532	12,293
U-	133	939.2	Butere							175									81	256
U-	134	93A.4	Mumias						1,755										818	2,573
TOTAL				161,126	160,799	45,117	52,554	45,385	45,716	73,949	65,902	54,408	704,955							

Appendix I.4 Annual Budgetary Schedule by Irrigation Projects

Unit : million US\$

District/Project	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	
Small scale schemes	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	0.57	
220 Mwea extension																					
310 Sabaki Extension							2.92	7.85	4.43	5.97	16.19	13.57	11.79	0.98		3.97	3.97				
350 Taita Taveta													3.97	3.97	3.97	2.38	2.38	2.38	2.38	2.38	2.38
360 Tana Delta		6.95	32.10	33.34	9.28	14.78	36.86	8.04	0.00		1.20	1.20	1.20	1.20	1.20						
410 Lower Ruingazi												7.62	7.62	7.62	7.62						
440 Kanzalu															45.44	45.44	45.44	45.44	45.44	45.44	45.44
440 Kibwezi extension																					
460 Kunai								0.70	0.70	0.70	0.70	0.70	0.70								
460 Thanzani														3.47	3.47	3.47	3.47	3.47	3.47	3.47	3.47
620 Kano Plain							4.06	3.83	8.11	14.51	12.86	5.64	12.95	24.78	32.57	51.10	43.19	18.98			
630 Lower Nzoia								2.49	2.49	2.49	2.49	2.49									
640 Kimira												3.63	3.63	3.63	3.63	0.66	0.66	0.66	0.66	0.66	0.66
640 Lower Kuja										0.62	0.62	0.82	0.00	0.00	0.99	0.66	0.66	0.66	0.66	0.66	0.66
710 Lower Ewaso Ngiro																	11.40	11.40	11.40	11.40	11.40
820 Aror													1.27	1.27	1.27	1.27	1.27				
850 Turkwell																0.35	0.35	0.35	0.35	0.35	0.35
910 Upper Nzoia															17.61	17.61	17.61	17.61	17.61	17.61	17.61
920 Yala Swamp													6.08	6.62	6.31	2.59	3.16	2.46	1.74	0.97	0.97
Total	0.57	7.52	32.67	33.91	9.85	15.35	44.42	22.78	16.29	24.85	34.61	36.24	49.77	54.10	124.62	140.65	133.46	103.56	79.82	15.68	15.68

Note : The master plan period (1993-2010) does not cover the whole construction period of the large irrigation schemes. In the Study, the disbursement schedule for a period from 1993 to 2010 was considered for the formulation of master action plan.

Appendix 1.5 Annual Budgetary Schedule by Hydropower Projects

(Unit : million US\$)

Project	Year											Total							
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003		2004	2005	2006	2007	2008	2009	2010
1 Sondur/Miriu No.1	20.0	27.0	46.0	33.0	7.0														133.0
No.2			6.0	12.0	12.0	6.0													36.0
2 Low Grand Falls					44.0	87.0	102.0	58.0											291.0
3 Oldorko							11.0	21.0	25.0	14.0									71.0
4 Magwagwa								50.0	100.0	115.0	64.0								329.0
5 Gitaru #3								4.0	8.0	9.0	4.0								25.0
6 Mutonga									22	48	52	27							149.0
Total	20.0	27.0	52.0	45.0	63.0	93.0	113.0	129.0	129.0	159.0	121.0	56.0	27.0	0.0	0.0	0.0	0.0	0.0	1034.0

Appendix 1.6 Annual Budgetary Schedule by Flood Control Projects

(Unit : million US\$)

Project	Year										Total								
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002		2003	2004	2005	2006	2007	2008	2009	2010
1 Kano Plain				5.2	5.2	5.2	5.2												20.7
2 Nairobi City						3.6	3.6	3.6											10.8
3 Yala Swamp								4.4	4.4	4.4	4.4	4.4							17.7
4 Kuja Rivermouth														1.7	1.7	1.7			5.0
5 Lumi Rivermouth																2.767	2.767	2.767	8.3
Total	0.0	0.0	0.0	5.2	5.2	8.8	8.8	3.6	4.4	4.4	4.4	4.4	0.0	1.7	1.7	4.4	2.8	2.8	62.5

Appendix 1.7 Annual Budgetary Schedule by Urban Drainage and River Improvement Projects

Urban Drainage Project	Year												Total						
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		2005	2006	2007	2008	2009	2010
Urban Drainage Projects																			
1 110 Nairobi			90.0	90.0	90.0	90.0									4.3	4.3	4.3	4.3	360.0
2 210 Kiambu															4.9	4.9	4.9	4.9	12.9
3 210 Thika															2.6	2.6	2.6	2.6	14.8
4 220 Kerugoya														10.5	10.5	10.5	10.5	7.7	
5 230 Muranga															2.0	2.0	2.0	2.0	31.5
6 240 Olkalou															1.6	1.6	1.6	1.6	6.0
7 250 Nyeri															2.5	2.5	2.5	2.5	13.1
8 310 Kihiki															2.4	2.4	2.4	2.4	4.9
9 310 Malindi															2.4	2.4	2.4	2.4	7.6
10 320 Kwale															2.3	2.3	2.3	2.3	7.2
11 330 Lamu															3.1	3.1	3.1	3.1	7.0
12 340 Mombasa				15.5	15.5	15.5									0.7	0.7	0.7	0.7	46.6
13 350 Voi															2.2	2.2	2.2	2.2	9.2
14 350 Wundanyi															2.5	2.5	2.5	2.5	9.2
15 360 Hola															0.3	0.3	0.3	0.3	0.7
16 410 Embu															1.2	1.2	1.2	1.2	2.2
17 420 Isiolo															0.8	0.8	0.8	0.8	3.6
18 430 Kitui															0.2	0.2	0.2	0.2	3.6
19 440 Michakos				7.4	7.4	7.4									0.5	0.5	0.5	0.5	22.1
20 440 Momboni				0.5	0.5	0.5									0.5	0.5	0.5	0.5	1.6
21 450 Marsabit															0.3	0.3	0.3	0.3	0.8
22 460 Meru									0.9	0.9	0.9				0.2	0.2	0.2	0.2	2.7
23 510 Garissa															0.2	0.2	0.2	0.2	6.4
24 520 Mandera															0.5	0.5	0.5	0.5	0.5
25 530 Wajir															0.3	0.3	0.3	0.3	1.5
26 610 Kisii										7.0	7.0	7.0			0.3	0.3	0.3	0.3	21.1
27 620 Kisumu															3.1	3.1	3.1	3.1	1.0
28 630 Siaya															0.3	0.3	0.3	0.3	33.5
29 640 Homa Bay															3.1	3.1	3.1	3.1	1.0
30 710 Kajiado															0.3	0.3	0.3	0.3	9.2
31 720 Kericho															3.1	3.1	3.1	3.1	9.2
32 730 Nanyuki															0.3	0.3	0.3	0.3	9.4
33 740 Narvasia															0.3	0.3	0.3	0.3	15.6
34 740 Nakuru				2.4	2.4	2.4									1.9	1.9	1.9	1.9	7.2
35 750 Naok				17.3	17.3	17.3									0.6	0.6	0.6	0.6	51.8
36 760 Kitale															2.1	2.1	2.1	2.1	6.4
37 770 Eldoret															0.4	0.4	0.4	0.4	25.2
38 810 Kabomet															0.4	0.4	0.4	0.4	34.3
39 820 Ilmorog															0.9	0.9	0.9	0.9	1.3
40 830 Kapkapet/Baretton															4.4	4.4	4.4	4.4	2.6
41 840 Maralal															4.4	4.4	4.4	4.4	13.1
42 850 Lodwar															1.9	1.9	1.9	1.9	5.6
43 850 Kapenguria/Makumano															0.6	0.6	0.6	0.6	1.8
44 910 Bungoma															0.9	0.9	0.9	0.9	2.8
45 910 Webuye															0.9	0.9	0.9	0.9	13.0
46 920 Busia															0.3	0.3	0.3	0.3	1.8
47 930 Kakamega															5.5	5.5	5.5	5.5	16.6
Sub-total	0.0	0.0	90.0	90.0	125.2	144.2	55.1	20.0	20.7	39.9	55.7	35.8	15.8	14.3	30.2	60.5	46.2	30.3	874.0
Minor Ad-hoc River Improvement Works																			
	0.0	0.0	4.5	4.5	4.5	4.5	4.5	4.5	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	90.0
Long-term Improvement of Lower Tana River																			
	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0	40.0
TOTAL	5.0	5.0	99.5	99.5	194.7	153.7	64.6	29.5	27.0	46.2	62.0	42.1	22.1	20.6	36.5	66.8	52.5	36.6	1004.0
(KSh)	6.3	6.3	125.4	125.4	169.7	193.7	81.4	37.1	34.1	58.2	78.1	53.1	27.8	26.0	46.0	84.2	66.2	46.1	1265.0

APPENDIX 2

IMPLEMENTATION PROGRAMME UNDER ALTERNATIVE BUDGETARY SCENARIO A

(Budget availability: 50% approximately)

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**Appendix 2.1 Urban Water Supply Schemes
Proposed Implementation Programme for Alternative-A**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule													
				US\$	K£	83	85	2000	2	4	6	8	10						
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	1,061.6	1,337.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	9.1	11.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
220	Kerugoya	U-12	Kiringa River	8.3	10.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•
230	Maragua	U-15	Githanji river	15.1	19.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•
240	Oi Kalou	U-19	Malewa River	10.7	13.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•
250	Nyeri	U-22	Chania River	50.3	63.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	64.4	81.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
320	Kwale	U-27	Marere pipeline	4.8	6.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•
330	Lamu	U-31	P/L from Tana River + B/H	37.5	47.3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	441.6	556.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
350	Wundanyi	U-34	Sigaso/Manguri River	0.9	1.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
360	Hola	U-36	Tana River	6.8	8.6	•	•	•	•	•	•	•	•	•	•	•	•	•	•
410	Embu	U-40	Lower Kapingazi River + Upper Ruringazi River	8.8	11.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
430	Kitui	U-43	Masinga Dam	9.4	11.9	•	•	•	•	•	•	•	•	•	•	•	•	•	•
440	Machakos	U-46	Athi River P/L	78.1	98.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
440	Wote	U-141	Kaiti river + Nzuuni river	3.3	4.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	177.7	223.9	•	•	•	•	•	•	•	•	•	•	•	•	•	•
460	Meru	U-58	Kathita river	43.5	54.9	•	•	•	•	•	•	•	•	•	•	•	•	•	•
510	Garissa	U-67	Tana River	12.9	16.3	•	•	•	•	•	•	•	•	•	•	•	•	•	•
520	Mandera	U-68	Daua River	3.1	4.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	172.3	217.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
610	Nyamira + Kebirigo	U-144	Kuja river	11.6	14.6	•	•	•	•	•	•	•	•	•	•	•	•	•	•
610	Kisii	U-76	Bunyonyu Dam	27.5	34.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•
620	Kisumu & + Kiboswa	U-79	Kibos dam	104.8	132.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
630	Siaya	U-83	Yala River	16.0	20.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
640	Homa Bay	U-85	Lake Victoria	12.5	15.8	•	•	•	•	•	•	•	•	•	•	•	•	•	•
710	Ngong	U-89	Kerarapon Spring	14.6	18.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
720	Kericho	U-94	Dimlitch Dam, Kinugung Dam	24.2	30.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•
730	Nanyuki	U-97	Liki river	18.6	23.5	•	•	•	•	•	•	•	•	•	•	•	•	•	•
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	212.0	267.1	•	•	•	•	•	•	•	•	•	•	•	•	•	•
750	Narok	U-105	Upper Narok Dam	30.9	39.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•
760	Kitale	U-107	Koitobos river	34.8	43.8	•	•	•	•	•	•	•	•	•	•	•	•	•	•
770	Eldoret	U-110	Moiben Dam + Nzoia river	135.9	171.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
810	Kabarnet	U-112	Kirandich Dam	27.3	34.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
820	Iten+Tambach	U-116	Moiben Dam	12.7	16.0	•	•	•	•	•	•	•	•	•	•	•	•	•	•
830	Kapsabet+Baraton	U-118	Mokong river	11.8	14.9	•	•	•	•	•	•	•	•	•	•	•	•	•	•
840	Maralal	U-119	Loikas/Yamo river	16.0	20.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
860	Kapenguria/Makutano	U-123	Kapenguria River	8.9	11.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•
910	Bungoma	U-124	Kuywa River	26.8	33.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•
920	Busia	U-127	Sio river	14.1	17.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•
930	Vihiga+Majengo	U-129	Edzawa River (Kimondi River)	5.1	6.4	•	•	•	•	•	•	•	•	•	•	•	•	•	•
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	29.2	36.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•
	TOTAL			3,015.9	3,800.1														
Note:		• Construction																	

**Appendix 2.2 Sewerage Development
Proposed Implementation Programme for Alternative-A**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule										
				US\$	K£	93	95	2000	2	4	6	8	10			
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	214.81	270.66	•	•	•			•	•	•	•	•	•
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	0.57	0.72		•	•		•	•			•	•	•
220	Kerugoya	U-12	Kiringa River	1.17	1.48	•	•							•	•	•
230	Maragua	U-15	Githanji river	3.08	3.88		•	•							•	•
240	Oi Kalou	U-19	Malewa River	1.31	1.65					•	•				•	•
250	Nyeri	U-22	Chania River	23.74	29.91			•	•				•	•		•
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	10.56	13.30				•	•					•	•
320	Kwale	U-27	Marere pipeline	0.53	0.66				•	•					•	•
330	Lamu	U-31	P/L from Tana River + B/H	1.19	1.50				•	•					•	•
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	57.41	72.33	•	•	•			•	•	•	•	•	•
350	Wundanyi	U-34	Sigaso/Manguri River	0.28	0.35										•	•
360	Hola	U-36	Tana River	1.22	1.54				•	•					•	•
410	Embu	U-40	Lower Kapingazi River + Upper Rupingazi River	2.47	3.12				•	•					•	•
430	Kitui	U-43	Masinga Dam	1.40	1.77	•	•								•	•
440	Machakos	U-46	Athi River P/L	22.81	28.74			•	•					•	•	•
440	Wote	U-141	Kaiti river + Nzuuni river	0.31	0.39				•	•					•	•
450	Marsabit	U-55	Boreholes +Small dams/Sub-surface dam/Spring	1.65	2.07	•	•	•	•	•			•	•	•	•
460	Meru	U-58	Kathita river	20.54	25.88			•	•						•	•
510	Garissa	U-67	Tana River	8.08	10.19				•	•					•	•
520	Mandera	U-68	Daua River	0.66	0.83				•	•					•	•
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	2.65	3.34	•	•	•	•	•	•	•	•	•	•	•
610	Nyamira + Kibirigo	U-144	Kuja river	1.12	1.41				•	•					•	•
610	Kisii	U-76	Bunyonyu Dam	9.24	11.64				•	•					•	•
620	Kisumu & + Kiboswa	U-79	Kibos dam	37.19	46.85				•	•				•	•	•
630	Siaya	U-83	Yala River	1.96	2.47				•	•					•	•
640	Homa Bay	U-85	Lake Victoria	2.50	3.16				•	•					•	•
710	Ngong	U-89	Kerarapon Spring	2.86	3.61				•	•					•	•
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	9.72	12.24				•	•					•	•
730	Nanyuki	U-97	Liki river	7.94	10.01				•	•					•	•
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	55.47	69.89				•	•				•	•	•
750	Narok	U-105	Upper Narok Dam	3.00	3.78				•	•					•	•
760	Kitale	U-107	Koitobos river	16.08	20.26				•	•					•	•
770	Eldoret	U-110	Moiben Dam + Nzoia river	31.47	39.65				•	•				•	•	•
810	Kabarnet	U-112	Kirandich Dam	1.20	1.52	•	•								•	•
820	Iten+Tambach	U-116	Moiben Dam	0.70	0.88				•	•					•	•
830	Kapsabet+Baraton	U-118	Mokong river	1.93	2.44				•	•					•	•
840	Maralal	U-119	Loikas/Yamo river	2.66	3.35				•	•					•	•
860	Kapenguria/Makutano	U-123	Kapenguria River	1.65	2.08				•	•					•	•
910	Bungoma	U-124	Kuywa River	9.50	11.97				•	•					•	•
920	Busia	U-127	Sio river	2.39	3.01				•	•					•	•
930	Vihiga+Majengo	U-129	Edzawa River (Kimondi River)	0.50	0.63				•	•					•	•
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	12.30	15.49				•	•					•	•
	TOTAL			587.82	740.65											

Note: • Construction

Appendix 2.3 Irrigation Project

Proposed Implementation Programme for Alternative - A

District Code	Project	Development Area (ha)	Executing Agency	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000	2	4	6	8	10							
	Small Scale Schemes	7,000	MOA	11.4	14.4	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●
220	Mwea extension	2,900	NIB	63.7	80.3	★	★	●	●	●	●	●	●	●	●	●	●	●	●	
360	Tana Delta	12,000	TARDA	141.4	178.2	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
410	Lower Rupingazi	1,800	TARDA	6.0	7.6			★	★	★	★	●	●	●	●	●	●	●	●	
460	Kunati	1,050	TARDA	3.5	4.4			★	★	★	★	●	●	●	●	●	●	●	●	
620	Kano Plain	25,640	LBDA	232.5	293.0	★	★	●	●	●	●	●	●	●	●	●	●	●	●	
630	Lower Nzoia/ Bunyala Extension	10,480	NIB	12.4	15.6	★	★	★	★	●	●	●	●	●	●	●	●	●	●	
640	Lower Kuja	1,900	LBDA	5.6	7.1			★	★	★	★	●	●	●	●	●	●	●	●	
640	Kimira	2,000	LBDA	18.1	22.8					★	★	★	★	●	●	●	●	●	●	
	Total	57,770		483.2	608.8															

Note:

★ Study

★ Design

● Construction

**Appendix 2.4 Major Flood Control Projects
Proposed Implementation Programme for Alternative-A**

District Code	Project	Description	Executing Agency	Cost (million)		Implementation Schedule															
				US\$	K£	93	95	2000	2	4	6	8	10								
620	Kano Plain (Nyando river)	- Heightening of existing dykes (2 km) - Construction of new dykes (69 km)	MOWD/LBDA	20.7	26.1	☆	☆	☆	●	●	●										
110	Nairobi City (Nairobi river, etc)	- Enlargment of existing channels/culverts (13 sites) - Channel improvement (11 sites)	MOLG	10.8	13.6							☆	☆	☆	●	●					
	Total			31.5	39.7																
<p>Note: ☆ Study/Design ● Construction</p>																					

**Appendix 2.5 Urban Drainage and River Improvement Projects
Proposed Implementation Programme for Alternative-A**

District Code	Project	Description	Executing Agency	Cost (million)		Implementation Schedule																	
				US\$	K£	93	95	2000			2	4	6	8	10								
Urban Drainage Projects																							
110	Nairobi	P = 1,481,800 , A = 90 km ²	MOLG	360	454				☆	☆	●	●	●	●									
340	Mombasa	P = 529,200 , A = 11.6 km ²	"	47	59												☆	☆	☆	●	●	●	
	Sub-total	P = 2,011,000 , A = 101.6 km ²	"	407	513																		
Minor Ad-hoc River Improvement Works																							
All	Various rivers	To be taken up as the need is identified	MOWD	45	57	☆	☆	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	
Long-term Improvement of Lower Tana River																							
360	Lower Tana improvement	Experimental work for rectifying river meanders and bank protection	MOWD/TARDA	20	25	●	●	●	●	●	●	●											
	Sub-total			65	82																		
	TOTAL			472	595																		
Note:		☆ Study/Design ● Construction																					

Appendix 2.6 Summary of Development Cost for Alternative-A

Development Sector	Budget Appropriated for	Financial Requirement (Million)					
		1993 - 2000		2001 - 2010		Total	
		US\$	K£	US\$	K£	US\$	K£
1. D&I Water Supply		2,081	2,622	2,249	2,834	4,330	5,456
(1) Urban water supply	MOWD *1	1,836	2,313	1,180	1,487	3,016	3,800
(2) Rural water supply	MOWD *2	245	309	1,069	1,347	1,314	1,656
2. Sewerage Development	MOLG *3	353	445	235	296	588	741
3. Irrigation Development		201	253	285	360	486	613
(1) Major irrigation projects	MORD *4	196	247	280	353	476	600
(2) Small irrigation schemes	MOA *5	5	6	5	7	10	13
4. Livestock Water Development	MOLD *6	128	161	249	314	377	475
5. Hydropower Development	MOE *7	542	683	492	621	1,034	1,304
6. River and Flood Works		235	296	269	339	504	635
(1) Major flood control projects	MOWD *8	21	26	11	14	32	40
(2) Urban drainage works	MOLG *3	180	227	227	286	407	513
(3) Minor river improvement	MOWD *8	14	18	31	39	45	57
(4) Improvement of Lower Tana	MOWD *9	20	25	-	-	20	25
Total		3,540	4,460	3,779	4,764	7,319	9,224

Notes: Executing agencies will be;

*1 : MOWD, NWPC, Municipalities (NCC, etc)

*2 : MOWD, NWPC, County councils, NGO, etc

*3 : Municipal and urban councils under technical assistance by MOWD

*4 : NIA, LBDA, TARDA, KVDA and other basin development authorities

*5 : MOA and some agencies listed for *4

*6 : Implementation to be entrusted to MOWD and/or basin development authorities

*7 : KPC, KPLC and basin development authorities

*8 : MOWD or to be entrusted to basin development authorities and municipal/urban councils

*9 : To be entrusted to TARDA

Appendix 2.7 Annual Budgetary Schedule for Alternative-A

(Unit : million US\$)

Development Sector	Year												Total						
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		2005	2006	2007	2008	2009	2010
1 D&I Water Supply	282.4	282.4	246.1	246.1	294.2	294.2	217.8	217.8	220.7	220.7	210.5	210.5	239.9	239.9	230.6	230.6	222.5	222.6	4,330
(1) Urban water supply	251.8	251.8	215.5	215.5	263.6	263.6	187.2	187.2	113.8	113.8	103.6	103.6	133.0	133.0	123.7	123.7	115.6	115.6	3,016
(2) Rural water supply	30.6	30.6	30.6	30.6	30.6	30.6	30.6	30.6	106.9	106.9	106.9	106.9	106.9	106.9	106.9	106.9	106.9	107.0	1,314
2 Sewerage Development (for 158 urban centres)	57.4	57.4	32.4	32.4	61.9	61.9	25.1	25.1	18.6	18.6	3.9	3.9	36.2	36.2	35.2	35.2	23.2	23.2	588
3 Irrigation Development	32.7	33.9	9.9	15.4	44.4	22.8	16.3	24.9	34.6	28.7	30.9	31.2	39.0	56.0	44.4	20.4	0.9	0.6	486
(1) Major irrigation projects	32.1	33.3	9.3	14.8	43.8	22.2	15.7	24.3	34.0	28.1	30.3	30.6	38.4	55.4	43.8	19.8	0.3	0.0	476
(2) Small irrigation schemes	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	10
4 Livestock Water Development	16.0	16.0	16.0	16.0	16.0	16.0	16.0	16.0	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	24.9	377
5 Hydropower Development	20.0	27.0	52.0	45.0	63.0	93.0	113.0	129.0	129.0	159.0	121.0	56.0	27.0						1,034
6 River and Flood Works	2.5	2.5	5.5	10.7	10.7	10.7	100.7	95.5	92.7	92.7	2.7	6.3	6.3	6.3	2.7	18.4	18.4	18.4	504
(1) Major flood control projects				5.2	5.2	5.2	5.2	90.0	90.0	90.0		3.6	3.6	3.6					32
(2) Urban drainage works				3.0	3.0	3.0	3.0	3.0	2.7	2.7	2.7	2.7	2.7	2.7	2.7	15.7	15.7	15.7	407
(3) Minor river improvement				2.5	2.5	2.5	2.5	2.5	2.5	2.5	2.7	2.7	2.7	2.7	2.7	2.7	2.7	2.7	45
(4) Improvement of Lower Tana				2.5	2.5	2.5	2.5	2.5	2.5	2.5									20
Total	411.0	419.2	361.9	365.5	490.1	498.5	488.8	508.3	520.5	544.6	393.9	332.8	373.3	363.3	337.8	329.5	289.9	289.7	7,319

APPENDIX 3

IMPLEMENTATION PROGRAMME UNDER ALTERNATIVE BUDGETARY SCENARIO B

(Budget availability: 75% approximately)

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**Appendix 3.1 Urban Water Supply Schemes (1/2)
Implementation Programme for Alternative-B**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000		2	4	6	8	10						
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	1061.6	1,337.7	•	•	•												
210	Karuri	U-2	Kiambaa Dam (Rui Ruaka R.)	12.0	15.1	•	•													
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	9.1	11.4	•	•													
210	Ruiru	U-6	Ruiru River	9.7	12.2		•	•												
220	Kenigoya	U-12	Kiringa River	8.3	10.5	•	•													
230	Maragua	U-15	Githanji river	15.1	19.0	•	•													
230	Makuyu	U-18	Motoho river	4.8	6.0	•	•													
240	Oi Kalou	U-19	Malewa River	10.7	13.5					•	•									
250	Nyeri	U-22	Chania River	50.3	63.4		•	•												
310	Mariakani	U-23	2nd Mzima P/L	4.6	5.8		•	•												
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	64.4	81.1					•	•									
320	Kwale	U-27	Marere pipeline	4.8	6.0					•	•									
330	Lamu	U-31	P/L from Tana River + B/I	37.5	47.3					•	•									
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	441.6	556.4	•	•	•					•	•	•					
350	Taveta	U-137	Njoro Spring	7.2	9.1		•	•												
350	Wundanyi	U-34	Sigaso/Manguri River	0.9	1.2															
360	Hola	U-36	Tana River	6.8	8.6					•	•									
410	Embu	U-40	Lower Kapingazi River + Upper Rapingazi River	8.8	11.2					•	•									
420	Isiolo	U-41	Boreholes + Spring	152.6	192.2					•	•									
420	Oi Doiyo Ng'iro	U-42	Ewaso Ngiro River	8.3	10.5	•	•													
420	Merti	U-139	Ewaso Ngiro	5.5	6.9		•	•												
430	Kitui	U-43	Masinga Dam	9.4	11.9	•	•													
430	Mwingi	U-45	Kiambere Dam	16.1	20.3	•	•													
440	Machakos	U-46	Athi River P/L	78.1	98.4					•	•									
440	Mitaboni	U-47	Kaathana River	20.3	25.6	•	•													
440	Kangundo	U-50	Pipeline from Athi River	19.5	24.6	•	•													
440	Wote	U-141	Kaiti river + Nzuuni river	3.3	4.1					•	•									
450	Kargi	U-54	Boreholes + Subsurface Dam	66.8	84.1					•	•									
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	177.7	223.9					•	•									
460	Meru	U-58	Kathita river	43.5	54.9					•	•									
510	Garissa	U-67	Tana River	12.9	16.3					•	•									
520	Mandera	U-68	Daua River	3.1	4.0					•	•									
520	Elwak	U-69	Boreholes	75.5	95.1					•	•									
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	172.3	217.1					•	•									
530	Buna	U-72	Boreholes(Lago Bor river)	94.8	119.4					•	•									
610	Nyamira + Kebirigo	U-144	Kuja river	11.6	14.6					•	•									
610	Kisii	U-76	Bunyonyu Dam	27.5	34.7					•	•									
620	Kisumu & + Kibos wa	U-79	Kibos dam	104.8	132.1					•	•									
620	Ahero	U-80	Nyando river	5.9	7.4	•	•													
620	Muhoroni	U-81	Nyando River	7.6	9.6					•	•									
630	Siaya	U-83	Yala River	16.0	20.1					•	•									
640	Homa Bay	U-85	Lake Victoria	12.5	15.8					•	•									
640	Migori	U-86	Migori river	5.4	6.9		•	•												
710	Oloitokitok	U-88	Nol-Turesh Spring	7.0	8.9					•	•									
710	Ngong	U-89	Kerarapon Spring	14.6	18.4					•	•									
710	Kajiado	U-90	Kiserian P/L	19.7	24.9					•	•									
710	Namanga	U-91	Namanga Spring	5.7	7.1					•	•									
720	Sotik	U-93	Kipsonoi river	4.5	5.6					•	•									
720	Kericho	U-94	Dimlitich Dam, Kimugung Dam	24.2	30.5					•	•									
730	Nanyuki	U-97	Liki river	18.6	23.5					•	•									
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	212.0	267.1					•	•									
750	Narok	U-105	Upper Narok Dam	30.9	39.0					•	•									
760	Kitale	U-107	Koitobos river	34.8	43.8					•	•									
770	Eldoret	U-110	Moiiben Dam + Nzoia river	135.9	171.2					•	•									
810	Kabarnet	U-112	Kirandich Dam	27.3	34.4	•	•													
810	Maji Mazuri	U-113	Maji Mazuri river	5.2	6.5					•	•									
820	Iten+Tambach	U-116	Moiiben Dam	12.7	16.0					•	•									

Note: • Construction

**Appendix 3.2 Sewerage Development
Proposed Implementation Programme for Alternative-B (1/2)**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000	2	4	6	8	10							
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	214.81	270.66	•	•	•												
210	Karuri	U-2	Kiamba Dam (Rui Ruaka R.)	1.59	2.00	•	•													
210	Kiambu	U-3	Kiamba Dam (Rui Ruaka r.)	0.57	0.72			•	•											
210	Ruiru	U-6	Ruiru River	1.39	1.75		•	•												
220	Kerugoya	U-12	Kiringa River	1.17	1.48	•	•													
230	Maragua	U-15	Githanji river	3.08	3.88	•	•													
230	Makuyu	U-18	Motoho river	0.57	0.72	•	•													
240	Oi Kalou	U-19	Malewa River	1.31	1.65				•	•										
250	Nyeri	U-22	Chania River	23.74	29.91		•	•							•	•				
310	Mariakani	U-23	2nd Mzima P/L	1.13	1.43		•	•												
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	10.56	13.30					•	•									
320	Kwale	U-27	Marere pipeline	0.53	0.66					•	•									
330	Lamu	U-31	P/L from Tana River + B/H	1.19	1.50					•	•									
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	57.41	72.33	•	•	•												
350	Taveta	U-137	Njoro Spring	1.00	1.26		•	•												
350	Wundanyi	U-34	Sigaso/Manguri River	0.28	0.35					•	•									
360	Hola	U-36	Tana River	1.22	1.54					•	•									
410	Embu	U-40	Lower Kapingazi River + Upper Rupingazi River	2.47	3.12					•	•									
420	Isiolo	U-41	Boreholes + Spring	3.41	4.29					•	•	•	•	•	•	•	•	•	•	•
420	Oi Doinyo Ng'iro	U-42	Ewaso Ngiro River	0.70	0.89	•	•													
420	Merti	U-139	Ewaso Ngiro	0.91	1.14		•	•												
430	Kitui	U-43	Masinga Dam	1.40	1.77	•	•													
430	Mwingi	U-45	Kiambere Dam	1.10	1.39	•	•													
440	Machakos	U-46	Athi River P/L	22.81	28.74		•	•												
440	Mitaboni	U-47	Kaathana River	7.64	9.63	•	•													
440	Kangundo	U-50	Pipeline from Athi River	1.50	1.89	•	•													
440	Wote	U-141	Kaiti river + Nzuuni river	0.31	0.39					•	•									
450	Kargi	U-54	Boreholes + Subsurface Dam	0.65	0.81		•	•	•	•	•	•	•	•	•	•	•	•	•	•
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dams/Spring	1.65	2.07		•	•	•	•	•	•	•	•	•	•	•	•	•	•
460	Meru	U-58	Kathita river	20.54	25.88		•	•												
510	Garissa	U-67	Tana River	8.08	10.19					•	•									
520	Mandera	U-68	Daua River	0.66	0.83					•	•									
520	Elwak	U-69	Boreholes	0.89	1.12		•	•												
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	2.65	3.34		•	•	•	•	•	•	•	•	•	•	•	•	•	•
530	Buna	U-72	Boreholes(Lago Bor river)	0.67	0.84		•	•	•	•	•	•	•	•	•	•	•	•	•	•
610	Nyamira + Kebirigo	U-144	Kuja river	1.12	1.41					•	•									
610	Kisii	U-76	Bunyonyu Dam	9.24	11.64					•	•									
620	Kisumu & + Kiboswa	U-79	Kibos dam	37.19	46.85		•	•												
620	Ahero	U-80	Nyando river	0.93	1.17	•	•													
620	Muhoroni	U-81	Nyando River	0.92	1.16		•	•												
630	Siaya	U-83	Yala River	1.96	2.47					•	•									
640	Homa Bay	U-85	Lake Victoria	2.50	3.16					•	•									
640	Migori	U-86	Migori river	0.83	1.04		•	•												
710	Oloitokitok	U-88	Nol-Turesh Spring	0.87	1.10					•	•									
710	Ngong	U-89	Kerarapon Spring	2.86	3.61		•	•												
710	Kajiado	U-90	Kiserian P/L	1.21	1.53					•	•									
710	Namanga	U-91	Namanga Spring	0.97	1.23		•	•												
720	Sotik	U-93	Kipsonoi river	0.58	0.73		•	•												
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	9.72	12.24					•	•									
730	Nanyuki	U-97	Liki river	7.94	10.01					•	•									
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	55.47	69.89		•	•												

Note: • Construction

**Appendix 3.4 Major Flood Control Projects
Proposed Implementation Programme for Alternative-B**

District Code	Project	Description	Executing Agency	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000	2	4	6	8	10							
620	Kano Plain (Nyando river)	- Heightening of existing dykes (2 km) - Construction of new dykes (69 km)	MOWD/LBDA	20.7	26.1	☆	☆	☆	●	●	●									
110	Nairobi City (Nairobi river, etc)	- Enlargment of existing channels/culverts (13 sites) - Channel improvement (11 sites)	MOLG	10.8	13.6					☆	☆	☆	●	●	●					
630	Yala Swamp (Yala/Nzoia river)	- Rehabilitation of existing dykes (25 km) - Construction of new dykes (16 km)	MOWD/LBDA	17.7	22.3									☆	☆	☆	●	●	●	●
	Total			49.2	62.0															
<p>Note: ☆ Study/Design ● Construction</p>																				

**Appendix 3.5 Urban Drainage and River Improvement Projects
Proposed Implementation Programme for Alternative-B**

District Code	Project	Description	Executing Agency	Cost (million)		Implementation Schedule																		
				US\$	K£	93	95	2000					2	4	6	8	10							
Urban Drainage Projects																								
110	Nairobi	P = 1,413,100 , A = 90.0 Km2	MOLG	360.0	453.6	☆	☆	●	●	●	●													
210	Thika	P = 59,000 , A = 1.9 Km2	"	14.8	18.6												☆	☆	☆	●	●			
250	Nyeri	P = 97,000 , A = 1.6 Km2	"	13.1	16.5								☆	☆	☆	●	●	●	●	●	●			
340	Mombasa	P = 479,600 , A = 11.6 Km2	"	46.6	58.7			☆	☆	☆	●	●	●											
440	Machakos	P = 91,100 , A = 2.8 Km2	"	22.1	27.8					☆	☆	☆	●	●	●									
460	Meru	P = 78,900 , A = 0.3 Km2	"	2.7	3.4								☆	☆	☆	●	●	●	●	●	●			
610	Kisii	P = 45,800 , A = 2.6 Km2	"	21.1	26.6												☆	☆	☆	●	●			
620	Kisumu	P = 188,700 , A = 5.6 Km2	"	33.5	42.2					☆	☆	☆	●	●	●									
720	Kericho	P = 41,200 , A = 1.2 Km2	"	9.4	11.8												☆	☆	☆	●	●			
740	Nakuru	P = 172,200 , A = 13.0 Km2	"	51.8	65.3					☆	☆	☆	●	●	●									
760	Kitale	P = 56,400 , A = 4.2 Km2	"	25.2	31.8												☆	☆	☆	●	●			
770	Eldoret	P = 112,900 , A = 8.6 Km2	"	34.3	43.2									☆	☆	☆	●	●	●	●	●			
930	Kakamega	P = 49,200 , A = 2.1 Km2	"	16.6	20.9												☆	☆	☆	●	●			
	Sub-total	P = 2,885,100 , A = 145.4 Km2	"	651.2	820.5																			
Minor Ad-hoc River Improvement Works																								
All	Various rivers	To be taken up as the need is identified	MOWD	68.0	86.0	☆	☆	●	●	●	●	●	●	●	●	●	●	●	●	●	●			
Long-term Improvement of Lower Tana River																								
360	Lower Tana improvement	Experimental work for rectifying river meanders and bank protection	MOWD/TARDA	30.0	38.0	●	●	●	●	●	●	●												
	Sub-total			98.0	124.0																			
	TOTAL			749.2	944.4																			
Note:		☆ Study/Design ● Construction																						

Appendix 3.6 Summary of Development Cost for Alternative-B

Development Sector	Budget Appropriated for	Financial Requirement (Million)					
		1993 - 2000		2001 - 2010		Total	
		US\$	K£	US\$	K£	US\$	K£
1. D&I Water Supply		2,606	3,284	3,079	3,879	5,685	7,163
(1) Urban water supply	MOWD *1	2,238	2,820	1,476	1,860	3,714	4,680
(2) Rural water supply	MOWD *2	368	464	1,603	2,019	1,971	2,483
2. Sewerage Development	MOLG *3	371	467	249	314	620	781
3. Irrigation Development		200	252	398	502	598	754
(1) Major irrigation projects	MORD *4	195	246	393	495	588	741
(2) Small irrigation schemes	MOA *5	5	6	5	7	10	13
4. Livestock Water Development	MOLD *6	192	242	374	471	566	713
5. Hydropower Development	MOE *7	542	683	492	621	1,034	1,304
6. River and Flood Works		462	582	336	423	798	1,005
(1) Major flood control projects	MOWD *8	21	26	28	36	49	62
(2) Urban drainage works	MOLG *3	391	493	260	327	651	820
(3) Minor river improvement	MOWD *8	20	25	48	60	68	85
(4) Improvement of Lower Tana	MOWD *9	30	38	-	-	30	38
Total		4,373	5,510	4,928	6,210	9,301	11,720

Notes: Executing agencies will be;

- *1 : MOWD, NWCPC, Municipalities (NCC, etc)
- *2 : MOWD, NWCPC, County councils, NGO, etc
- *3 : Municipal and urban councils under technical assistance by MOWD
- *4 : NIA, LBDA, TARDA, KVDA and other basin development authorities
- *5 : MOA and some agencies listed for *4
- *6 : Implementation to be entrusted to MOWD and/or basin development authorities
- *7 : KPC, KPLC and basin development authorities
- *8 : MOWD or to be entrusted to basin development authorities and municipal/urban councils
- *9 : To be entrusted to TARDA

Appendix 3.7 Annual Budgetary Schedule for Alternative-B

Development Sector	(Unit : million US\$)																		
	Year												Total						
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		2005	2006	2007	2008	2009	2010
1 D&I Water Supply	471.8	471.8	395.0	395.0	201.5	201.5	234.8	234.8	332.2	332.2	363.9	363.9	323.9	323.9	296.6	296.6	223.0	223.0	5,685
(1) Urban water supply	425.8	425.8	349.0	349.0	155.5	155.5	188.8	188.8	171.9	171.9	203.6	203.6	163.6	163.6	136.3	136.3	62.7	62.7	3,714
(2) Rural water supply	46.0	46.0	46.0	46.0	46.0	46.0	46.0	46.0	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	160.3	1,971
2 Sewerage Development (for 158 urban centres)	78.7	78.7	79.2	79.2	11.1	11.1	16.4	16.4	22.7	22.7	22.7	22.7	36.6	36.6	31.4	31.4	11.4	11.4	620
3 Irrigation Development	32.7	33.9	9.9	15.4	44.4	22.8	15.6	24.9	33.4	28.6	36.9	46.0	54.1	76.0	63.9	39.1	11.3	9.0	598
(1) Major irrigation projects	32.1	33.3	9.3	14.8	43.8	22.2	15.0	24.3	32.8	28.0	36.3	45.4	53.5	75.4	63.3	38.5	10.7	8.4	588
(2) Small irrigation schemes	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	10
4 Livestock Water Development	24.0	24.0	24.0	24.0	24.0	24.0	24.0	24.0	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4	37.4	566
5 Hydropower Development	20.0	27.0	52.0	45.0	63.0	93.0	113.0	129.0	129.0	159.0	121.0	56.0	27.0						1,034
6 River and Flood Works	3.7	3.7	97.1	102.3	102.4	102.4	27.9	22.7	20.3	44.2	44.2	43.9	21.5	21.6	25.8	38.1	38.4	38.2	798
(1) Major flood control projects			5.2	5.2	5.2	5.2	5.2	5.2	15.6	3.6	3.6	3.6	4.8	4.8	4.4	4.4	4.4	4.4	49
(2) Urban drainage works			90.0	90.0	90.0	90.0	15.5	15.5	15.6	35.9	35.9	35.6	16.7	16.8	16.6	28.9	29.2	29.0	651
(3) Minor river improvement			3.4	3.4	3.4	3.4	3.4	3.4	4.7	4.7	4.7	4.7	4.8	4.8	4.8	4.8	4.8	4.8	68
(4) Improvement of Lower Tana			3.7	3.7	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	30
Total	630.8	639.0	657.2	660.9	446.3	454.7	431.6	451.7	575.0	624.1	626.1	569.9	500.5	495.5	455.1	442.6	321.5	319.0	9,302

Note : Development cost of rural and livestock water supply systems were estimated at 25 % of full scale development plan.

APPENDIX 4

IMPLEMENTATION PROGRAMME OF DOMESTIC/INDUSTRIAL WATER SUPPLY SCHEMES UNDER REDUCED DEVELOPMENT SCENARIO

(Reduced development just enough to meet the demand
level projected for year 2000)

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Appendix 4.1 Urban Water Supply Schemes
Proposed Implementation Programme for Reduced Development (Alternative-A) (1/2)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule															
				US\$	K£	93	95	2000		2	4	6	8	10							
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	577.6	727.8	•	•	•	•			•	•	•							
210	Karuri	U-2	Kiambaa Dam (Rui Ruaka R.)	9.1	11.4	•	•													•	•
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	6.5	8.2	•	•		•	•										•	•
210	Ruiru	U-6	Ruiru River	6.5	8.2		•	•												•	•
210	Thika	U-7	Chania River (Lower)	10.4	13.1															•	•
210	Kikuyu	U-9	Kikuyu Dam	12.7	16.0		•	•												•	•
220	Kerugoya	U-12	Kiringa River	5.0	6.3	•	•													•	•
220	Kutus	U-13	Thiba River	2.8	3.5				•	•										•	•
230	Maragua	U-15	Githanji river	10.4	13.2	•	•													•	•
230	Murang'a	U-17	Maragua river	7.1	8.9	•	•													•	•
230	Makuyu	U-18	Motoho river	3.1	3.9	•	•													•	•
240	Oi Kalou	U-19	Malwa River	6.8	8.5				•	•										•	•
250	Karatina	U-20	Ragati River	1.5	1.9															•	•
250	Othaya	U-21	Tuthi river	3.0	3.8			•	•											•	•
250	Nyeri	U-22	Chania River	29.2	36.8		•	•												•	•
310	Mariakani	U-23	2nd Mzima P/L	2.9	3.6	•	•													•	•
310	Kilifi	U-24	Rare reservoir	4.5	5.7															•	•
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	48.9	61.6				•	•										•	•
320	Kwale	U-27	Marere pipeline	2.9	3.7				•	•										•	•
320	Msamwoni	U-29	Boreholes + Mkurumuji river	26.7	33.7			•	•	•	•		•	•	•	•	•	•	•	•	•
330	Lamu	U-31	P/L from Tana River + B/H	23.9	30.1				•	•										•	•
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	324.8	409.2	•	•	•	•			•	•	•	•	•	•	•	•	•	•
350	Taveta	U-137	Njoro Spring	5.0	6.3		•	•												•	•
350	Voi	U-33	2nd Mzim pipeline	4.9	6.1				•	•										•	•
360	Hola	U-36	Tana River	4.2	5.3			•	•											•	•
410	Embu	U-40	Lower Kapingazi River + Upper Ruyingazi River	4.2	5.4				•	•										•	•
420	Isiolo	U-41	Boreholes + Spring	72.4	91.3			•	•	•	•	•	•	•	•	•	•	•	•	•	•
420	Oi Doiyo Ng'iro	U-42	Ewaso Ng'iro River	5.2	6.6	•	•													•	•
420	Merti	U-139	Ewaso Ng'iro	3.4	4.3		•	•												•	•
430	Kitui	U-43	Masinga Dam	5.6	7.0	•	•													•	•
430	Mwingi	U-45	Kiambere Dam	10.2	12.9	•	•													•	•
440	Machakos	U-46	Athi River P/L	47.4	59.7		•	•												•	•
440	Mitaboni	U-47	Kaathana River	12.5	15.8	•	•													•	•
440	Athi River	U-48	Upper Athi Dam	12.6	15.8				•	•										•	•
440	Kangundo	U-50	Pipeline from Athi River	12.4	15.6	•	•													•	•
440	Wote	U-141	Kaiti river + Nzuuni river	2.0	2.5			•	•											•	•
450	Kargi	U-54	Boreholes + Subsurface Dam	38.2	48.1	•	•	•	•	•	•		•	•	•	•	•	•	•	•	•
450	Korr	U-143	Boreholes	33.4	42.1			•	•	•	•		•	•	•	•	•	•	•	•	•
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	101.8	128.2	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
450	Moyale	U-57	Boreholes + Small Dam	38.5	48.5			•	•	•	•		•	•	•	•	•	•	•	•	•
460	Meru	U-58	Kathita river	26.1	32.8		•	•												•	•
460	Nkubu	U-59	Thingithu River	2.8	3.5				•	•										•	•
510	Garissa	U-67	Tana River	6.6	8.3															•	•
520	Mandera	U-68	Daus River	1.4	1.8															•	•
520	Elwak	U-69	Boreholes	50.7	63.9	•	•													•	•
530	Wajir	U-71	Boreholes + Ewaso Ng'iro River	104.7	131.9	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
530	Buna	U-72	Boreholes(Lago Bor river)	62.5	78.7	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
610	Nyamira + Kebirigo	U-144	Kuja river	7.6	9.6			•	•											•	•
610	Kisii	U-76	Bunyonyu Dam	19.2	24.2			•	•	•	•									•	•
620	Maseno	U-78	Edzawa Dam	10.1	12.8			•	•											•	•
620	Kisumu & + Kiboswa	U-79	Kibos dam	72.7	91.6	•	•													•	•

Note: • Construction

**Appendix 4.1 Urban Water Supply Schemes
Proposed Implementation Programme for Reduced Development (Alternative-A) (2/2)**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000	2	4	6	8	10							
620	Ahero	U-80	Nyando river	4.0	5.0	•	•												•	•
620	Muhoroni	U-81	Nyando River	4.9	6.1		•	•											•	•
630	Siaya	U-83	Yala River	10.3	13.0				•	•								•	•	
640	Homa Bay	U-85	Lake Victoria	8.1	10.2				•	•								•	•	
640	Migori	U-86	Migori river	3.6	4.5		•	•										•	•	
710	Oloitokitok	U-88	Nol-Turesh Spring	4.0	5.1				•	•								•	•	
710	Ngong	U-89	Kerarapon Spring	8.4	10.5		•	•										•	•	
710	Kajiado	U-90	Kiserian P/L	12.0	15.1		•	•										•	•	
710	Namanga	U-91	Namanga Spring	3.2	4.0		•	•										•	•	
720	Souk	U-93	Kipsonoi river	3.0	3.8		•	•										•	•	
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	15.2	19.1				•	•								•	•	
730	Nanyuki	U-97	Liki river	10.4	13.1				•	•								•	•	
730	Nyahururu	U-98	Nyahururu dam + Borehole	13.4	16.9				•	•								•	•	
740	Gilgil	U-99	Turasha P/L & Malewa Dam	6.3	8.0				•	•								•	•	
740	Naivasha	U-100	Turasha P/L & Malewa Dam	21.5	27.1				•	•								•	•	
740	Elburgon	U-102	Itare Dam	16.3	20.6		•	•	•	•								•	•	
740	Molo	U-103	Itare Dam	13.3	16.8		•	•	•	•								•	•	
740	Nakuru	U-104	Turasha P/L & Malewa Dam + Itare Dam	121.0	152.5		•	•									•	•		
750	Narok	U-105	Upper Narok Dam	22.8	28.7				•	•								•	•	
760	Kitale	U-107	Koitobos river	19.6	24.7				•	•								•	•	
770	Eldoret	U-110	Moiben Dam + Nzoia river	80.7	101.6		•	•									•	•		
810	Kabarnet	U-112	Kirandich Dam	24.2	30.5	•	•											•	•	
810	Maji Mazuri	U-113	Maji Mazuri river	3.2	4.0		•	•										•	•	
810	Eldama Ravinc	U-114	Chemususu Dam	21.8	27.5				•	•								•	•	
820	Iten+Tambach	U-116	Moiben Dam	8.5	10.7		•	•										•	•	
830	Kapsabet+Baraton	U-118	Mokong river	7.1	8.9				•	•								•	•	
840	Maralal	U-119	Loikas/Yamo river	9.5	12.0				•	•								•	•	
850	Lodwar	U-122	Boreholes & sub-surface dam	65.5	82.5				•	•	•	•	•	•	•	•	•	•	•	
860	Kapenguria/Makutano	U-123	Kapenguria River	5.3	6.7		•	•										•	•	
910	Bungoma	U-124	Kuywa River	15.9	20.0				•	•								•	•	
910	Kimilili	U-125	Kimilili River	4.4	5.6		•	•										•	•	
910	Webuye	U-126	Nzoia River	11.8	14.9				•	•								•	•	
920	Busia	U-127	Sio river	8.1	10.2				•	•								•	•	
930	Vihiga+Majengo	U-129	Bdzawa River (Kimondi River)	3.4	4.3		•	•										•	•	
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	18.5	23.3				•	•								•	•	
930	Mumias	U-134	Nzoia River	9.0	11.4				•	•								•	•	
				2,522.9	3,178.9															

Note: • Construction

Appendix 4.2 Sewerage Development - Proposed Implementation Programme for Reduced Development (Alternative A) (1/2)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000	2	4	6	8	10							
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	140.77	177.37	•	•	•												
210	Karuri	U-2	Kiambaa Dam (Rui Ruaka R.)	1.08	1.36		•	•												
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	0.36	0.45				•	•										
210	Ruiru	U-6	Ruiru River	0.94	1.19			•	•											
210	Thika	U-7	Chania River (Lower)	8.96	11.29			•	•											
210	Kikuyu	U-9	Kikuyu Dam	0.48	0.61		•	•												
220	Kerugoya	U-12	Kiringa River	0.71	0.89	•	•													
220	Kutus	U-13	Thiba River	0.49	0.62				•	•										
230	Maragua	U-15	Githanji river	2.17	2.73		•	•												
230	Murang'a	U-17	Maragua river	1.54	1.94	•	•													
230	Makuyu	U-18	Motoho river	0.37	0.46		•	•												
240	Ol Kalou	U-19	Malewa River	0.86	1.08				•	•										
250	Karatina	U-20	Ragati River	0.42	0.53				•	•										
250	Othaya	U-21	Tuthi river	0.37	0.47				•	•										
250	Nyeri	U-22	Chania River	14.12	17.79			•	•											
310	Mariakani	U-23	2nd Mzima P/L	0.52	0.65			•	•											
310	Kilifi	U-24	Rare reservoir	1.31	1.65				•	•										
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	3.14	3.96				•	•										
320	Kwale	U-27	Marere pipeline	0.33	0.42				•	•										
320	Msambweni	U-29	Boreholes + Mkurumuji river	0.75	0.95			•	•	•										
330	Lamu	U-31	P/L from Tana River + B/H	0.71	0.89				•	•										
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	42.51	53.57	•	•	•												
350	Taveta	U-137	Njoro Spring	0.71	0.89			•	•											
350	Voi	U-33	2nd Mzim pipeline	0.81	1.02				•	•										
350	Wundanyi	U-34	Sigaso/Manguri River	0.18	0.23				•	•										
360	Hola	U-36	Tana River	0.76	0.96				•	•										
410	Embu	U-40	Lower Kapingazi River + Upper Rupingazi River	1.51	1.90				•	•										
420	Isiolo	U-41	Boreholes + Spring	1.84	2.32			•	•	•										
420	Ol Doinyo Ng'iro	U-42	Ewaso Ngiro River	0.42	0.53		•	•												
420	Merti	U-139	Ewaso Ngiro	0.54	0.68			•	•											
430	Kitui	U-43	Masinga Dam	0.84	1.05	•	•													
430	Mwingi	U-45	Kiambere Dam	0.66	0.83	•	•													
440	Machakos	U-46	Athi River P/L	13.87	17.47			•	•											
440	Mitaboni	U-47	Kaathana River	2.32	2.92		•	•												
440	Athi River	U-48	Upper Athi Dam	2.00	2.52				•	•										
440	Kangundo	U-50	Pipeline from Athi River	0.90	1.14		•	•												
440	Wote	U-141	Kaiti river + Nzuuni river	0.19	0.24				•	•										
450	Kargi	U-54	Boreholes + Subsurface Dam	0.39	0.50		•	•	•	•										
450	Korr	U-143	Boreholes	0.45	0.56		•	•	•	•										
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	1.01	1.27		•	•	•	•										
450	Moyale	U-57	Boreholes + Small Dam	0.62	0.78		•	•	•	•										
460	Meru	U-58	Kathita river	12.58	15.85			•	•											
460	Nkubu	U-59	Thingithu River	0.42	0.53				•	•										
510	Garissa	U-67	Tana River	2.59	3.26				•	•										
520	Mandera	U-68	Daua River	0.43	0.54				•	•										
520	Elwak	U-69	Boreholes	0.62	0.78			•	•											
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	1.62	2.04		•	•	•	•										
530	Buna	U-72	Boreholes(Lago Bor river)	0.45	0.56		•	•	•	•										
610	Nyamira + Kebirigo	U-144	Kuja river	0.73	0.92				•	•										
610	Kisii	U-76	Bunyonyu Dam	3.06	3.85				•	•										
620	Maseno	U-78	Edzawa Dam	1.10	1.39				•	•										

Note: • Construction

**Appendix 4.2 Sewerage Development - Proposed Implementation
Programme for Reduced Development (Alternative A) (2/2)**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule													
				US\$	K£	93	95	2000		2	4	6	8	10					
620	Kisumu & + Kiboswa	U-79	Kibos dam	23.13	29.14			•	•										
620	Ahero	U-80	Nyando river	0.64	0.80		•	•											
620	Muhoroni	U-81	Nyando River	0.57	0.72				•	•									
630	Siaya	U-83	Yala River	1.27	1.60					•	•								
640	Homa Bay	U-85	Lake Victoria	1.65	2.08					•	•								
640	Migori	U-86	Migori river	0.54	0.68				•	•									
710	Oloitokitok	U-88	Nol-Turesh Spring	0.46	0.58					•	•								
710	Ngong	U-89	Kerarapon Spring	1.58	1.98				•	•									
710	Kajiado	U-90	Kiserian P/L	0.64	0.80				•	•									
710	Namanga	U-91	Namanga Spring	0.51	0.65				•	•									
720	Sotik	U-93	Kipsonoi river	0.39	0.49				•	•									
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	3.00	3.78					•	•								
730	Nanyuki	U-97	Liki river	2.20	2.77					•	•								
730	Nyahururu	U-98	Nyahururu dam + Borehole	1.26	1.58					•	•								
740	Gilgil	U-99	Turasha P/L & Malwa Dam	1.37	1.73					•	•								
740	Naivasha	U-100	Turasha P/L & Malwa Dam	7.07	8.91					•	•								
740	Elburgon	U-102	Itare Dam	1.17	1.47					•	•								
740	Moto	U-103	Itare Dam	1.03	1.29					•	•								
740	Nakuru	U-104	Turasha P/L + Malwa Dam + Itare Dam	30.09	37.91				•	•									
750	Narok	U-105	Upper Narok Dam	1.51	1.91					•	•								
760	Kitale	U-107	Koitobos river	9.43	11.88					•	•								
770	Eldoret	U-110	Moiben Dam + Nzoia river	17.50	22.05				•	•									
810	Kabarnet	U-112	Kirandich Dam	0.71	0.89	•	•												
810	Maji Mazuri	U-113	Maji Mazuri river	0.39	0.50				•	•									
810	Eldama Ravine	U-114	Chemususu Dam	0.43	0.54					•	•								
820	Iten+Tambach	U-116	Moiben Dam	0.45	0.57					•	•								
830	Kapsabet+Baraton	U-118	Mokong river	1.14	1.43					•	•								
840	Maralal	U-119	Loikas/Yamo river	1.50	1.89					•	•								
850	Lodwar	U-122	Boreholes & sub-surface dam	0.81	1.02				•	•	•	•	•	•	•	•	•	•	•
860	Kapenguria/Makutano	U-123	Kapenguria River	0.96	1.21				•	•									
910	Bungoma	U-124	Kuywa River	2.80	3.52					•	•								
910	Kimilili	U-125	Kimilili River	0.63	0.79				•	•									
910	Webuye	U-126	Nzoia River	2.53	3.18					•	•								
920	Busia	U-127	Sio river	1.41	1.78					•	•								
930	Vihiga+Majengo	U-129	Edzawa River (Kimondi River)	0.34	0.43				•	•									
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	7.76	9.78					•	•								
930	Mumias	U-134	Nzoia River	1.76	2.21					•	•								
				407.11	512.96														

Note: • Construction

Appendix 4.3 Summary of Development Cost for Reduced Development (Alternative-A)

Development Sector	Budget Appropriated for	Financial Requirement (Million)					
		1993 - 2000		2001 - 2010		Total	
		US\$	K£	US\$	K£	US\$	K£
1. D&I Water Supply		1,904	2,399	1,933	2,436	3,837	4,835
(1) Urban water supply	MOWD *1	1,247	1,571	1,276	1,608	2,523	3,179
(2) Rural water supply	MOWD *2	657	828	657	828	1,314	1,656
2. Sewerage Development	MOLG *3	203	256	204	257	407	513
Total		2,107	2,655	2,137	2,693	4,244	5,348

Notes: Executing agencies will be;

*1 : MOWD, NWCPC, Municipalities (NCC, etc)

*2 : MOWD, NWCPC, County councils, NGO, etc

*3 : Municipal and urban councils under technical assistance by MOWD

Appendix 4.4 Annual Budgetary Schedule for Reduced Development (Alternative-A)

(Unit : million US\$)

Development Sector	Year																	Total	
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009		2010
1 D&I Water Supply	336.2	336.2	257.4	257.4	170.9	170.9	187.3	187.3	190.6	190.6	195.5	195.5	213.9	213.9	204.1	204.1	162.5	162.5	3,837
(1) Urban water supply	254.1	254.1	175.3	175.3	88.8	88.8	105.2	105.2	125.0	125.0	129.8	129.8	148.2	148.2	138.4	138.4	96.8	96.8	2,523
(2) Rural water supply	82.1	82.1	82.1	82.1	82.1	82.1	82.1	82.1	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	65.7	1,314
2 Sewerage Development (for 158 urban centres)	30.6	30.6	31.7	31.7	22.5	22.5	16.9	16.9	16.7	16.7	16.8	16.8	32.1	32.1	21.3	21.3	14.8	14.8	407
Total	366.9	366.9	289.1	289.1	193.4	193.4	204.2	204.2	207.3	207.3	212.3	212.3	246.0	246.0	225.4	225.4	177.3	177.3	4,244

Appendix 4.5 Urban Water Supply Schemes (1/3)
Proposed Implementation Programme for Reduced Development (Alternative-B)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule													
				US\$	KE	93	95	2000	2	4	6	8	10						
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	1,061.6	1,337.7	•	•	•			•	•	•						
210	Karuri	U-2	Kiambaa Dam (Rui Ruaka R.)	9.1	11.4	•	•											•	•
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	6.5	8.2	•	•		•	•								•	•
210	Limuru	U-5	Chania P/L	9.2	11.6				•	•								•	•
210	Ruiru	U-6	Ruiru River	6.5	8.2		•	•										•	•
210	Thika	U-7	Chania River (Lower)	10.4	13.1													•	•
210	Githunguri	U-8	Ruiru river	3.2	4.0				•	•								•	•
210	Kikuyu	U-9	Kikuyu Dam	12.7	16.0		•	•										•	•
220	Wanguru	U-10	Thiba River	0.6	0.7													•	•
220	Sagana	U-11	Ragati River	2.2	2.7					•	•							•	•
220	Kerugoya	U-12	Kiringa River	5.0	6.3	•	•											•	•
220	Kutus	U-13	Thiba River	2.8	3.5					•	•							•	•
230	Maragua	U-15	Githanji river	10.4	13.2	•	•											•	•
230	Kangema	U-16	Mathiyoa River	0.5	0.7													•	•
230	Murang'a	U-17	Maragua river	7.1	8.9	•	•											•	•
230	Makuyu	U-18	Motoho river	3.1	3.9	•	•											•	•
240	Oi Kalou	U-19	Malewa River	6.8	8.5					•	•							•	•
250	Karatina	U-20	Ragati River	1.5	1.9													•	•
250	Othaya	U-21	Tuhi river	3.0	3.8				•	•								•	•
250	Nyeri	U-22	Chania River	29.2	36.8		•	•										•	•
310	Mariakani	U-23	2nd Mzima P/L	2.9	3.6		•	•										•	•
310	Kilifi	U-24	Rare reservoir	4.5	5.7													•	•
310	Watamu	U-25	Sabaki pipeline	3.3	4.2	•	•											•	•
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	64.4	81.1					•	•							•	•
310	Mamburi	U-135	Sabaki river	2.5	3.2	•	•											•	•
320	Kwale	U-27	Marere pipeline	2.9	3.7					•	•							•	•
320	Kinango	U-28	Marere pipeline	3.1	4.0					•	•							•	•
320	Msambweni	U-29	Boreholes + Mkurumuji river	26.7	33.7				•	•	•	•		•	•			•	•
320	Lungalunga	U-136	Umba river	1.5	1.9					•	•							•	•
330	Witu	U-30	Mkondo wa Cambi river	3.3	4.2				•	•								•	•
330	Lamu	U-31	P/L from Tana River + B/I	37.5	47.3				•	•								•	•
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	441.6	556.4	•	•	•			•	•	•					•	•
350	Taveta	U-137	Njoro Spring	5.0	6.3		•	•										•	•
350	Voi	U-33	2nd Mzim pipeline	4.9	6.1					•	•							•	•
360	Bura & Madogo	U-35	Tana River	0.6	0.8					•	•							•	•
360	Hola	U-36	Tana River	4.2	5.3				•	•								•	•
360	Garsen	U-37	Tana River	2.0	2.5				•	•								•	•
410	Runyenjes	U-38	Ena river	1.5	1.9				•	•		•	•	•	•	•	•	•	•
410	Embu	U-40	Lower Kapingazi River + Upper Rupingazi River	4.2	5.4													•	•
420	Isiolo	U-41	Boreholes + Spring	72.4	91.3				•	•	•	•	•	•	•	•	•	•	•
420	Oi Doiyo Ng'iro	U-42	Ewaso Ngiro River	5.2	6.6	•	•											•	•
420	Garbatula	U-138	Boreholes	21.1	26.6		•	•	•	•	•							•	•
420	Merti	U-139	Ewaso Ngiro	3.4	4.3		•	•										•	•
430	Kitui	U-43	Masinga Dam	5.6	7.0	•	•											•	•
430	Mwingi	U-45	Kiambere Dam	10.2	12.9	•	•											•	•
440	Machakos	U-46	Athi River P/L	47.4	59.7		•	•										•	•
440	Mitaboni	U-47	Kaathana River	12.5	15.8	•	•											•	•
440	Athi River	U-48	Upper Athi Dam	12.6	15.8					•	•							•	•
440	Uaani/Tawa	U-49	Tawa river	0.8	1.0		•	•										•	•
440	Kangundo	U-50	Pipeline from Athi River	12.4	15.6	•	•											•	•
440	Tala	U-140	Pipeline from Athi river	5.6	7.1	•	•											•	•

Note: • Construction

Appendix 4.5 Urban Water Supply Schemes (2/3)
Proposed Implementation Programme for Reduced Development (Alternative-B)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule																	
				US\$	K£	93	95	2000		2	4	6	8	10									
440	Nunguni	U-51	Kyangonyo river	1.0	1.3					•	•										•	•	
440	Wote	U-141	Kaiti river + Nzuuni river	2.0	2.5					•	•											•	•
440	Emali	U-52	Nol Tresh P/L	1.2	1.5	•	•															•	•
440	Mtito Andei&Kibwezi	U-53	Pipeline from Athi river	12.8	16.1	•	•															•	•
450	North Horr	U-142	Boreholes	13.9	17.5		•	•														•	•
450	Kargi	U-54	Boreholes + Subsurface Dam	38.2	48.1		•	•	•	•	•	•	•									•	•
450	Korr	U-143	Boreholes	33.4	42.1				•	•	•	•	•	•								•	•
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	177.7	223.9		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
450	Sojolo	U-56	Boreholes	36.6	46.1		•	•	•	•	•	•	•									•	•
450	Moyale	U-57	Boreholes + Small Dam	38.5	48.5				•	•	•	•	•									•	•
460	Meru	U-58	Kathita river	26.1	32.8		•	•														•	•
460	Nkubu	U-59	Thingithu River	2.8	3.5					•	•											•	•
460	Chogoria	U-60	North Mara River	1.3	1.6	•	•															•	•
460	Chuka	U-61	Tungu river	2.6	3.3					•	•											•	•
460	Maua	U-62	Ura river	2.5	3.2					•	•											•	•
510	Mudo Gashe	U-63	Boreholes + Subsurface Dam	12.9	16.3		•	•														•	•
510	Ijara	U-64	Boreholes + Small dam	8.0	10.1		•	•														•	•
510	Koitile	U-65	Boreholes/Subsurface Dam/Tana	11.7	14.8		•	•														•	•
510	Masalani	U-66	Tana River	1.7	2.1					•	•											•	•
510	Garissa	U-67	Tana River	6.6	8.3																	•	•
520	Mandera	U-68	Daua River	1.4	1.8																	•	•
520	Elwak	U-69	Boreholes	50.7	63.9		•	•														•	•
520	Rhamu	U-70	Daua River	1.8	2.3					•	•											•	•
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	104.7	131.9		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
530	Buna	U-72	Boreholes(Lago Bor river)	62.5	78.7		•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•
530	Bute	U-73	Boreholes + Small Dams	12.0	15.2		•	•														•	•
610	Manga	U-74	Bunyonyu Dam	2.0	2.6					•	•											•	•
610	Keroka	U-75	Bunyonyu Dam	3.6	4.6					•	•											•	•
610	Nyamira + Kebirigo	U-144	Kuja river	7.6	9.6					•	•											•	•
610	Kisii	U-76	Bunyonyu Dam	19.2	24.2					•	•	•										•	•
610	Ogembo	U-77	Kuja river	1.2	1.5	•	•															•	•
620	Maseno	U-78	Edzawa Dam	10.1	12.8					•	•											•	•
620	Kisumu & + Kiboswa	U-79	Kibos dam	104.8	132.1		•	•														•	•
620	Ahero	U-80	Nyando river	4.0	5.0	•	•															•	•
620	Muhoroni	U-81	Nyando River	4.9	6.1		•	•														•	•
630	Bondo	U-145	Yala river	2.8	3.5					•	•											•	•
630	Yala	U-82	Yala river	1.7	2.1					•	•											•	•
630	Siaya	U-83	Yala River	10.3	13.0					•	•											•	•
630	Ukwala	U-84	Nzoia River	1.3	1.6					•	•											•	•
640	Homa Bay	U-85	Lake Victoria	8.1	10.2					•	•											•	•
640	Migori	U-86	Migori river	3.6	4.5		•	•														•	•
640	Kehancha + Tarang'anya	U-146	Migori river	3.3	4.1	•	•															•	•
640	Nyabikaye	U-147	Boreholes	18.9	23.8		•	•														•	•
640	Oyugis	U-148	Isanta river(Awach Tende)	3.4	4.3					•	•											•	•
640	Kendu Bay	U-87	Lake Victoria	1.9	2.5					•	•											•	•
640	Awendo/Sare	U-149	Sare river	3.6	4.6	•	•															•	•
710	Oloitokitok	U-88	Nol-Turesh Spring	4.0	5.1					•	•											•	•
710	Ngong	U-89	Kerarapon Spring	8.4	10.5					•	•											•	•
710	Kajiado	U-90	Kiserian P/L	12.0	15.1					•	•											•	•
710	Namanga	U-91	Namanga Spring	3.2	4.0					•	•											•	•
710	Magadi	U-92	Oloibortoto river	6.4	8.0							•	•									•	•
720	Sotik	U-93	Kipsonoi river	3.0	3.8		•	•														•	•

Note: • Construction

Appendix 4.5 Urban Water Supply Schemes (3/3)
Proposed Implementation Programme for Reduced Development (Alternative-B)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule													
				US\$	K£	93	95	2000					2	4	6	8	10		
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	24.2	30.5			•	•									•	•
720	Kipkelion	U-95	Nyando river	1.3	1.6			•	•									•	•
720	Londiani	U-96	Londiani dam	57.1	72.0			•	•									•	•
730	Nanyuki	U-97	Liki river	10.4	13.1					•	•							•	•
730	Rumuruti	U-150	Rumuruti Dam + Borehole	7.3	9.2		•	•										•	•
730	Nyahururu	U-98	Nyahururu dam + Borehole	13.4	16.9					•	•							•	•
740	Gilgil	U-99	Turasha P/L & Malewa Dam	6.3	8.0			•	•									•	•
740	Naivasha	U-100	Turasha P/L & Malewa Dam	21.5	27.1			•	•									•	•
740	Njoro	U-101	Itare Dam	16.9	21.3		•	•	•									•	•
740	Elburgon	U-102	Itare Dam	16.3	20.6		•	•	•									•	•
740	Molo	U-103	Itare Dam	13.3	16.8		•	•	•									•	•
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	212.0	267.1		•	•								•	•		
750	Narok	U-105	Upper Narok Dam	22.8	28.7					•	•							•	•
750	Nairagie Ngare	U-106	Nasampolai river	1.1	1.3					•	•							•	•
750	Kilgoris	U-151	Poroko river	2.6	3.3					•	•							•	•
750	Lolkorian	U-152	Migori river	2.3	2.9					•	•							•	•
760	Kitale	U-107	Koitobos river	19.6	24.7					•	•							•	•
760	Kiminiini/Saboti+Spr.Kita	U-108	Kabewyan river	2.1	2.7	•	•											•	•
760	Endeboss/Kwanza	U-109	Koitobos river	1.7	2.1	•	•											•	•
770	Moi's Bridge	U-153	Nzoia river	1.9	2.4		•	•										•	•
770	Turbo	U-154	Sosiani river	3.5	4.4					•	•							•	•
770	Eldoret	U-110	Moiben Dam + Nzoia river	80.7	101.6		•	•								•	•		
770	Burnt Forest	U-111	Kipkaren river	1.3	1.6					•	•							•	•
810	Kabarnet	U-112	Kirandich Dam	24.2	30.5	•	•											•	•
810	Maji Mazuri	U-113	Maji Mazuri river	3.2	4.0		•	•										•	•
810	Eldama Ravine	U-114	Chemususu Dam	21.8	27.5					•	•							•	•
810	Mogotio	U-115	Molo river /Chemususu Dam	4.7	5.9					•	•							•	•
810	Marigat	U-155	Perkerra river	1.6	2.1					•	•							•	•
820	Iten+Tambach	U-116	Moiben Dam	8.5	10.7		•	•			•	•						•	•
830	Nandi Hills	U-117	Mokong River	2.7	3.3					•	•							•	•
830	Kapsabet+Baraton	U-118	Mokong river	7.1	8.9					•	•							•	•
840	Maralal	U-119	Loikas/Yamo river	9.5	12.0					•	•							•	•
840	Wamba	U-120	Boreholes	43.1	54.3		•	•	•							•	•	•	•
840	Baragoi	U-121	Boreholes + Sub-surface dam	66.5	83.8		•	•	•							•	•	•	•
850	Lodwar	U-122	Boreholes & sub-surface dam	65.5	82.5		•	•	•	•						•	•	•	•
860	Kapenguria/Makutano	U-123	Kapenguria River	5.3	6.7		•	•										•	•
910	Mawalie + Malakisi	U-156	Malikisi river	2.2	2.8	•	•											•	•
910	Bungoma	U-124	Kuywa River	15.9	20.0					•	•							•	•
910	Kimilili	U-125	Kimilili River	4.4	5.6		•	•										•	•
910	Webuye	U-126	Nzoia River	11.8	14.9					•	•							•	•
910	Chaptais	U-157	Sasuri river	1.8	2.2	•	•											•	•
920	Busia	U-127	Sio river	8.1	10.2					•	•							•	•
920	Nambale	U-158	Sio river	1.4	1.8					•	•							•	•
930	Vihiga+Majengo	U-129	Edzawa River (Kimundi River)	3.4	4.3		•	•										•	•
930	Khayega	U-131	Yala river	1.2	1.5	•	•											•	•
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	18.5	23.3					•	•							•	•
930	Butere	U-133	Viratsi River	1.4	1.8					•	•							•	•
930	Mumias	U-134	Nzoia River	9.0	11.4					•	•							•	•
				3,818.1	4,810.8														

Note: • Construction

Appendix 4.6 Sewerage Development - Proposed Implementation Programme for Reduced Development (Alternative-B) (1/3)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule												
				US\$	K£	93	95	2000	2	4	6	8	10					
110	Nairobi	U-1	Thika Dam, Ndarugu, Ruiru-A, Chania-B	214.81	270.66	•	•	•	•	•	•	•	•	•	•	•	•	•
210	Karuri	U-2	Kiambaa Dam (Rui Ruaka R.)	1.08	1.36		•	•									•	•
210	Kiambu	U-3	Kiambaa Dam (Rui Ruaka r.)	0.36	0.45				•	•							•	•
210	Gatundu & Ngenda	U-4	Thiririka River	0.03	0.03												•	•
210	Limuru	U-5	Chanja P/L	0.11	0.14			•	•								•	•
210	Ruiru	U-6	Ruiru River	0.94	1.19			•	•								•	•
210	Thika	U-7	Chanja River (Lower)	8.96	11.29			•	•								•	•
210	Githunguri	U-8	Ruiru river	0.30	0.38			•	•								•	•
210	Kikuyu	U-9	Kikuyu Dam	0.48	0.61		•	•									•	•
220	Wanguru	U-10	Thiba River	0.04	0.05				•	•							•	•
220	Sagana	U-11	Ragati River	0.23	0.29				•	•							•	•
220	Kerugoya	U-12	Kiringa River	0.71	0.89	•	•										•	•
220	Kutus	U-13	Thiba River	0.49	0.62				•	•							•	•
230	Kandara	U-14	Thika River	0.02	0.03												•	•
230	Maragua	U-15	Githanji river	2.17	2.73		•	•									•	•
230	Kangema	U-16	Mathioya River	0.10	0.12				•	•							•	•
230	Murang'a	U-17	Maragua river	1.54	1.94	•	•										•	•
230	Makuyu	U-18	Motoho river	0.37	0.46		•	•									•	•
240	Oi Kalou	U-19	Malewa River	0.86	1.08				•	•							•	•
250	Karatina	U-20	Ragati River	0.42	0.53				•	•							•	•
250	Othaya	U-21	Tuthi river	0.37	0.47				•	•							•	•
250	Nyeri	U-22	Chanja River	14.12	17.79			•	•								•	•
310	Mariakani	U-23	2nd Mzima P/L	0.52	0.65			•	•								•	•
310	Kilifi	U-24	Rare reservoir	1.31	1.65				•	•							•	•
310	Watamu	U-25	Sabaki pipeline	0.19	0.23	•	•										•	•
310	Malindi	U-26	Sabaki Pipeline & Rare Dam	10.56	13.30				•	•							•	•
310	Mamburi	U-135	Sabaki river	0.24	0.30	•	•										•	•
320	Kwale	U-27	Marere pipeline	0.33	0.42				•	•							•	•
320	Kinango	U-28	Marere pipeline	0.15	0.19				•	•							•	•
320	Msambweni	U-29	Boreholes + Mkurumuji river	0.75	0.95			•	•	•	•						•	•
320	Lungalunga	U-136	Umba river	0.20	0.25				•	•							•	•
330	Witu	U-30	Mkondo wa Cambi river	0.26	0.33				•	•							•	•
330	Lamu	U-31	P/L from Tana River + B/H	1.19	1.50				•	•							•	•
340	Mombasa	U-32	2nd Mzima/Mwachi Dam, Pemba Dam	57.41	72.33	•	•	•			•	•	•	•			•	•
350	Taveta	U-137	Njoro Spring	0.71	0.89				•	•							•	•
350	Voi	U-33	2nd Mzim pipeline	0.81	1.02				•	•							•	•
350	Wundanyi	U-34	Sigaso/Manguri River	0.18	0.23				•	•							•	•
360	Bura & Madogo	U-35	Tana River	0.07	0.09				•	•							•	•
360	Hola	U-36	Tana River	0.76	0.96				•	•							•	•
360	Garsen	U-37	Tana River	0.28	0.36				•	•							•	•
410	Runyenjes	U-38	Ena river	0.14	0.18				•	•		•	•	•	•	•	•	•
410	Siakago	U-39	Ena River	0.01	0.01												•	•
410	Embu	U-40	Lower Kapingazi River + Upper Rupingazi River	1.51	1.90				•	•							•	•
420	Isiolo	U-41	Boreholes + Spring	1.84	2.32				•	•	•	•	•	•	•	•	•	•
420	Oi Doinyo Ng'iro	U-42	Ewaso Ng'iro River	0.42	0.53		•	•									•	•
420	Garbatula	U-138	Boreholes	0.18	0.23		•	•		•	•						•	•
420	Merti	U-139	Ewaso Ng'iro	0.54	0.68				•	•							•	•
430	Kitui	U-43	Masinga Dam	0.84	1.05	•	•										•	•
430	Mutomo	U-44	Sub-Surface dam on Tiva river	0.02	0.03												•	•
430	Mwingi	U-45	Kiambere Dam	0.66	0.83	•	•										•	•
440	Machakos	U-46	Athi River P/L	13.87	17.47				•	•							•	•
440	Mitaboni	U-47	Kaathana River	2.32	2.92		•	•									•	•
440	Athi River	U-48	Upper Athi Dam	2.00	2.52				•	•							•	•

Note: • Construction

Appendix 4.6 Sewerage Development - Proposed Implementation Programme for Reduced Development (Alternative-B) (2/3)

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule												
				US\$	K£	93	95	2000			2	4	6	8	10			
440	Uaani/Tawa	U-49	Tawa river	0.02	0.02		•	•									•	•
440	Kangundo	U-50	Pipeline from Athi River	0.90	1.14		•	•									•	•
440	Tala	U-140	Pipeline from Athi river	0.14	0.18		•	•									•	•
440	Nunguni	U-51	Kyangonyo river	0.03	0.03					•	•						•	•
440	Wote	U-141	Kaiti river + Nzuuni river	0.19	0.24					•	•						•	•
440	Emali	U-52	Nol Tresh P/L	0.02	0.03	•	•										•	•
440	Mtito Andei&Kibwezi	U-53	Pipeline from Athi river	0.29	0.37	•	•										•	•
450	North Horr	U-142	Boreholes	0.16	0.21		•	•								•	•	•
450	Kargi	U-54	Boreholes + Subsurface Dam	0.39	0.50		•	•	•	•						•	•	•
450	Korr	U-143	Boreholes	0.45	0.56		•	•	•	•						•	•	•
450	Marsabit	U-55	Boreholes + Small dams/Sub-surface dam/Spring	1.65	2.07		•	•	•	•	•					•	•	•
450	Sololo	U-56	Boreholes	0.34	0.43		•	•	•	•						•	•	•
450	Moyale	U-57	Boreholes + Small Dam	0.62	0.78		•	•	•	•						•	•	•
460	Meru	U-58	Kathita river	12.58	15.85					•	•						•	•
460	Nkubu	U-59	Thingithu River	0.42	0.53					•	•						•	•
460	Chogoria	U-60	North Mara River	0.08	0.10	•	•										•	•
460	Chuka	U-61	Tungu river	0.29	0.36					•	•						•	•
460	Maua	U-62	Ura river	0.29	0.36					•	•						•	•
510	Mudo Gashe	U-63	Boreholes + Subsurface Dam	0.17	0.21		•	•									•	•
510	Ijara	U-64	Boreholes + Small dam	0.09	0.11		•	•									•	•
510	Kotile	U-65	Boreholes/Subsurface Dam/Tana	0.09	0.11		•	•									•	•
510	Masalani	U-66	Tana River	0.09	0.11					•	•						•	•
510	Garissa	U-67	Tana River	2.59	3.26					•	•						•	•
520	Mandera	U-68	Daua River	0.43	0.54					•	•						•	•
520	Elwak	U-69	Boreholes	0.62	0.78					•	•						•	•
520	Rhamu	U-70	Daua River	0.26	0.33					•	•						•	•
530	Wajir	U-71	Boreholes + Ewaso Ngiro River	1.62	2.04		•	•	•	•	•						•	•
530	Buna	U-72	Boreholes(Lago Bor river)	0.45	0.56		•	•	•	•	•						•	•
530	Bute	U-73	Boreholes + Small Dams	0.15	0.18		•	•									•	•
610	Manga	U-74	Bunyonyu Dam	0.06	0.07					•	•						•	•
610	Keroka	U-75	Bunyonyu Dam	0.15	0.19					•	•						•	•
610	Nyamira + Kebirigo	U-144	Kuja river	0.73	0.92					•	•						•	•
610	Kisii	U-76	Bunyonyu Dam	3.06	3.85					•	•						•	•
610	Ogembo	U-77	Kuja river	0.07	0.09	•	•										•	•
620	Maseno	U-78	Edzawa Dam	1.10	1.39					•	•						•	•
620	Kisumu & + Kiboswa	U-79	Kibos dam	37.19	46.85		•	•									•	•
620	Ahero	U-80	Nyando river	0.64	0.80		•	•									•	•
620	Muhoroni	U-81	Nyando River	0.57	0.72					•	•						•	•
630	Bondo	U-145	Yala river	0.21	0.26					•	•						•	•
630	Yala	U-82	Yala river	0.16	0.20					•	•						•	•
630	Siaya	U-83	Yala River	1.27	1.60					•	•						•	•
630	Ukwala	U-84	Nzoia River	0.07	0.08					•	•						•	•
640	Homa Bay	U-85	Lake Victoria	1.65	2.08					•	•						•	•
640	Migori	U-86	Migori river	0.54	0.68					•	•						•	•
640	Kehancha + Tarang'anya	U-146	Migori river	0.24	0.30	•	•										•	•
640	Nyabikaye	U-147	Boreholes	0.23	0.29		•	•									•	•
640	Oyugis	U-148	Isanta river(Awach Tende)	0.24	0.30					•	•						•	•
640	Kendu Bay	U-87	Lake Victoria	0.20	0.25					•	•						•	•
640	Awendo/Sare	U-149	Sare river	0.27	0.34	•	•										•	•
710	Oloitokitok	U-88	Nol-Turesh Spring	0.46	0.58					•	•						•	•
710	Ngong	U-89	Kerarapon Spring	1.58	1.98					•	•						•	•
710	Kajiado	U-90	Kiscirian P/L	0.64	0.80					•	•						•	•
710	Namanga	U-91	Namanga Spring	0.51	0.65					•	•						•	•

Note: • Construction

**Appendix 4.6 Sewerage Development - Proposed Implementation
Programme for Reduced Development (Alternative-B) (3/3)**

District Code	Urban Name	City Code	Future Raw Water Source	Cost (million)		Implementation Schedule														
				US\$	K£	93	95	2000		2	4	6	8	10						
710	Magadi	U-92	Oloibortoto river	0.30	0.38															
720	Souk	U-93	Kipsonoi river	0.39	0.49															
720	Kericho	U-94	Dimlitch Dam, Kimugung Dam	9.72	12.24															
720	Kipkelion	U-95	Nyando river	0.17	0.21															
720	Londiani	U-96	Londiani dam	0.24	0.30															
730	Nanyuki	U-97	Liki river	2.20	2.77															
730	Rumuruti	U-150	Rumuruti Dam + Borehole	0.18	0.23															
730	Nyahururu	U-98	Nyahururu dam + Borehole	1.26	1.58															
740	Gilgil	U-99	Turasha P/L & Malewa Dam	1.37	1.73															
740	Naiyasha	U-100	Turasha P/L & Malewa Dam	7.07	8.91															
740	Njoro	U-101	Itare Dam	0.86	1.08															
740	Elburgon	U-102	Itare Dam	1.17	1.47															
740	Molo	U-103	Itare Dam	1.03	1.29															
740	Nakuru	U-104	Turasha P/L + Malewa Dam + Itare Dam	55.47	69.89															
750	Narok	U-105	Upper Narok Dam	1.51	1.91															
750	Nairagio Ngarc	U-106	Nasampolai river	0.05	0.06															
750	Kilgoris	U-151	Poroko river	0.33	0.42															
750	Lolkorian	U-152	Migori river	0.17	0.22															
760	Kitale	U-107	Koitobos river	9.43	11.88															
760	Kimini/Saboti+Spr.Kita	U-108	Kabewyan river	0.10	0.13															
760	Endebess/Kwanza	U-109	Koitobos river	0.17	0.21															
770	Moi's Bridge	U-153	Nzoia river	0.22	0.28															
770	Turbo	U-154	Sosiani river	0.30	0.38															
770	Eldoret	U-110	Moiben Dam + Nzoia river	17.50	22.05															
770	Burnt Forest	U-111	Kipkaren river	0.16	0.20															
810	Kabarnet	U-112	Kirandich Dam	0.71	0.89															
810	Maji Mazuri	U-113	Maji Mazuri river	0.39	0.50															
810	Eldama Ravine	U-114	Chemususu Dam	0.43	0.54															
810	Mogotio	U-115	Molo river /Chemususu Dam	0.22	0.28															
810	Marigat	U-155	Perkerra river	0.20	0.25															
820	Iten+Tambach	U-116	Moiben Dam	0.45	0.57															
830	Nandi Hills	U-117	Mokong River	0.10	0.12															
830	Kapsabet+Baraton	U-118	Mokong river	1.14	1.43															
840	Muralal	U-119	Loikas/Yamo river	1.50	1.89															
840	Wamba	U-120	Boreholes	0.32	0.40															
840	Baragoi	U-121	Boreholes + Sub-surface dam	0.28	0.35															
850	Lodwar	U-122	Boreholes & sub-surface dam	0.81	1.02															
860	Kapenguria/Makutano	U-123	Kapenguria River	0.96	1.21															
910	Bungoma	U-124	Kuywa River	2.80	3.52															
910	Kimillili	U-125	Kimillili River	0.63	0.79															
910	Webuye	U-126	Nzoia River	2.53	3.18															
910	Chaptais	U-157	Sasuri river	0.22	0.28															
920	Busia	U-127	Sio river	1.41	1.78															
920	Nambale	U-158	Sio river	0.18	0.23															
930	Luanda	U-128	Edzawa river	0.14	0.17															
930	Vihiga+Majengo	U-129	Edzawa River (Kimondi River)	0.34	0.43															
930	Kaimosi	U-130	Galagoli river	0.02	0.02															
930	Khayega	U-131	Yala river	0.03	0.04															
930	Kakamega	U-132	Isiukhu River, Mukulusi Dam	7.76	9.78															
930	Butere	U-133	Viratsi River	0.17	0.22															
930	Mumias	U-134	Nzoia River	1.76	2.21															
				562.81	709.14															

Note: ● Construction

Appendix 4.7 Summary of Development Cost for Reduced Development (Alternative-B)

Development Sector	Budget Appropriated for	Financial Requirement (Million)					
		1993 - 2000		2001 - 2010		Total	
		US\$	K£	US\$	K£	US\$	K£
1. D&I Water Supply		3,032	3,821	2,756	3,472	5,788	7,293
(1) Urban water supply	MOWD *1	2,047	2,580	1,771	2,231	3,818	4,811
(2) Rural water supply	MOWD *2	985	1,241	985	1,241	1,970	2,482
2. Sewerage Development	MOLG *3	310	390	253	319	563	709
Total		3,342	4,211	3,009	3,791	6,351	8,002

Notes: Executing agencies will be;

*1 : MOWD, NWCPC, Municipalities (NCC, etc)

*2 : MOWD, NWCPC, County councils, NGO, etc

*3 : Municipal and urban councils under technical assistance by MOWD

Appendix 4.8 Annual Budgetary Schedule for Reduced Development (Alternative-B)

Development Sector	Year												Total						
	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004		2005	2006	2007	2008	2009	2010
1 D&I Water Supply	537.9	537.9	424.7	424.7	293.1	293.1	260.5	260.5	264.6	264.6	306.5	306.5	280.6	280.6	261.4	261.4	265.1	265.0	1,943
(1) Urban water supply	414.7	414.7	301.6	301.6	169.9	169.9	137.4	137.4	166.0	166.0	208.0	208.0	182.1	182.1	162.9	162.9	166.6	166.6	3,818
(2) Rural water supply	123.2	123.2	123.2	123.2	123.2	123.2	123.2	123.2	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	98.5	1,970
2 Sewerage Development (for 158 urban centres)	74.9	74.9	47.6	47.6	14.5	14.5	17.8	17.8	22.6	22.6	22.8	22.8	36.8	36.8	24.1	24.1	20.3	20.3	563
Total	612.7	612.7	472.3	472.3	307.6	307.6	278.3	278.3	287.2	287.2	329.3	329.3	317.3	317.3	285.5	285.5	285.4	285.4	6,351

