

## 9.5 Present Water Pollution Analysis

### Self-Purification Coefficient of Rivers

Concentrated load is usually reduced in the main river section contributed by biological decomposition, sedimentation and absorption. The run-off ratio after purification in the subject river section is different depending on the self-purification phenomenon of rivers.

Self-purification phenomenon of rivers can be described by the Streeter-Phelps equation as follows:

<Streeter-Phelps Equation> (modified)

$$L_d = \{L_u - L_a / (2.31 \cdot kr)\} \times 10^{(kr \cdot t)} + L_a / (2.31 \cdot kr)$$

where ; L: BOD (ppm)

d-- at downstream, u -- at upstream

L<sub>a</sub>-- BOD added from river bed (ppm/day)

kr: BOD reduction coefficient (self-purification coefficient)

(= k<sub>1</sub> + k<sub>3</sub>) (1/day)

k<sub>1</sub> -- deoxygenation coefficient

k<sub>2</sub> -- re-aeration coefficient

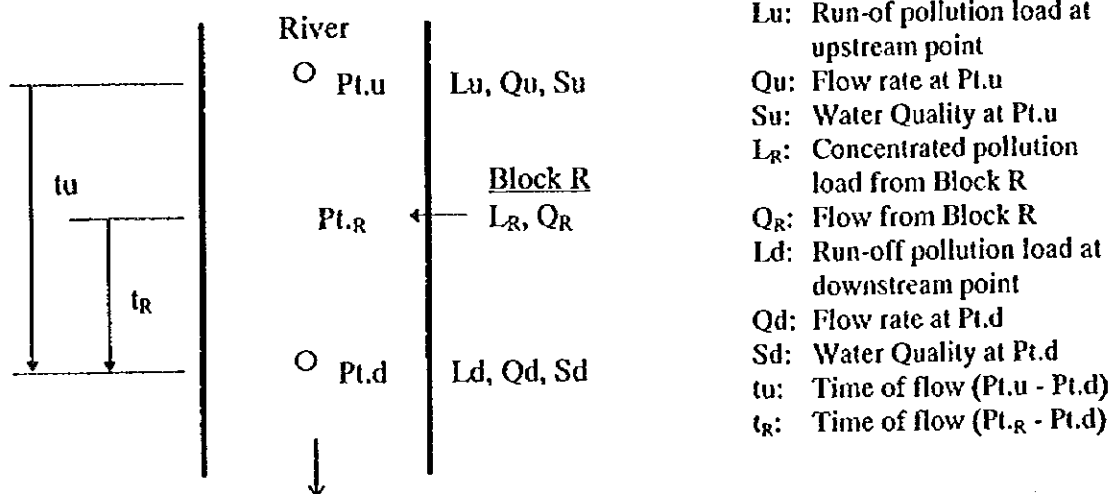
k<sub>3</sub> -- physical coefficient

t: time of flow from upstream to downstream

Assuming L<sub>a</sub> is negligible (=0), above equation becomes as follows;

$$L_d = L_u \times 10^{(kr \cdot t)} \text{ or } L_u \times e^{(kr \cdot t)}$$

In cases where pollution load flows along the river between the upstream and the downstream portions, the following calculation is made.



In the above figure,

$$Q_u + Q_R = Q_d$$

$$S_u = L_u / Q_u, S_d = L_d / Q_d$$

and using Streeter-Phelps equation, following equation can be obtained;

$$L_d = L_u \cdot 10^{(-k_r \cdot t_u)} + L_R \cdot 10^{(-k_r \cdot R)}$$

The self-purification coefficient ( $k_r$ ), is a summation of  $k_1$  (deoxidization coefficient) and  $k_3$  (physical coefficient). The range of  $k_1$  is rather small with 0.05 - 0.3, however,  $k_3$  fluctuates depending on the characteristics of water quality, especially related to physical conditions (suspended solid).

SECTION 10 FUTURE WATER POLLUTION ANALYSIS

10.2 Frame Values and Pollution Load by Sub-basin

Table 10.2.1 Population by Sewered/Unsewered by Sub-basin (Scenario 1, 2005)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			Total
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	
1. Manyame River (Ustream) S/B										
Goromonzi Rural	-	31,666	0%	-	-	-	-	-	31,666	31,666
Harare Rural	-	145	0%	-	-	-	-	-	145	145
Manyame Rural	-	2,868	0%	-	-	-	-	-	2,868	2,868
Total	-	34,679		-	-	-	-	-	34,679	34,679
2. Ruwa River S/B										
Harare City	105,800	-	100%	-	-	105,800	-	-	-	-
Ruwa Local Board	70,638	-	100%	11,328	810	58,500	-	-	-	-
Epworth Local Board	55,988	-	100%	-	-	55,988	-	-	-	-
Goromonzi Rural	-	7,513	0%	-	-	-	-	-	7,513	7,513
Harare Rural	-	4,989	0%	-	-	-	-	-	4,989	4,989
Total	232,426	12,502		11,328	810	220,288	-	-	12,502	232,426
3. Seke & Harava Dams S/B										
Harare City	47,760	-	100%	3,960	-	43,800	-	-	-	-
Epworth Local Board	6,053	-	100%	-	-	6,053	-	-	-	-
Goromonzi Rural	-	143	0%	-	-	-	-	-	143	143
Harare Rural	-	2,749	0%	-	-	-	-	-	2,749	2,749
Manyame Rural	-	1,193	0%	-	-	-	-	-	1,193	1,193
Total	53,813	4,085		3,960	-	49,853	-	-	4,085	53,813
4. Nyaisime River S/B										
Chitungwiza Municipality	370,675	-	100%	-	15,075	355,600	-	-	-	-
Manyame Rural	-	12,482	0%	-	-	-	-	-	12,482	12,482
Marondera Rural	-	9,156	0%	-	-	-	-	-	9,156	9,156
Total	370,675	21,638		-	15,075	355,600	-	-	21,638	370,675
5. Mukvsvi River S/B										
Harare City	764,305	49,356	94%	42,451	98,029	623,826	-	-	49,356	764,305
Epworth Local Board	21,942	-	100%	-	-	21,942	-	-	-	21,942
Harare Rural	-	2,260	0%	-	-	-	-	-	2,260	2,260
Zvimba Rural	-	516	0%	-	-	-	-	-	516	516
Total	786,247	52,132		42,451	98,029	645,768	-	-	49,356	786,247

Table 10.2.1 Population by Sewered/Unsewered by Sub-basin (Scenario 1, 2005)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area				Unsewered Area													
	Sewered	Unsewered		Low	Medium	High	Total	Low	Medium	High	Total										
6. Manyame River (D stream) S/B																					
Harare City	133,810	-	100%	-	20,610	113,200	-	-	-	-	133,810	-	-	-	-	-	-	-	-	-	-
Chitungwiza Municipality	68,800	-	100%	-	-	68,800	-	-	-	-	68,800	-	-	-	-	-	-	-	-	-	-
Harare Rural	-	3,404	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,404
Manyame Rural	-	1,797	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,797
Total	202,610	5,201		-	20,610	182,000	-	-	-	-	202,610	-	-	-	-	-	-	-	-	-	5,201
7. Marimba River S/B																					
Harare City	861,729	-	100%	53,923	94,807	713,000	-	-	-	-	861,729	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	3,218	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	3,218
Total	861,729	3,218		53,923	94,807	713,000	-	-	-	-	861,729	-	-	-	-	-	-	-	-	-	3,218
8. Lake Chivero S/B																					
Harare City	162,000	-	0%	-	-	162,000	-	-	-	-	162,000	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	1,697	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	1,697
Manyame Rural	-	2,474	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2,474
Zvimba Rural	-	5,700	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	5,700
Total	162,000	9,871		-	-	162,000	-	-	-	-	162,000	-	-	-	-	-	-	-	-	-	9,871
9. Mazururu River S/B																					
Harare City	150,000	-	0%	-	-	150,000	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	16,797	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	16,797
Total	150,000	16,797		-	-	150,000	-	-	-	-	150,000	-	-	-	-	-	-	-	-	-	16,797
10. Gwebi River S/B																					
Harare City	12,576	29,184	30%	12,576	-	-	-	-	-	-	12,576	29,184	-	-	-	-	-	-	-	-	29,184
Mazowe Rural	-	15,233	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,233
Zvimba Rural	-	24,385	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	24,385
Total	12,576	68,802		12,576	-	-	-	-	-	-	12,576	29,184	-	-	-	-	-	-	-	-	68,802
11. Lake Manyame S/B																					
Norton Town	62,358	-	100%	6,468	9,540	46,350	-	-	-	-	62,358	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	7,389	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	7,389
Zvimba Rural	-	15,021	0%	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	15,021
Total	62,358	22,410		6,468	9,540	46,350	-	-	-	-	62,358	-	-	-	-	-	-	-	-	-	22,410
Grand Total	2,894,434	251,335	92%	130,706	238,870	2,524,859	2,894,434	78,540	-	-	2,894,434	78,540	-	-	-	-	-	-	-	-	251,335

Note: 1. Estimated population and land use are based on Section 12.2.3., Chapter 2, Supporting Report  
 2. Population in rural districts is categorised to high-density area.

Table 10.2.2 Population by Sewered/Unsewered by Sub-basin (Scenario 1, 2015)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			Total
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	
1. Manvame River (U stream) S/B										
Goromonzi Rural	-	38,130	0%	-	-	-	-	-	-	38,130
Harare Rural	-	174	0%	-	-	-	-	-	-	174
Manvame Rural	-	3,454	0%	-	-	-	-	-	-	3,454
Total	-	41,758		-	-	-	-	-	-	41,758
2. Ruwa River S/B										
Harare City	153,000	-	100%	-	-	153,000	-	-	-	-
Ruwa Local Board	90,798	-	100%	11,328	11,970	67,500	-	-	-	90,798
Epworth Local Board	67,417	-	100%	-	-	67,417	-	-	-	67,417
Goromonzi Rural	-	9,047	0%	-	-	-	-	-	-	9,047
Harare Rural	-	6,008	0%	-	-	-	-	-	-	6,008
Total	311,215	15,055		11,328	11,970	287,917	-	-	-	311,215
3. Seke & Harava Dams S/B										
Harare City	47,760	-	100%	3,960	-	43,800	-	-	-	47,760
Epworth Local Board	7,288	-	100%	-	-	7,288	-	-	-	7,288
Goromonzi Rural	-	173	0%	-	-	-	-	-	-	173
Harare Rural	-	3,310	0%	-	-	-	-	-	-	3,310
Manyame Rural	-	1,436	0%	-	-	-	-	-	-	1,436
Total	55,048	4,919		3,960	-	51,088	-	-	-	55,048
4. Nvatsime River S/B										
Chitungwiza Municipality	504,338	-	100%	2,568	37,170	464,600	-	-	-	504,338
Manyame Rural	-	15,030	0%	-	-	-	-	-	-	15,030
Marondera Rural	-	11,026	0%	-	-	-	-	-	-	11,026
Total	504,338	26,056		2,568	37,170	464,600	-	-	-	504,338
5. Mukwisi River S/B										
Harare City	820,661	49,356	94%	44,407	98,029	678,226	49,356	-	-	820,661
Epworth Local Board	26,421	-	100%	-	-	26,421	-	-	-	26,421
Harare Rural	-	2,721	0%	-	-	-	-	-	-	2,721
Zvimba Rural	-	622	0%	-	-	-	-	-	-	622
Total	847,082	52,699		44,407	98,029	704,647	49,356	-	-	847,082

Table 10.2.2 Population by Sewered/Unsewered by Sub-basin (Scenario 1, 2015)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			Total
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	
6. Manyame River (D-stream) S/B										
Harare City	476,410	-	100%	-	20,610	455,800	-	-	-	-
Chitungwiza Municipality	68,800	-	100%	-	68,800	-	-	-	-	-
Harare Rural	-	4,099	0%	-	-	-	-	4,099	-	4,099
Manyame Rural	-	2,164	0%	-	-	-	-	2,164	-	2,164
Total	545,210	6,263		-	20,610	524,600	-	6,263	-	6,263
7. Marimba River S/B										
Harare City	996,585	-	100%	60,180	107,435	828,971	-	-	-	-
Zvimba Rural	-	3,875	0%	-	-	-	-	3,875	-	3,875
Total	996,585	3,875		60,180	107,435	828,971	-	3,875	-	3,875
8. Lake Chivero S/B										
Harare City	194,800	-	0%	-	-	194,800	-	-	-	-
Chegutu Rural	-	2,044	0%	-	-	-	-	2,044	-	2,044
Manyame Rural	-	2,979	0%	-	-	-	-	2,979	-	2,979
Zvimba Rural	-	6,864	0%	-	-	-	-	6,864	-	6,864
Total	194,800	11,887		-	-	194,800	-	11,887	-	11,887
9. Muzuru River S/B										
Harare City	150,000	-	0%	-	-	150,000	-	-	-	-
Zvimba Rural	-	20,226	0%	-	-	-	-	20,226	-	20,226
Total	150,000	20,226		-	-	150,000	-	20,226	-	20,226
10. Gwebi River S/B										
Harare City	21,324	33,780	39%	21,324	-	-	33,780	-	-	33,780
Mazowe Rural	-	18,343	0%	-	-	-	-	18,343	-	18,343
Zvimba Rural	-	29,363	0%	-	-	-	-	29,363	-	29,363
Total	21,324	81,486		21,324	-	-	33,780	47,706	-	81,486
11. Lake Manyame S/B										
Norton Town	118,290	-	100%	21,540	24,750	72,000	-	-	-	-
Chegutu Rural	-	8,897	0%	-	-	-	-	8,897	-	8,897
Zvimba Rural	-	18,087	0%	-	-	-	-	18,087	-	18,087
Total	118,290	26,984		21,540	24,750	72,000	-	26,984	-	26,984
Grand Total	3,743,892	291,208	93%	165,307	299,963	3,278,623	83,136	208,072	-	291,208

Note: 1. Estimated population and land use are based on Section 12.2.3., Chapter 2, Supporting Report  
 2. Population in rural districts is categorised to high-density area.

Table 10.2.3 Population by Sewered/Unsewered by Sub-basin (Scenario 2, 2005)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			Total
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	
1. Manyame River (U-stream) S/B	-	31,666	0%	-	-	-	-	-	-	-
Goromonzi Rural	-	145	0%	-	-	-	-	-	-	-
Harare Rural	-	2,868	0%	-	-	-	-	-	-	-
Manyame Rural	-	34,679	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	-
2. Ruwa River S/B	112,726	-	100%	-	-	112,726	-	-	-	-
Harare City	1,941	-	100%	155	11	1,775	-	-	-	1,941
Epworth Local Board	55,988	-	100%	-	-	55,988	-	-	-	55,988
Goromonzi Rural	-	7,513	0%	-	-	-	-	-	-	7,513
Harare Rural	-	4,989	0%	-	-	-	-	-	-	4,989
Total	170,655	12,502	-	155	11	170,489	-	-	-	170,655
3. Seke & Harava Dams S/B	6,994	-	100%	580	-	6,414	-	-	-	6,994
Epworth Local Board	6,053	-	100%	-	-	6,053	-	-	-	6,053
Goromonzi Rural	-	143	0%	-	-	-	-	-	-	143
Harare Rural	-	2,749	0%	-	-	-	-	-	-	2,749
Manyame Rural	-	1,193	0%	-	-	-	-	-	-	1,193
Total	13,047	4,085	-	580	-	12,467	-	-	-	13,047
4. Nvaise River S/B	526,688	-	100%	-	21,420	505,268	-	-	-	526,688
Chitungwiza Municipality	-	12,482	0%	-	-	-	-	-	-	12,482
Manyame Rural	-	9,156	0%	-	-	-	-	-	-	9,156
Marondera Rural	-	21,638	0%	-	21,420	505,268	-	-	-	21,638
Total	526,688	-	-	-	21,420	505,268	-	-	-	526,688
5. Mukuvisi River S/B	804,669	36,347	96%	42,446	89,664	672,560	36,347	-	-	804,669
Harare City	21,942	-	100%	-	-	21,942	-	-	-	21,942
Epworth Local Board	-	2,260	0%	-	-	-	-	-	-	2,260
Harare Rural	-	516	0%	-	-	-	-	-	-	516
Zimbabwe Rural	826,611	39,123	-	42,446	89,664	694,502	36,347	-	-	826,611
Total	826,611	39,123	-	42,446	89,664	694,502	36,347	-	-	826,611

Table 10.2.3 Population by Sewered/Unsewered by Sub-basin (Scenario 2, 2005)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	Total
6. Manyame River (D.stream) S/B										
Harare City	9,847	-	100%	-	1,517	8,330	-	-	-	-
Chitungwiza Municipality	141,618	-	100%	-	-	141,618	-	-	-	-
Harare Rural	-	3,404	0%	-	-	-	-	3,404	-	-
Manyame Rural	-	1,797	0%	-	-	-	-	1,797	-	-
Total	151,465	5,201		-	1,517	149,948	-	5,201	-	151,465
7. Manimba River S/B										
Harare City	678,007	-	100%	40,072	79,619	558,316	-	-	-	-
Zvimbura Rural	-	3,218	0%	-	-	-	-	3,218	-	-
Total	678,007	3,218		40,072	79,619	558,316	-	3,218	-	678,007
8. Lake Chivero S/B										
Harare City	-	-	100%	-	-	-	-	-	-	-
Chegutu Rural	-	1,697	0%	-	-	-	-	1,697	-	-
Manyame Rural	-	2,474	0%	-	-	-	-	2,474	-	-
Zvimbura Rural	-	5,700	0%	-	-	-	-	5,700	-	-
Total	-	9,871		-	-	-	-	9,871	-	-
9. Muzuru River S/B										
Harare City	-	-	100%	-	-	-	-	-	-	-
Zvimbura Rural	-	16,797	0%	-	-	-	-	16,797	-	-
Total	-	16,797		-	-	-	-	16,797	-	-
10. Gwebi River S/B										
Harare City	13,068	91,078	13%	13,068	-	-	91,078	-	-	91,078
Mazowe Rural	-	15,233	0%	-	-	-	-	15,233	-	-
Zvimbura Rural	-	24,385	0%	-	-	-	-	24,385	-	-
Total	13,068	130,696		13,068	-	-	91,078	-	-	130,696
11. Lake Manyame S/B										
Norton Town	27,362	-	100%	1,487	2,193	23,681	-	-	-	-
Chegutu Rural	-	7,389	0%	-	-	-	-	7,389	-	-
Zvimbura Rural	-	15,021	0%	-	-	-	-	15,021	-	-
Total	27,362	22,410		1,487	2,193	23,681	-	7,389	-	22,410
Grand Total	2,406,903	300,220	89%	97,807	194,423	2,114,672	127,425	172,795	-	300,220

Note: 1. Estimated population and land use are based on Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.



Table 10.2.4 Population by Sewered/Unsewered by Sub-basin (Scenario 2, 2015)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			Total
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	
1. Manyame River (Ustream) S/B										
Goromonzi Rural	-	38,130	0%	-	-	-	-	-	38,130	38,130
Harare Rural	-	174	0%	-	-	-	-	-	174	174
Manyame Rural	-	3,454	0%	-	-	-	-	-	3,454	3,454
Total	-	41,758		-	-	-	-	-	41,758	41,758
2. Ruwa River S/B										
Harare City	145,926	-	100%	-	-	145,926	-	-	-	-
Ruwa Local Board	2,337	-	100%	153	161	2,023	-	-	-	-
Epworth Local Board	67,417	-	100%	-	-	67,417	-	-	-	-
Goromonzi Rural	-	9,047	0%	-	-	-	-	-	9,047	9,047
Harare Rural	-	6,008	0%	-	-	-	-	-	6,008	6,008
Total	215,680	15,055		153	161	215,366	-	-	15,055	15,055
3. Seké & Harava Dams S/B										
Harare City	9,054	-	100%	751	-	8,303	-	-	9,054	-
Epworth Local Board	7,288	-	100%	-	-	7,288	-	-	7,288	-
Goromonzi Rural	-	173	0%	-	-	-	-	-	173	173
Harare Rural	-	3,310	0%	-	-	-	-	-	3,310	3,310
Manyame Rural	-	1,436	0%	-	-	-	-	-	1,436	1,436
Total	16,342	4,919		751	-	15,591	-	-	4,919	4,919
4. Nyatsime River S/B										
Chitungwiza Municipality	758,507	-	100%	3,862	55,902	698,742	-	-	758,507	-
Manyame Rural	-	15,030	0%	-	-	-	-	-	15,030	15,030
Marondera Rural	-	11,026	0%	-	-	-	-	-	11,026	11,026
Total	758,507	26,056		3,862	55,902	698,742	-	-	26,056	26,056
5. Mukuvisi River S/B										
Harare City	1,041,656	47,052	96%	53,691	108,314	879,652	47,052	-	-	47,052
Epworth Local Board	26,421	-	100%	-	-	26,421	-	-	-	-
Harare Rural	-	2,721	0%	-	-	-	-	-	2,721	2,721
Zimbabwe Rural	-	622	0%	-	-	-	-	-	622	622
Total	1,068,077	50,395		53,691	108,314	906,073	47,052	-	3,343	50,395

Table 10.2.4 Population by Sewered/Unsewered by Sub-basin (Scenario 2, 2015)

Sub-basin/District	Total Population		Projected Sewered %	Sewered Area			Unsewered Area			
	Sewered	Unsewered		Low	Medium	High	Low	Medium	High	Total
6. Manyame River (D-stream) S/B										
Harare City	12,747	-	100%	-	551	12,196	12,747	-	-	-
Chitungwiza Municipality	203,950	-	100%	-	203,950	203,950	-	-	-	-
Harare Rural	-	4,099	0%	-	-	-	-	-	4,099	4,099
Manyame Rural	-	2,164	0%	-	-	-	-	-	2,164	2,164
Total	216,697	6,263		-	551	216,146	216,697	-	6,263	6,263
7. Marimba River S/B										
Harare City	877,690	-	100%	47,516	102,633	727,541	877,690	-	-	-
Zimbabwe Rural	-	3,875	0%	-	-	-	-	-	3,875	3,875
Total	877,690	3,875		47,516	102,633	727,541	877,690	-	3,875	3,875
8. Lake Chivero S/B										
Harare City	-	-	100%	-	-	-	-	-	-	-
Chegutu Rural	-	2,044	0%	-	-	-	-	-	2,044	2,044
Manyame Rural	-	2,979	0%	-	-	-	-	-	2,979	2,979
Zimbabwe Rural	-	6,864	0%	-	-	-	-	-	6,864	6,864
Total	-	11,887		-	-	-	-	-	11,887	11,887
9. Muzuru River S/B										
Harare City	-	-	100%	-	-	-	-	-	-	-
Zimbabwe Rural	-	20,226	0%	-	-	-	-	-	20,226	20,226
Total	-	20,226		-	-	-	-	-	20,226	20,226
10. Gwebi River S/B										
Harare City	16,917	117,902	13%	16,917	-	-	16,917	117,902	-	117,902
Mazowe Rural	-	18,343	0%	-	-	-	-	-	18,343	18,343
Zimbabwe Rural	-	29,363	0%	-	-	-	-	-	29,363	29,363
Total	16,917	165,608		16,917	-	-	16,917	117,902	-	165,608
11. Lake Manyame S/B										
Norton Town	32,947	-	100%	3,440	3,953	25,554	32,947	-	-	-
Chegutu Rural	-	8,897	0%	-	-	-	-	-	8,897	8,897
Zimbabwe Rural	-	18,087	0%	-	-	-	-	-	18,087	18,087
Total	32,947	26,984		3,440	3,953	25,554	32,947	-	-	26,984
Grand Total	3,202,857	373,026	90%	126,330	271,515	2,805,013	3,202,857	164,954	208,072	373,026

Note: 1. Estimated population and land use are based on Section 12.2.3., Chapter 2, Supporting Report  
 2. Population in rural districts is categorised to high-density area.











Table 10.2.7 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 2, 2005)

Sub-basin/District	Generated/Discharged Wastewater Quantity (m3/day)											
	Sewered Area						Unsewered Area					
	Domestic			Com. & Inst.			Domestic			Com. & Inst.		
	Low	Medium	High	Low	High	Total	Low	Medium	High	Low	High	Total
6. Manyame River (D.stream) S/B												
Harare City	-	319	541	-	-	39,533	40,393	-	-	-	-	-
Chitungwiza Municipality	-	-	9,205	-	-	-	9,205	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	-	221	-	-	221
Manyame Rural	-	-	-	-	-	-	-	-	117	-	-	117
Total	-	319	9,747	-	-	39,533	49,598	-	338	-	-	338
7. Marimba River S/B												
Harare City	12,623	16,720	36,291	12,292	11,392	89,317	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	209	-	-	209
Total	12,623	16,720	36,291	12,292	11,392	89,317	-	-	209	-	-	209
8. Lake Chivero S/B												
Harare City	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	110	-	-	110
Manyame Rural	-	-	-	-	-	-	-	-	161	-	-	161
Zvimba Rural	-	-	-	-	-	-	-	-	371	-	-	371
Total	-	-	-	-	-	-	-	-	642	-	-	642
9. Muzuru River S/B												
Harare City	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	1,092	-	-	1,092
Total	-	-	-	-	-	-	-	-	1,092	-	-	1,092
10. Gwebi River S/B												
Harare City	4,116	-	-	-	-	4,116	28,690	-	-	-	-	28,690
Mazowe Rural	-	-	-	-	-	-	-	-	990	-	-	990
Zvimba Rural	-	-	-	-	-	-	-	-	1,585	-	-	1,585
Total	4,116	-	-	-	-	4,116	28,690	-	2,575	-	-	31,265
11. Lake Manyame S/B												
Norton Town	468	461	1,539	123	3,386	5,978	-	-	-	-	-	3,451
Chegutu Rural	-	-	-	-	-	-	-	-	480	-	-	480
Zvimba Rural	-	-	-	-	-	-	-	-	976	-	-	976
Total	468	461	1,539	123	3,386	5,978	-	-	1,457	-	-	4,908
Grand Total	30,809	40,829	137,454	63,776	97,189	366,745	40,139	-	11,232	-	-	55,147

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report  
 2. Population in rural districts is categorised to high-density area.



Table 10.2.8 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 2, 2015)

Sub-basin/District	Generated/Discharged Wastewater Quantity (m <sup>3</sup> /day)													
	Sewered Area							Unsewered Area						
	Domestic			Com. & Inst.	Industrial	Total	Domestic			Com. & Inst.	Industrial	Total		
	Low	Medium	High				Low	Medium	High					
1. Manyame River (Upstream) S/B														
Goromonzi Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	2,669
Harare Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Manyame Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	242
Total	-	-	-	-	-	-	-	-	-	-	-	-	-	2,923
2. Ruwa River S/B														
Harare City	-	-	10,215	-	25,642	35,857	-	-	-	-	-	-	-	-
Ruwa Local Board	48	34	142	11	4,632	4,867	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	4,719	236	-	4,955	-	-	-	-	-	-	-	-
Goromonzi Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	633
Harare Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	421
Total	48	34	15,076	247	30,274	45,679	-	-	-	-	-	-	-	1,054
3. Sekke & Harava Dams S/B														
Harare City	236	-	581	-	-	818	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	510	26	-	536	-	-	-	-	-	-	-	-
Goromonzi Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Harare Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	232
Manyame Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	101
Total	236	-	1,091	26	-	1,353	-	-	-	-	-	-	-	344
4. Nyatsime River S/B														
Chitungwiza Municipality	1,217	11,740	48,912	3,142	10,740	61,868	-	-	-	-	-	-	-	-
Manyame Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	1,052
Marondera Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	772
Total	1,217	11,740	48,912	3,142	10,740	61,868	-	-	-	-	-	-	-	1,824
5. Mukvisi River S/B														
Harare City	16,913	22,746	61,576	89,550	41,762	232,546	14,821	-	-	-	-	-	-	325
Epworth Local Board	-	-	1,849	92	-	1,942	-	-	-	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	190
Zvimba Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	44
Total	16,913	22,746	63,425	89,642	41,762	234,488	14,821	-	-	-	-	-	-	325
														15,380

Table 10.2.8 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 2, 2015)

Sub-basin/District	Generated/Discharged Wastewater Quantity (m <sup>3</sup> /day)											
	Sewered Area						Unsewered Area					
	Domestic			Com. & Inst.			Domestic			Com. & Inst.		
	Low	Medium	High	Total	Industrial	Total	Low	Medium	High	Total	Industrial	Total
6. Manyame River (D.stream) S/B												
Harare City	-	116	854	40,502	39,533	40,502	-	-	-	-	-	-
Chitungwiza Municipality	-	-	14,277	16,301	2,024	16,301	-	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	-	287	-	-	287
Manyame Rural	-	-	-	-	-	-	-	-	151	-	-	151
Total	-	116	15,130	56,803	41,557	56,803	-	-	438	-	-	438
7. Marimba River S/B												
Harare City	14,968	21,553	50,928	121,228	11,392	121,228	-	-	-	-	-	-
Zimba Rural	-	-	-	-	-	-	-	-	271	-	-	271
Total	14,968	21,553	50,928	121,228	11,392	121,228	-	-	271	-	-	271
8. Lake Chivero S/B												
Harare City	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	143	-	-	143
Manyame Rural	-	-	-	-	-	-	-	-	209	-	-	209
Zimba Rural	-	-	-	-	-	-	-	-	480	-	-	480
Total	-	-	-	-	-	-	-	-	832	-	-	832
9. Muzuru River S/B												
Harare City	-	-	-	-	-	-	-	-	-	-	-	-
Zimba Rural	-	-	-	-	-	-	-	-	1,416	-	-	1,416
Total	-	-	-	-	-	-	-	-	1,416	-	-	1,416
10. Gwebi River S/B												
Harare City	5,329	-	-	5,329	-	5,329	37,139	-	-	-	-	37,139
Mazowe Rural	-	-	-	-	-	-	-	-	1,284	-	-	1,284
Zimba Rural	-	-	-	-	-	-	-	-	2,055	-	-	2,055
Total	5,329	-	-	5,329	-	5,329	37,139	-	3,339	-	-	40,479
11. Lake Manyame S/B												
Norton Town	1,084	830	1,789	21,930	18,042	21,930	-	-	-	-	3,451	3,451
Chegutu Rural	-	-	-	-	-	-	-	-	623	-	-	623
Zimba Rural	-	-	-	-	-	-	-	-	1,266	-	-	1,266
Total	1,084	830	1,789	21,930	18,042	21,930	-	-	1,889	-	-	3,451
Grand Total	39,794	57,018	196,351	548,677	153,767	548,677	51,961	-	14,565	-	-	70,302

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

Table 10.2.9 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 1, 2005)

Sub-basin/District	Generated BOD (kg/day)												Concentrated BOD (kg/day)											
	Sewered Area				Unsewered Area				Sewered Area				Unsewered Area											
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total						
1. Manvame River (Upstream) S/B																								
Goromonzi Rural																								
Harare Rural																								
Manvame Rural																								
Total																								
2. Ruwa River S/B																								
Harare City																								
Ruwa Local Board																								
Epworth Local Board																								
Goromonzi Rural																								
Harare Rural																								
Total																								
3. Sete & Harava Dams S/B																								
Harare City																								
Epworth Local Board																								
Goromonzi Rural																								
Harare Rural																								
Manvame Rural																								
Total																								
4. Nvatsime River S/B																								
Chitungwiza Municipality																								
Manvame Rural																								
Marondera Rural																								
Total																								
5. Mukurusi River S/B																								
Harare City																								
Epworth Local Board																								
Harare Rural																								
Zvimba Rural																								
Total																								
6. Manvame River (Downstream) S/B																								
Harare City																								
Chitungwiza Municipality																								
Harare Rural																								
Manvame Rural																								
Total																								

Table 10.2.9 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 1, 2005)

Sub-basin/District	Generated BOD (kg/day)												Concentrated BOD (kg/day)												
	Sewered Area				Unsewered Area				Sewered Area				Unsewered Area				Sewered Area				Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	
7. Manimba River S/B																									
Harare City	2,696	4,456	31,372	6,274	12,826	57,624	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	142	-	142	-	-	-	-	-	-	-	-	-	-	11	-	-	71
Total	2,696	4,456	31,372	6,274	12,826	57,624	-	-	142	-	142	-	-	-	-	-	-	-	-	-	-	11	-	-	71
8. Lake Chivero S/B																									
Harare City	-	-	7,128	-	-	7,128	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	75	-	75	-	-	-	-	-	-	-	-	-	-	6	-	-	6
Manyame Rural	-	-	-	-	-	-	-	-	109	-	109	-	-	-	-	-	-	-	-	-	-	9	-	-	9
Zimbabwe Rural	-	-	-	-	-	-	-	-	251	-	251	-	-	-	-	-	-	-	-	-	-	20	-	-	20
Total	-	-	7,128	-	-	7,128	-	-	434	-	434	-	-	-	-	-	-	-	-	-	-	35	-	-	35
9. Muzaruru River S/B																									
Harare City	-	-	6,600	-	-	6,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	739	-	739	-	-	-	-	-	-	-	-	-	-	59	-	-	59
Total	-	-	6,600	-	-	6,600	-	-	739	-	739	-	-	-	-	-	-	-	-	-	-	59	-	-	59
10. Gwebi River S/B																									
Harare City	629	-	-	-	-	629	1,459	-	-	-	1,459	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	670	-	670	-	-	-	-	-	-	-	-	-	-	54	-	-	54
Zimbabwe Rural	-	-	-	-	-	-	-	-	1,073	-	1,073	-	-	-	-	-	-	-	-	-	-	86	-	-	86
Total	629	-	-	-	-	629	1,459	-	1,743	-	3,202	-	-	-	-	-	-	-	-	-	-	139	-	-	139
11. Lake Manyame S/B																									
Norton Town	323	448	2,039	141	5,891	8,843	-	-	-	-	7,850	7,850	-	-	-	-	-	-	-	-	-	-	-	-	628
Chegutu Rural	-	-	-	-	-	-	-	-	325	-	325	-	-	-	-	-	-	-	-	-	-	26	-	-	26
Zimbabwe Rural	-	-	-	-	-	-	-	-	661	-	661	-	-	-	-	-	-	-	-	-	-	53	-	-	53
Total	323	448	2,039	141	5,891	8,843	-	-	986	-	8,216	8,836	-	-	-	-	-	-	-	-	-	79	-	-	628
Grand Total	8,658	14,866	131,500	32,597	110,132	297,752	6,395	-	7,675	-	8,216	22,286	-	-	-	-	-	-	-	-	-	614	-	-	657

Note: 1. Residential density category is based on those shown in Section 12.2.3, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 95% WSP 90%

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

Table 10.2.10 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin • BOD (Scenario 1, 2015)

Sub-basin/District	Generated BOD (kg/day)										Concentrated BOD (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Impingement	Total	Low	Med.	High	C & I	Ind.	Total	
1. Manvame River (Upstream) S/B																					
Goromonzi Rural																					
Harare Rural																					
Manvame Rural																					
Total																					
2. Ruwa River S/B																					
Harare City																					
Ruwa Local Board																					
Epworth Local Board																					
Goromonzi Rural																					
Harare Rural																					
Total																					
3. Seke & Harava Dams S/B																					
Harare City																					
Epworth Local Board																					
Goromonzi Rural																					
Harare Rural																					
Manvame Rural																					
Total																					
4. Nyatsime River S/B																					
Chitungwiza Municipality																					
Manvame Rural																					
Manondera Rural																					
Total																					
5. Mukoyisi River S/B																					
Harare City																					
Epworth Local Board																					
Harare Rural																					
Zvornba Rural																					
Total																					
6. Manvame River (Downstream) S/B																					
Harare City																					
Chitungwiza Municipality																					
Harare Rural																					
Manvame Rural																					
Total																					

Table 10.2.10 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 1, 2015)

Sub-basin/District	Generated BOD (kg/day)										Concentrated BOD (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Triggation	Total	Low	Med.	High	C & I	Ind.	Total		
7. Manimba River S/B																						
Harare City	3,009	5,049	36,475	8,895	12,826	66,254	-	-	-	-	-	-	-	Coxborough (BNR, TF)	2,862	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	171	-	171	-	-	-	-	-	-	14	-	-	-	14
Total	3,009	5,049	36,475	8,895	12,826	66,254	-	-	171	-	171	-	-	-	2,862	-	-	14	-	-	-	14
8. Lake Chivero S/B																						
Harare City	-	-	8,571	-	-	8,571	-	-	-	-	-	-	-	Fire STW (Irrigation farm)	171	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	90	-	90	-	-	-	-	-	-	7	-	-	-	7
Manyanje Rural	-	-	-	-	-	-	-	-	131	-	131	-	-	-	-	-	-	10	-	-	-	10
Zimbabwe Rural	-	-	-	-	-	-	-	-	302	-	302	-	-	-	-	-	-	24	-	-	-	24
Total	-	-	8,571	-	-	8,571	-	-	523	-	523	-	-	-	171	-	-	42	-	-	-	42
9. Mazurru River S/B																						
Harare City	-	-	6,600	-	-	6,600	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	890	-	890	-	-	-	-	-	-	71	-	-	-	71
Total	-	-	6,600	-	-	6,600	-	-	890	-	890	-	-	-	-	-	-	71	-	-	-	71
10. Gwebi River S/B																						
Harare City	1,066	-	-	-	-	1,066	1,689	-	-	-	1,689	-	-	Matibonough (WSP)	9	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	807	-	807	-	-	-	-	-	-	65	-	-	-	65
Zimbabwe Rural	-	-	-	-	-	-	-	-	1,292	-	1,292	-	-	-	-	-	-	103	-	-	-	103
Total	1,066	-	-	-	-	1,066	1,689	-	-	-	3,788	-	-	-	9	-	-	168	-	-	-	168
11. Lake Manyame S/B																						
Norton Town	1,077	1,163	3,168	270	35,349	41,028	-	-	-	7,850	7,850	-	-	Norton (TF)	328	-	-	-	-	-	-	628
Chegutu Rural	-	-	-	-	-	-	-	-	391	-	391	-	-	-	-	-	-	31	-	-	-	31
Zimbabwe Rural	-	-	-	-	-	-	-	-	796	-	796	-	-	-	-	-	-	64	-	-	-	64
Total	1,077	1,163	3,168	270	35,349	41,028	-	-	1,187	-	7,850	9,037	-	-	328	-	-	95	-	-	-	628
Grand Total	8,265	14,098	144,259	46,364	183,872	396,859	4,157	-	9,155	-	8,216	21,528	-	-	14,182	-	-	752	-	-	-	657

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report.

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 95% BOD for irrigation reuse (STW): 8% for unsewered area: 8% High; 8% Low & Medium; 0%

4. Pollution load reduction efficiency at STWs: 100% BNR 95% BOD for irrigation reuse (STW): 8% for unsewered area: 8% High; 8% Low & Medium; 0%

Table 10.2.11 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 1, 2005)

Sub-basin/District	Generated COD (kg/day)												Concentrated COD (kg/day)											
	Sewered Area				Unsewered Area				Sewered Area				Unsewered Area											
	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Impingement	Total	Low	Med.	High	C & I	Ind.	Total					
1. Manvame River (Upstream) S/B																								
Goromonzi Rural	-	-	-	-	-	-	2,787	-	-	-	2,787	-	-	-	-	223	-	-	-	223				
Harare Rural	-	-	-	-	-	-	13	-	-	-	13	-	-	-	-	1	-	-	-	1				
Manvame Rural	-	-	-	-	-	-	252	-	-	-	252	-	-	-	-	20	-	-	-	20				
Total	-	-	-	-	-	-	3,052	-	-	-	3,052	-	-	-	-	244	-	-	-	244				
2. Ruwa River S/B																								
Harare City	-	-	9,310	-	-	-	-	-	-	-	9,310	-	-	-	-	-	-	-	-	-				
Ruwa Local Board	1,133	76	5,148	318	9,077	15,752	-	-	-	-	189	-	-	-	-	-	-	-	-	-				
Epworth Local Board	-	-	4,927	147	-	5,074	-	-	-	-	761	-	-	-	-	-	-	-	-	-				
Goromonzi Rural	-	-	-	-	-	-	-	-	-	-	661	-	-	-	-	53	-	-	-	53				
Harare Rural	-	-	-	-	-	-	-	-	-	-	439	-	-	-	-	35	-	-	-	35				
Total	1,133	76	19,385	465	9,077	30,136	-	-	-	-	1,100	-	-	-	-	88	-	-	-	88				
3. Seke & Harava Dams S/B																								
Harare City	396	-	3,854	-	-	4,250	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Epworth Local Board	-	-	533	16	-	549	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Goromonzi Rural	-	-	-	-	-	-	-	-	-	-	13	-	-	-	-	1	-	-	-	1				
Harare Rural	-	-	-	-	-	-	-	-	-	-	242	-	-	-	-	19	-	-	-	19				
Manvame Rural	-	-	-	-	-	-	-	-	-	-	105	-	-	-	-	8	-	-	-	8				
Total	396	-	4,387	16	-	4,799	-	-	-	-	359	-	-	-	-	29	-	-	-	29				
4. Nyatisime River S/B																								
Chitungwiza Municipality	-	1,417	31,293	1,638	3,909	38,257	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Manvame Rural	-	-	-	-	-	-	-	-	-	-	1,098	-	-	-	-	88	-	-	-	88				
Marondeni Rural	-	-	-	-	-	-	-	-	-	-	806	-	-	-	-	64	-	-	-	64				
Total	-	1,417	31,293	1,638	3,909	38,257	-	-	-	-	1,904	-	-	-	-	152	-	-	-	152				
5. Mubvumba River S/B																								
Harare City	4,245	9,215	54,857	50,189	118,956	237,502	4,936	-	-	1,020	5,956	-	-	-	-	-	-	-	82	82				
Epworth Local Board	-	-	1,931	58	-	1,988	-	-	-	-	199	-	-	-	-	-	-	-	-	-				
Harare Rural	-	-	-	-	-	-	-	-	-	-	199	-	-	-	-	16	-	-	-	16				
Zvimba Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Total	4,245	9,215	56,828	50,247	118,956	239,490	4,936	-	-	1,020	6,154	-	-	-	-	16	-	-	82	98				
6. Manvame River (Downstream) S/B																								
Harare City	-	-	-	-	123,960	123,960	-	-	-	-	199	-	-	-	-	16	-	-	-	16				
Chitungwiza Municipality	-	-	-	-	-	-	-	-	-	-	45	-	-	-	-	4	-	-	-	4				
Harare Rural	4,245	9,215	56,828	-	-	70,287	4,936	-	-	-	244	-	-	-	-	20	-	-	-	20				
Manvame Rural	-	-	-	-	-	-	-	-	-	-	158	-	-	-	-	13	-	-	-	13				
Total	4,245	9,215	56,828	-	123,960	194,247	4,936	-	-	-	647	-	-	-	-	52	-	-	-	52				

Table 10.2.11 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 1, 2005)

Sub-basin/District	Generated COD (kg/day)										Concentrated COD (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Irrigation	Total	Low	Med.	High	C & I	Ind.	Total		
7. Marimba River S/B																						
Harare City	5,392	8,912	62,744	12,547	35,721	125,316	-	-	-	-	-	-	-	-	10,144	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	283	-	283	-	-	-	-	-	-	23	-	-	-	23
Total	5,392	8,912	62,744	12,547	35,721	125,316	-	-	283	-	283	-	-	-	10,144	-	-	23	-	-	-	23
8. Lake Chivero S/B																						
Harare City	-	-	14,256	-	-	14,256	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	149	-	149	-	-	-	-	-	-	12	-	-	-	12
Manvame Rural	-	-	-	-	-	-	-	-	218	-	218	-	-	-	-	-	-	17	-	-	-	17
Zimbabwe Rural	-	-	-	-	-	-	-	-	502	-	502	-	-	-	-	-	-	40	-	-	-	40
Total	-	-	14,256	-	-	14,256	-	-	869	-	869	-	-	-	608	-	-	69	-	-	-	69
9. Muzuruu River S/B																						
Harare City	-	-	13,200	-	-	13,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	1,478	-	1,478	-	-	-	-	-	-	118	-	-	-	118
Total	-	-	13,200	-	-	13,200	-	-	1,478	-	1,478	-	-	-	-	-	-	118	-	-	-	118
10. Cowebi River S/B																						
Harare City	1,258	-	-	-	-	1,258	2,918	-	-	-	2,918	-	-	Marlborough (WSP)	15	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	1,341	-	1,341	-	-	-	-	-	-	107	-	-	-	107
Zimbabwe Rural	-	-	-	-	-	-	-	-	2,146	-	2,146	-	-	-	-	-	-	172	-	-	-	172
Total	1,258	-	-	-	-	1,258	2,918	-	3,486	-	6,405	-	-	-	15	-	-	279	-	-	-	279
11. Lake Manyame S/B																						
Norton Town	647	897	4,079	281	23,940	29,843	-	-	-	-	33,539	33,539	-	Norton (TF)	358	-	-	-	-	-	-	2,683
Chegutu Rural	-	-	-	-	-	-	-	-	650	-	650	-	-	-	-	-	-	52	-	-	-	52
Zimbabwe Rural	-	-	-	-	-	-	-	-	1,322	-	1,322	-	-	-	-	-	-	106	-	-	-	106
Total	647	897	4,079	281	23,940	29,843	-	-	1,972	-	33,539	33,539	-	358	-	-	-	158	-	-	-	2,683
Grand Total	17,316	29,731	262,999	65,194	315,563	690,803	12,790	-	15,350	-	34,559	62,698	-	45,972	-	-	-	1,228	-	-	-	3,993

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 90% COD 90%

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

WSP 85%

TF 85%

85%



Table 10.2.12. Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 1, 2015)

Sub-basin/District	Generated COD (kg/day)										Concentrated COD (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manyame River (Upstream) S/B																				
Goromonzi Rural	-	-	-	-	-	-	-	3,355	-	-	-	3,355	-	-	268	-	-	-	268	
Harare Rural	-	-	-	-	-	-	-	15	-	-	-	15	-	-	1	-	-	-	1	
Manvame Rural	-	-	-	-	-	-	-	304	-	-	-	304	-	-	24	-	-	-	24	
Total	-	-	-	-	-	-	-	3,675	-	-	-	3,675	-	-	294	-	-	-	294	
2. Ruwa River S/B																				
Harare City	-	-	13,464	-	80,420	93,884	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ruwa Local Board	1,133	1,125	5,940	410	11,858	20,466	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	5,933	193	-	6,126	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goromonzi Rural	-	-	-	-	-	-	-	796	-	-	-	796	-	-	64	-	-	-	64	
Harare Rural	-	-	-	-	-	-	-	529	-	-	-	529	-	-	42	-	-	-	42	
Total	1,133	1,125	25,337	603	92,278	120,476	-	-	1,325	-	-	1,325	-	-	106	-	-	-	106	
3. Sekke & Harava Dams S/B																				
Harare City	396	-	3,854	-	-	4,250	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	643	21	-	662	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goromonzi Rural	-	-	-	-	-	-	-	15	-	-	-	15	-	-	1	-	-	-	1	
Harare Rural	-	-	-	-	-	-	-	291	-	-	-	291	-	-	23	-	-	-	23	
Manvame Rural	-	-	-	-	-	-	-	126	-	-	-	126	-	-	10	-	-	-	10	
Total	396	-	4,496	21	-	4,913	-	-	433	-	-	433	-	-	35	-	-	-	35	
4. Nvatsime River S/B																				
Chitungwiza Municipality	257	3,494	40,885	2,534	29,963	77,133	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manvame Rural	-	-	-	-	-	-	-	1,323	-	-	-	1,323	-	-	106	-	-	-	106	
Marondera Rural	-	-	-	-	-	-	-	970	-	-	-	970	-	-	78	-	-	-	78	
Total	257	3,494	40,885	2,534	29,963	77,133	-	-	2,293	-	-	2,293	-	-	183	-	-	-	183	
5. Mukuvisi River S/B																				
Harare City	4,441	9,215	59,684	71,162	130,949	275,450	4,936	-	-	1,020	5,956	24,380	-	-	-	-	82	-	82	
Epworth Local Board	-	-	2,325	76	-	2,401	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	239	-	-	-	239	-	-	19	-	-	-	19	
Zvimba Rural	-	-	-	-	-	-	-	55	-	-	-	55	-	-	4	-	-	-	4	
Total	4,441	9,215	62,009	71,238	130,949	277,851	4,936	-	394	-	1,020	6,250	24,380	-	24	-	82	-	105	
6. Manyame River (Downstream) S/B																				
Harare City	-	1,937	40,110	-	123,960	166,008	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chitungwiza Municipality	-	-	6,054	-	5,644	11,698	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	361	-	-	-	361	-	-	29	-	-	-	29	
Manvame Rural	-	-	-	-	-	-	-	190	-	-	-	190	-	-	15	-	-	-	15	
Total	-	1,937	46,165	-	129,604	177,706	-	-	551	-	-	551	-	-	44	-	-	-	44	

Table 10.2.12 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 1, 2015)

Sub-basin/District	Generated COD (kg/day)												Concentrated COD (kg/day)											
	Sewered Area				Unsewered Area				Sewered Area				Unsewered Area											
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total						
7. Manimba River S/B																								
Harare City	6,018	10,099	72,949	17,791	35,721	142,578	-	-	-	-	-	-	-	-	-	-	-	-	-					
Zvimbwa Rural	-	-	-	-	-	-	-	-	341	-	-	-	-	-	-	-	-	27	-	27				
Total	6,018	10,099	72,949	17,791	35,721	142,578	-	-	341	-	-	-	-	-	-	-	-	27	-	27				
8. Lake Chivero S/B																								
Harare City	-	-	17,142	-	-	17,142	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Chegutu Rural	-	-	-	-	-	-	-	-	180	-	-	-	-	-	-	-	-	14	-	14				
Manvaye Rural	-	-	-	-	-	-	-	-	262	-	-	-	-	-	-	-	-	21	-	21				
Zvimbwa Rural	-	-	-	-	-	-	-	-	604	-	-	-	-	-	-	-	-	48	-	48				
Total	-	-	17,142	-	-	17,142	-	-	1,046	-	-	-	-	-	-	-	-	84	-	84				
9. Muzuru River S/B																								
Harare City	-	-	13,200	-	-	13,200	-	-	-	-	-	-	-	-	-	-	-	-	-	-				
Zvimbwa Rural	-	-	-	-	-	-	-	-	1,780	-	-	-	-	-	-	-	-	142	-	142				
Total	-	-	13,200	-	-	13,200	-	-	1,780	-	-	-	-	-	-	-	-	142	-	142				
10. Gwebi River S/B																								
Harare City	2,132	-	-	-	-	2,132	3,378	-	-	-	3,378	-	-	-	-	-	-	-	-	-				
Mazowe Rural	-	-	-	-	-	-	-	-	1,614	-	-	-	-	-	-	-	-	129	-	129				
Zvimbwa Rural	-	-	-	-	-	-	-	-	2,584	-	-	-	-	-	-	-	-	207	-	207				
Total	2,132	-	-	-	-	2,132	3,378	-	4,198	-	-	-	-	-	-	-	-	336	-	336				
11. Lake Manvaye S/B																								
Norton Town	2,154	2,327	6,336	541	147,158	158,515	-	-	-	-	33,539	-	-	-	-	-	-	1,902	-	2,683				
Chegutu Rural	-	-	-	-	-	-	-	-	783	-	-	-	-	-	-	-	-	63	-	63				
Zvimbwa Rural	-	-	-	-	-	-	-	-	1,592	-	-	-	-	-	-	-	-	127	-	127				
Total	2,154	2,327	6,336	541	147,158	158,515	-	-	2,375	-	33,539	-	-	-	-	-	-	1,902	-	2,683				
Grand Total	16,531	28,197	288,519	92,727	565,673	991,646	8,314	-	18,310	-	34,559	61,183	-	-	-	-	-	1,465	-	2,765				

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 90% COD 90%

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

8% for unsewered area:

8% for unsewered area:

TF 85%

WSP 85%

Table 10.2.13 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 1, 2005)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C & I	Ind.	Total	
1. Manvame River (Upstream) S/B																					
Gomononzi Rural	-	-	-	-	-	-	-	348	-	-	-	-	-	-	-	-	-	28	-	-	28
Harare Rural	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	0	-	-	0
Manvame Rural	-	-	-	-	-	-	-	32	-	-	-	-	-	-	-	-	-	3	-	-	3
Total	-	-	-	-	-	-	-	381	-	-	-	-	-	-	-	-	-	31	-	-	31
2. Ruwa River S/B																					
Harare City	-	-	1,164	-	-	1,164	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ruwa Local Board	147	10	644	40	450	1,291	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	616	18	-	634	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gomononzi Rural	-	-	-	-	-	-	-	83	-	-	-	-	-	-	-	-	-	7	-	-	7
Harare Rural	-	-	-	-	-	-	-	55	-	-	-	-	-	-	-	-	-	4	-	-	4
Total	147	10	2,423	58	450	3,080	-	138	-	-	138	-	-	-	-	-	-	11	-	-	11
3. Saka & Harava Dams S/B																					
Harare City	51	-	482	-	-	533	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	67	2	-	69	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gomononzi Rural	-	-	-	-	-	-	-	2	-	-	-	-	-	-	-	-	-	0	-	-	0
Harare Rural	-	-	-	-	-	-	-	30	-	-	-	-	-	-	-	-	-	2	-	-	2
Manvame Rural	-	-	-	-	-	-	-	13	-	-	-	-	-	-	-	-	-	1	-	-	1
Total	51	-	548	2	-	602	-	45	-	-	45	-	-	-	-	-	-	4	-	-	4
4. Nevasine River S/B																					
Chitungwiza Municipality	-	181	3,912	205	59	4,356	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manvame Rural	-	-	-	-	-	-	-	137	-	-	-	-	-	-	-	-	-	11	-	-	11
Marondera Rural	-	-	-	-	-	-	-	101	-	-	-	-	-	-	-	-	-	8	-	-	8
Total	-	181	3,912	205	59	4,356	-	238	-	-	238	-	-	-	-	-	-	19	-	-	19
5. Mukavisi River S/B																					
Harare City	552	1,176	6,862	6,311	1,301	16,202	642	-	-	11	653	-	-	-	-	-	-	-	-	1	1
Epworth Local Board	-	-	241	7	-	249	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	25	-	-	25	-	-	-	-	-	-	2	-	-	2
Zvimsa Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	552	1,176	7,103	6,318	1,301	16,450	642	25	-	11	677	-	-	-	-	-	-	2	-	1	3
6. Manvame River (D.stream) S/B																					
Harare City	-	-	-	-	1,355	1,355	-	25	-	-	25	-	-	-	-	-	-	2	-	-	2
Chitungwiza Municipality	-	-	-	-	-	-	-	6	-	-	6	-	-	-	-	-	-	0	-	-	0
Harare Rural	552	1,176	7,103	-	-	8,832	642	31	-	-	672	-	-	-	-	-	-	2	-	-	2
Manvame Rural	-	-	-	-	-	-	-	20	-	-	20	-	-	-	-	-	-	2	-	-	2
Total	552	1,176	7,103	-	1,355	10,187	642	81	-	-	722	-	-	-	-	-	-	6	-	-	6

Table 10.2.13 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 1, 2005)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Irrigation	Total	Low	Med.	High	C & I	Ind.	Total	
7. Mzimba River S/B																					
Harare City	701	1,138	7,843	1,578	389	11,643	-	-	-	-	-	-	-	2,077	-	-	-	-	-	-	
Zimbabwe Rural	-	-	-	-	-	-	-	-	35	-	35	-	-	-	-	-	3	-	-	3	
Total	701	1,138	7,843	1,578	389	11,643	-	-	35	-	35	-	-	2,077	-	-	3	-	-	3	
8. Lake Chivero S/B																					
Harare City	-	-	1,782	-	-	1,782	-	-	-	-	-	-	-	-	203	-	-	-	-	-	
Chegutu Rural	-	-	-	-	-	-	-	-	19	-	19	-	-	-	-	-	1	-	-	1	
Manvame Rural	-	-	-	-	-	-	-	-	27	-	27	-	-	-	-	-	2	-	-	2	
Zimbabwe Rural	-	-	-	-	-	-	-	-	63	-	63	-	-	-	-	-	5	-	-	5	
Total	-	-	1,782	-	-	1,782	-	-	109	-	109	-	-	-	203	-	-	9	-	9	
9. Muzuruni River S/B																					
Harare City	-	-	1,650	-	-	1,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zimbabwe Rural	-	-	-	-	-	-	-	-	185	-	185	-	-	-	-	-	15	-	-	15	
Total	-	-	1,650	-	-	1,650	-	-	185	-	185	-	-	-	-	-	15	-	-	15	
10. Gwebi River S/B																					
Harare City	163	-	-	-	-	163	379	-	-	-	379	-	-	7	-	-	-	-	-	-	
Marowe Rural	-	-	-	-	-	-	-	-	168	-	168	-	-	-	-	-	13	-	-	13	
Zimbabwe Rural	-	-	-	-	-	-	-	-	268	-	268	-	-	-	-	-	21	-	-	21	
Total	163	-	-	-	-	163	379	-	436	-	815	-	-	7	-	-	35	-	-	35	
11. Lake Manvame S/B																					
Norton Town	84	114	510	35	188	932	-	-	-	131	131	-	-	52	-	-	-	-	-	10	
Chegutu Rural	-	-	-	-	-	-	-	-	81	-	81	-	-	-	-	-	7	-	-	7	
Zimbabwe Rural	-	-	-	-	-	-	-	-	165	-	165	-	-	-	-	-	13	-	-	13	
Total	84	114	510	35	188	932	-	-	247	-	247	-	-	52	-	-	20	-	-	30	
Grand Total	2,251	3,795	32,875	8,196	3,742	50,859	1,663	-	1,919	-	1,919	-	142	3,723	6,072	-	153	-	-	11	165

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% for irrigation reuse (STW): 8% for unsewered area: 0%

4. Pollution load reduction efficiency at STWs: BNR 80% TF 30% WSP 50%

High: 8% Low & Medium: 0%

Table 10.2.14 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 1, 2015)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	
1. Manvame River (Upstream) S/B	-	-	-	-	-	-	-	419	-	419	-	-	-	-	-	-	-	-	34	-	34
Goromonzi Rural	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	0	-	0	
Harare Rural	-	-	-	-	-	-	38	-	38	-	-	-	-	-	-	-	-	3	-	3	
Manvame Rural	-	-	-	-	-	-	459	-	459	-	-	-	-	-	-	-	-	37	-	37	
Total	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
2. Rowa River S/B	-	-	1,683	-	880	2,563	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare City	-	144	743	52	588	1,673	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Rowa Local Board	-	-	742	24	766	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	-	-	-	-	100	-	100	-	-	-	-	-	-	-	-	8	-	8	
Goromonzi Rural	-	-	-	-	-	-	66	-	66	-	-	-	-	-	-	-	-	5	-	5	
Harare Rural	147	144	3,167	76	1,488	5,002	-	166	-	166	-	-	-	-	-	-	-	13	-	13	
Total	147	144	3,167	76	1,488	5,002	-	166	-	166	-	-	-	-	-	-	-	13	-	13	
3. Seke & Harava Dams S/B	-	-	482	-	533	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare City	51	-	80	3	83	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	-	0	-	0	
Goromonzi Rural	-	-	-	-	-	-	36	-	36	-	-	-	-	-	-	-	-	3	-	3	
Harare Rural	-	-	-	-	-	-	16	-	16	-	-	-	-	-	-	-	-	1	-	1	
Manvame Rural	-	-	-	-	-	-	54	-	54	-	-	-	-	-	-	-	-	4	-	4	
Total	51	-	562	3	616	-	-	-	616	-	-	-	-	-	-	-	-	4	-	4	
4. Nyansime River S/B	-	-	5,111	317	450	6,357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chitungwiza Municipality	33	446	5,111	317	450	6,357	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manvame Rural	-	-	-	-	-	-	165	-	165	-	-	-	-	-	-	-	-	13	-	13	
Marondera Rural	-	-	-	-	-	-	121	-	121	-	-	-	-	-	-	-	-	10	-	10	
Total	33	446	5,111	317	450	6,357	-	-	287	-	-	-	-	-	-	-	-	23	-	23	
5. Mukuvisi River S/B	-	-	7,460	8,939	1,432	19,886	642	-	-	11	653	-	-	-	-	-	-	-	-	1	
Harare City	577	1,176	7,460	291	9	300	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	-	-	-	-	30	-	30	-	-	-	-	-	-	-	-	2	-	2	
Harare Rural	-	-	-	-	-	-	7	-	7	-	-	-	-	-	-	-	-	1	-	1	
Zvombwa Rural	-	-	-	-	-	-	37	-	37	-	-	-	-	-	-	-	-	3	-	3	
Total	577	1,176	7,460	291	9	300	-	-	689	-	-	-	-	-	-	-	-	3	-	3	
6. Manvame River (Downstream) S/B	-	-	5,014	-	1,355	6,616	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare City	-	247	5,014	-	85	842	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chitungwiza Municipality	-	-	757	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	45	-	45	-	-	-	-	-	-	-	-	4	-	4	
Manvame Rural	-	-	-	-	-	-	24	-	24	-	-	-	-	-	-	-	-	2	-	2	
Total	-	247	5,771	-	1,440	7,458	-	-	69	-	-	-	-	-	-	-	-	6	-	6	

Table 10.2.14 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 1, 2015)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C&I	Ind.	Total	Low	Med.	High	C&I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C&I	Ind.	Total	
7. Marimba River S/B																					
Harare City	782	1,289	9,119	2,235	389	13,814	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	43	-	-	-	-	-	-	-	-	3	-	-	3
Total	782	1,289	9,119	2,235	389	13,814	-	-	43	-	-	-	-	-	-	-	-	3	-	-	3
8. Lake Chivero S/B																					
Harare City	-	-	2,143	-	-	2,143	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	22	-	-	22	-	-	-	-	-	-	2	-	-	2
Manyame Rural	-	-	-	-	-	-	-	33	-	-	33	-	-	-	-	-	-	3	-	-	3
Zimbabwe Rural	-	-	-	-	-	-	-	76	-	-	76	-	-	-	-	-	-	6	-	-	6
Total	-	-	2,143	-	-	2,143	-	131	-	-	131	-	-	-	-	-	-	10	-	-	10
9. Muzuru River S/B																					
Harare City	-	-	1,650	-	-	1,650	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	222	-	-	222	-	-	-	-	-	-	18	-	-	18
Total	-	-	1,650	-	-	1,650	-	222	-	-	222	-	-	-	-	-	-	18	-	-	18
10. Gwebi River S/B																					
Harare City	277	-	-	-	-	277	439	-	-	-	439	-	-	-	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	202	-	-	202	-	-	-	-	-	-	16	-	-	16
Zimbabwe Rural	-	-	-	-	-	-	-	323	-	-	323	-	-	-	-	-	-	26	-	-	26
Total	277	-	-	-	-	277	439	-	-	-	964	-	-	-	-	-	-	42	-	-	42
11. Lake Manyame S/B																					
Norton Town	280	297	792	64	872	2,309	-	-	-	131	131	-	-	-	-	-	-	-	-	-	10
Chegutu Rural	-	-	-	-	-	-	-	-	-	98	98	-	-	-	-	-	-	8	-	-	8
Zimbabwe Rural	-	-	-	-	-	-	-	-	-	199	199	-	-	-	-	-	-	16	-	-	16
Total	280	297	792	64	872	2,309	-	-	-	297	428	-	-	-	-	-	-	24	-	-	34
Grand Total	2,149	3,600	36,065	11,648	6,051	59,512	1,081	-	2,289	-	3,512	-	-	-	-	-	-	183	-	-	194

Note: 1. Residential density category is based on those shown in Section 12.2.3.1, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% for irrigation reuse (STW): 8% for unsewered area: 0%

4. Pollution load reduction efficiency at STWs: T-N 80% BNR 80% TF 30% WSP 50%

High: 8% Low & Medium:

Table 10.2.15 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 1, 2005)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manvame River (Upstream) S/B																				
Goromonzi Rural																				
Harare Rural																				
Manvame Rural																				
Total																				
2. Ruwa River S/B																				
Harare City																				
Ruwa Local Board																				
Epworth Local Board																				
Goromonzi Rural																				
Harare Rural																				
Total																				
3. Soko & Harava Dams S/B																				
Harare City																				
Epworth Local Board																				
Goromonzi Rural																				
Harare Rural																				
Manvame Rural																				
Total																				
4. Nvatsime River S/B																				
Chitungwiza Municipality																				
Manvame Rural																				
Marondera Rural																				
Total																				
5. Mubovvi River S/B																				
Harare City																				
Epworth Local Board																				
Harare Rural																				
Zvimba Rural																				
Total																				
6. Manvame River (Downstream) S/B																				
Harare City																				
Chitungwiza Municipality																				
Harare Rural																				
Manvame Rural																				
Total																				

Table 10.2.15 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 1, 2005)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total			
7. Marimba River S/B																				
Harare City	75	123	856	172	121	1,347	-	-	-	-	-	-	-	-	-	-	292			
Zvimba Rural	-	-	-	-	-	-	4	4	-	-	4	-	-	0	-	-	0			
Total	75	123	856	172	121	1,347	4	4	-	-	4	-	-	0	-	-	292			
8. Lake Chivero S/B																				
Harare City	-	-	194	-	-	194	-	-	-	-	-	-	-	-	-	-	25			
Chegutu Rural	-	-	-	-	-	-	2	2	-	-	2	-	-	0	-	-	0			
Manyame Rural	-	-	-	-	-	-	3	3	-	-	3	-	-	0	-	-	0			
Zvimba Rural	-	-	-	-	-	-	7	7	-	-	7	-	-	1	-	-	1			
Total	-	-	194	-	-	194	12	12	-	-	12	-	-	1	-	-	25			
9. Mazururu River S/B																				
Harare City	-	-	180	-	-	180	-	-	-	-	-	-	-	-	-	-	-			
Zvimba Rural	-	-	-	-	-	-	20	20	-	-	20	-	-	2	-	-	2			
Total	-	-	180	-	-	180	20	20	-	-	20	-	-	2	-	-	2			
10. Gwebi River S/B																				
Harare City	18	-	-	-	-	18	41	-	-	-	41	-	-	-	-	-	1			
Mazowe Rural	-	-	-	-	-	-	18	-	-	-	18	-	-	1	-	-	-			
Zvimba Rural	-	-	-	-	-	-	29	-	-	-	29	-	-	2	-	-	2			
Total	18	-	-	-	-	18	41	48	-	-	88	-	-	4	-	-	4			
11. Lake Manyame S/R																				
Norton Town	9	12	56	4	31	112	-	-	-	-	21	21	6	-	-	-	6			
Chegutu Rural	-	-	-	-	-	-	9	9	-	-	9	-	-	1	-	-	1			
Zvimba Rural	-	-	-	-	-	-	18	18	-	-	18	-	-	1	-	-	1			
Total	9	12	56	4	31	112	27	27	-	-	48	24	6	2	-	-	7			
Grand Total	242	411	3,586	892	1,058	6,190	179	209	-	-	412	24	412	956	-	-	17			

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 75% T-P 75% WSP 30%

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 9% Low & Medium: 0%



Table 10.2.16 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 1, 2015)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C & I	Ind.	Total	
1. Manvame River (Upstream) S/B																					
Gonomonzi Rural																					
Harare Rural																					
Manvame Rural																					
Total																					
2. Ruwa River S/B																					
Harare City																					
Ruwa Local Board																					
Epworth Local Board																					
Gonomonzi Rural																					
Harare Rural																					
Total																					
3. Sekr & Harava Dams S/B																					
Harare City																					
Epworth Local Board																					
Gonomonzi Rural																					
Harare Rural																					
Manvame Rural																					
Total																					
4. Nvatsime River S/B																					
Chitungwiza Municipality																					
Manvame Rural																					
Marondera Rural																					
Total																					
5. Mukuvusi River S/B																					
Harare City																					
Epworth Local Board																					
Harare Rural																					
Zvimba Rural																					
Total																					
6. Manvame River (Downstream) S/B																					
Harare City																					
Chitungwiza Municipality																					
Harare Rural																					
Manvame Rural																					
Total																					

Table 10.2.16 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 1, 2015)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	
7. Manimba River S/B																					
Harare City	84	140	995	243	1,583	-	-	-	-	-	-	-	-	-	353	-	-	-	-	-	
Zimbabwe Rural	-	-	-	-	-	-	-	5	-	5	-	-	-	-	-	-	-	0	-	0	
Total	84	140	995	243	1,583	-	-	5	-	5	-	-	-	-	353	-	-	0	-	0	
8. Lake Chivero S/B																					
Harare City	-	-	234	-	234	-	-	-	-	-	-	-	-	-	25	-	-	-	-	-	
Chesutsu Rural	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	-	-	0	-	0	
Manyame Rural	-	-	-	-	-	-	-	4	-	4	-	-	-	-	-	-	-	0	-	0	
Zimbabwe Rural	-	-	-	-	-	-	-	8	-	8	-	-	-	-	-	-	-	0	-	0	
Total	-	-	234	-	234	-	-	14	-	14	-	-	-	-	25	-	-	0	-	1	
9. Muzuru River S/B																					
Harare City	-	-	180	-	180	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zimbabwe Rural	-	-	-	-	-	-	-	24	-	24	-	-	-	-	-	-	-	1	-	1	
Total	-	-	180	-	180	-	-	24	-	24	-	-	-	-	-	-	-	1	-	1	
10. Gwebi River S/B																					
Harare City	30	-	-	-	30	47	-	-	-	47	-	-	-	-	2	-	-	-	-	-	
Mazowe Rural	-	-	-	-	-	-	-	22	-	22	-	-	-	-	-	-	-	1	-	1	
Zimbabwe Rural	-	-	-	-	-	-	-	35	-	35	-	-	-	-	-	-	-	2	-	2	
Total	30	-	-	-	30	47	-	57	-	103	-	-	-	-	2	-	-	3	-	3	
11. Lake Manyame S/B																					
Norton Town	30	32	86	7	299	-	-	-	-	21	21	-	-	-	17	-	-	-	-	2	
Chesutsu Rural	-	-	-	-	-	-	-	11	-	11	-	-	-	-	-	-	-	1	-	1	
Zimbabwe Rural	-	-	-	-	-	-	-	22	-	22	-	-	-	-	-	-	-	1	-	1	
Total	30	32	86	7	299	-	-	32	-	53	-	-	-	-	17	-	-	2	-	3	
Grand Total	231	390	3,934	1,269	7,520	116	-	250	-	390	-	-	-	-	1,387	-	-	12	-	14	

Note: 1. Residential density category is based on those shown in Section 12.2.3, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 75% TF 30% WSP

4. Pollution load reduction efficiency at STWs: T-P 75% for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

Table 10.2.17 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 2, 2005)

Sub-basin/District	Generated BOD (kg/day)										Concentrated ROD (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manvame River (Upstream) S/B																						
Goromonzi Rural	-	-	-	-	-	-	-	1,393	-	-	-	1,393	-	-	-	-	-	70	-	-	70	-
Harare Rural	-	-	-	-	-	-	-	6	-	-	-	6	-	-	-	-	-	0	-	-	0	-
Manvame Rural	-	-	-	-	-	-	-	126	-	-	-	126	-	-	-	-	-	6	-	-	6	-
Total	-	-	-	-	-	-	-	1,526	-	-	-	1,526	-	-	-	-	-	76	-	-	76	-
2. Ruwa River S/B																						
Harare City	-	-	4,960	-	-	4,960	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ruwa Local Board	8	1	78	0	2,543	2,629	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	2,463	73	-	2,537	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goromonzi Rural	-	-	-	-	-	-	-	331	-	-	-	331	-	-	-	-	-	17	-	-	17	-
Harare Rural	-	-	-	-	-	-	-	220	-	-	-	220	-	-	-	-	-	11	-	-	11	-
Total	8	1	7,502	74	2,543	10,126	-	-	-	-	-	550	-	-	-	-	-	28	-	-	28	-
3. Seke & Harava Dams S/B																						
Harare City	29	-	282	-	-	311	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Epworth Local Board	-	-	266	8	-	274	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Goromonzi Rural	-	-	-	-	-	-	-	6	-	-	-	6	-	-	-	-	-	0	-	-	0	-
Harare Rural	-	-	-	-	-	-	-	121	-	-	-	121	-	-	-	-	-	6	-	-	6	-
Manvame Rural	-	-	-	-	-	-	-	52	-	-	-	52	-	-	-	-	-	3	-	-	3	-
Total	29	-	549	8	-	585	-	-	-	-	-	180	-	-	-	-	-	9	-	-	9	-
4. Nvashimbe River S/B																						
Chitungwiza Municipality	-	1,007	22,232	2,130	1,641	27,010	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Manvame Rural	-	-	-	-	-	-	-	549	-	-	-	549	-	-	-	-	-	27	-	-	27	-
Marondeni Rural	-	-	-	-	-	-	-	403	-	-	-	403	-	-	-	-	-	20	-	-	20	-
Total	-	1,007	22,232	2,130	1,641	27,010	-	-	-	-	-	952	-	-	-	-	-	48	-	-	48	-
5. Mukuvisi River S/B																						
Harare City	2,122	4,214	29,593	17,825	42,715	96,469	1,817	-	-	366	2,183	-	-	-	-	-	-	-	-	-	29	-
Epworth Local Board	-	-	965	29	-	994	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	99	-	-	-	99	-	-	-	-	-	5	-	-	5	-
Zvimbura Rural	-	-	-	-	-	-	-	23	-	-	-	23	-	-	-	-	-	1	-	-	1	-
Total	2,122	4,214	30,558	17,854	42,715	97,463	1,817	-	-	366	2,305	-	-	-	-	-	-	6	-	-	29	35
6. Manvame River (Downstream) S/B																						
Harare City	-	71	367	-	44,516	44,954	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chitungwiza Municipality	-	-	6,231	-	-	6,231	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare Rural	-	-	-	-	-	-	-	150	-	-	-	150	-	-	-	-	-	7	-	-	7	-
Manvame Rural	-	-	-	-	-	-	-	79	-	-	-	79	-	-	-	-	-	4	-	-	4	-
Total	-	71	6,598	-	44,516	51,185	-	-	-	-	-	229	-	-	-	-	-	11	-	-	11	-

Table 10.2.17 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 2, 2005)

Sub-basin/District	Generated BOD (kg/day)										Concentrated BOD (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	
7. Manimba River S/B																					
Harare City	2,004	3,742	24,566	4,456	12,826	47,594	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	142	-	-	142	-	-	-	-	-	-	-	-	-	-	-
Total	2,004	3,742	24,566	4,456	12,826	47,594	142	-	-	142	-	-	-	-	-	-	-	-	-	-	-
8. Lake Chivero S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	75	-	-	75	-	-	-	-	-	-	-	-	-	-	-
Manvame Rural	-	-	-	-	-	-	109	-	-	109	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	251	-	-	251	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	434	-	-	434	-	-	-	-	-	-	-	-	-	-	-
9. Muzuru River S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	739	-	-	739	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	739	-	-	739	-	-	-	-	-	-	-	-	-	-	-
10. Gwebi River S/B																					
Harare City	653	-	-	-	-	653	4,554	-	-	4,554	-	-	-	-	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	670	-	-	670	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	1,073	-	-	1,073	-	-	-	-	-	-	-	-	-	-	-
Total	653	-	-	-	-	653	4,554	-	-	6,297	-	-	-	-	-	-	-	-	-	-	-
11. Lake Manyame S/B																					
Norton Town	74	103	1,042	21	5,891	7,132	-	-	-	7,850	7,850	-	-	-	57	-	-	-	-	-	628
Chegutu Rural	-	-	-	-	-	-	-	-	-	325	-	-	-	-	-	-	-	-	-	-	16
Zvimba Rural	-	-	-	-	-	-	-	-	-	661	-	-	-	-	-	-	-	-	-	-	33
Total	74	103	1,042	21	5,891	7,132	-	-	-	886	8,836	-	-	-	57	-	-	-	-	-	628
Grand Total	4,890	9,138	93,046	24,542	110,132	241,748	6,371	-	-	8,216	22,190	-	-	-	9,013	-	-	-	-	-	657

Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 95% BOD

4. Pollution load reduction efficiency at STW's: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

TF 90% WSP 90%

Table 10.2.18 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - BOD (Scenario 2, 2015)

Sub-basin/District	Generated BOD (kg/day)												Concentrated BOD (kg/day)											
	Sewered Area						Unsewered Area						Sewered Area						Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total						
1. Manyame River (Upstream) S/B																								
Gezomonzi Rural																								
Harare Rural																								
Manyame Rural																								
Total																								
2. Rowa River S/B																								
Harare City																								
Rowa Local Board																								
Epworth Local Board																								
Gezomonzi Rural																								
Harare Rural																								
Total																								
3. Seke & Harava Dams S/B																								
Harare City																								
Epworth Local Board																								
Gezomonzi Rural																								
Harare Rural																								
Total																								
4. Nvatsine River S/B																								
Chitungwiza Municipality																								
Manyame Rural																								
Marondera Rural																								
Total																								
5. Mukovisi River S/B																								
Harare City																								
Epworth Local Board																								
Harare Rural																								
Zvimba Rural																								
Total																								
6. Manyame River (Downstream) S/B																								
Harare City																								
Chitungwiza Municipality																								
Harare Rural																								
Manyame Rural																								
Total																								

Table 10.2.18 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin • BOD (Scenario 2, 2015)

Sub-basin/District	Generated BOD (kg/day)										Concentrated BOD (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C.&I	Ind.	Total	Low	Med.	High	C.&I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C.&I	Ind.	Total	
7. Marimba River S/B																					
Harare City	2,376	4,824	32,012	7,890	12,826	59,928	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zomba Rural	-	-	-	-	-	-	-	-	171	-	171	-	-	-	-	-	-	9	-	-	9
Total	2,376	4,824	32,012	7,890	12,826	59,928	-	-	171	-	171	-	-	-	-	-	-	9	-	-	9
8. Lake Chivero S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	90	-	90	-	-	-	-	-	-	4	-	-	4
Manvame Rural	-	-	-	-	-	-	-	-	131	-	131	-	-	-	-	-	-	7	-	-	7
Zomba Rural	-	-	-	-	-	-	-	-	302	-	302	-	-	-	-	-	-	15	-	-	15
Total	-	-	-	-	-	-	-	-	523	-	523	-	-	-	-	-	-	26	-	-	26
9. Marimba River S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zomba Rural	-	-	-	-	-	-	-	-	890	-	890	-	-	-	-	-	-	44	-	-	44
Total	-	-	-	-	-	-	-	-	890	-	890	-	-	-	-	-	-	44	-	-	44
10. Gwebi River S/B																					
Harare City	846	-	-	-	-	846	5,895	-	-	-	5,895	-	-	-	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	807	-	807	-	-	-	-	-	-	40	-	-	40
Zomba Rural	-	-	-	-	-	-	-	-	1,292	-	1,292	-	-	-	-	-	-	65	-	-	65
Total	846	-	-	-	-	846	5,895	-	2,099	-	7,994	-	-	-	-	-	-	105	-	-	105
11. Lake Manvame S/B																					
Norton Town	172	186	1,124	16	35,349	36,847	-	-	-	-	7,850	7,850	-	295	-	-	-	-	-	628	628
Chegutu Rural	-	-	-	-	-	-	-	-	391	-	391	-	-	-	-	-	-	20	-	-	20
Zomba Rural	-	-	-	-	-	-	-	-	796	-	796	-	-	-	-	-	-	40	-	-	40
Total	172	186	1,124	16	35,349	36,847	-	-	1,187	-	7,850	9,037	-	295	-	-	-	59	-	-	628
Grand Total	6,316	12,761	123,421	41,340	183,872	367,710	8,248	-	9,155	-	8,216	25,619	-	13,530	-	-	-	458	-	-	657

Note 1. Residential density category is based on those shown in Section 12.2.3, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 95% BOD 90%

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

Table 10.2.19 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 2, 2005)

Sub-basin/District	Generated COD (kg/day)												Concentrated COD (kg/day)											
	Sewered Area						Unsewered Area						Sewered Area						Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total						
1. Manyame River (Upstream) S/B																								
Gonomozi Rural																								
Harare Rural																								
Manyame Rural																								
Total																								
2. Rawa River S/B																								
Harare City																								
Rawa Local Board	15	1	156	0	9,077	9,250																		
Epworth Local Board			4,927	147		5,074																		
Gonomozi Rural																								
Harare Rural																								
Total	15	1	15,003	147	9,077	24,244																		
3. Seke & Harava Dams S/B																								
Harare City																								
Epworth Local Board																								
Gonomozi Rural																								
Harare Rural																								
Manyame Rural																								
Total	58		1,097	16		1,171																		
4. Nyatsime River S/B																								
Chitungwiza Municipality																								
Manyame Rural																								
Marondera Rural																								
Total																								
5. Mutovisi River S/B																								
Harare City	4,245	8,428	59,185	55,650	118,956	226,464																		
Epworth Local Board			1,931	58		1,988																		
Harare Rural																								
Zvimba Rural																								
Total	4,245	8,428	61,116	55,707	118,956	228,452																		
6. Manyame River (Downstream) S/B																								
Harare City																								
Chitungwiza Municipality																								
Harare Rural																								
Manyame Rural																								
Total																								

Table 10.2.19 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 2, 2005)

Sub-basin/District	Generated COD (kg/day)										Concentrated COD (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Irrigation	Total	Low	Med.	High	C & I	Ind.	Total		
7. Marimba River S/B																						
Harare City	4,007	7,484	49,132	8,912	35,721	105,257	-	-	-	-	-	-	-	6,792	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	283	-	283	-	-	-	-	-	-	14	-	-	14	
Total	4,007	7,484	49,132	8,912	35,721	105,257	-	-	283	-	283	-	-	6,792	-	-	14	-	-	14	14	
8. Lake Chivero S/B																						
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	600	-	-	-	-	-	-	-
Chesenu Rural	-	-	-	-	-	-	-	-	149	-	149	-	-	-	-	-	-	7	-	-	7	
Manvame Rural	-	-	-	-	-	-	-	-	218	-	218	-	-	-	-	-	-	11	-	-	11	
Zvimba Rural	-	-	-	-	-	-	-	-	502	-	502	-	-	-	-	-	-	28	-	-	28	
Total	-	-	-	-	-	-	-	-	869	-	869	-	-	600	-	-	-	43	-	-	43	
9. Muzaruni River S/B																						
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	1,478	-	1,478	-	-	-	-	-	-	74	-	-	74	
Total	-	-	-	-	-	-	-	-	1,478	-	1,478	-	-	-	-	-	-	74	-	-	74	
10. Gwebi River S/B																						
Harare City	1,307	-	-	-	-	1,307	9,108	-	-	-	9,108	-	-	16	-	-	-	-	-	-	-	-
Muzaruni Rural	-	-	-	-	-	-	-	-	1,341	-	1,341	-	-	-	-	-	-	67	-	-	67	
Zvimba Rural	-	-	-	-	-	-	-	-	2,146	-	2,146	-	-	-	-	-	-	107	-	-	107	
Total	1,307	-	-	-	-	1,307	9,108	-	3,486	-	12,594	-	-	16	-	-	-	174	-	-	174	
11. Lake Manvame S/B																						
Norton Town	149	206	2,084	43	23,940	26,422	-	-	-	-	33,539	33,539	-	317	-	-	-	-	-	-	2,683	
Chesenu Rural	-	-	-	-	-	-	-	-	-	-	650	650	-	-	-	-	-	33	-	-	33	
Zvimba Rural	-	-	-	-	-	-	-	-	1,972	-	1,972	-	-	-	-	-	-	66	-	-	66	
Total	149	206	2,084	43	23,940	26,422	-	-	1,972	-	33,539	33,539	-	317	-	-	-	99	-	-	2,683	
Grand Total	9,781	18,276	186,091	49,085	315,563	578,796	12,743	-	15,206	-	34,559	62,507	-	####	-	-	-	760	-	-	2,765	

Note 1. Residential density category is based on those shown in Section 1.2.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 90% COD 85% TF 85% WSP 85%

4. Pollution load reduction efficiency at STWs: High: 8% Low & Medium: 0%



Table 10.2.20 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 2, 2015)

Sub-basin/District	Generated COD (kg/day)										Concentrated COD (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total	Low	Med.	High	C & I	Total		
1. Manyame River (Upstream) S/B																						
Goromonzi Rural																						
Harare Rural																						
Manyame Rural																						
Total																						
2. Ruwa River S/B																						
Harare City																						
Ruwa Local Board																						
Epworth Local Board																						
Goromonzi Rural																						
Harare Rural																						
Total																						
3. Seke & Harava Dams S/B																						
Harare City																						
Epworth Local Board																						
Goromonzi Rural																						
Harare Rural																						
Manyame Rural																						
Total																						
4. Nvatsime River S/B																						
Chitungwiza Municipality																						
Manyame Rural																						
Marondera Rural																						
Total																						
5. Mukuvisi River S/B																						
Harare City																						
Epworth Local Board																						
Harare Rural																						
Zimbabwe Rural																						
Total																						
6. Manyame River (Downstream) S/B																						
Harare City																						
Chitungwiza Municipality																						
Harare Rural																						
Manyame Rural																						
Total																						

Table 10.2.20 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 2, 2015)

Sub-basin/District	Generated COD (kg/day)										Concentrated COD (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total		
7. Marimba River S/B																				
Harare City	4,752	9,648	64,024	15,781	35,721	129,924	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	341	-	341	-	-	-	-	-	-	-	-	
Total	4,752	9,648	64,024	15,781	35,721	129,924	-	-	341	-	341	-	-	-	-	-	-	-	-	
8. Lake Chivero S/B																				
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Cherepa Rural	-	-	-	-	-	-	-	-	180	-	180	-	-	-	-	-	-	-	-	
Manyame Rural	-	-	-	-	-	-	-	-	262	-	262	-	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	604	-	604	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	1,046	-	1,046	-	-	-	-	-	-	-	-	
9. Muzuru River S/B																				
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	1,780	-	1,780	-	-	-	-	-	-	-	-	
Total	-	-	-	-	-	-	-	-	1,780	-	1,780	-	-	-	-	-	-	-	-	
10. Gushiki River S/B																				
Harare City	1,692	-	-	-	-	1,692	11,790	-	-	-	11,790	-	-	-	-	-	-	-	-	
Maroze Rural	-	-	-	-	-	-	-	-	1,614	-	1,614	-	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	2,584	-	2,584	-	-	-	-	-	-	-	-	
Total	1,692	-	-	-	-	1,692	11,790	-	4,198	-	15,988	-	-	-	-	-	-	-	-	
11. Lake Manyame S/B																				
Norton Town	344	372	2,249	32	147,158	150,155	-	-	-	-	23,539	33,539	-	-	-	-	-	-	-	
Cherepa Rural	-	-	-	-	-	-	-	-	783	-	783	-	-	-	-	-	-	-	-	
Zvimba Rural	-	-	-	-	-	-	-	-	1,592	-	1,592	-	-	-	-	-	-	-	-	
Total	344	372	2,249	32	147,158	150,155	-	-	2,375	-	35,914	1,802	-	-	-	-	-	-	-	
Grand Total	12,633	25,522	246,841	82,680	565,673	933,349	16,695	-	18,310	-	34,559	69,365	1,802	-	-	-	-	-	-	

Note: 1. Residential density category is based on those shown in Section 12.2.3, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100% BNR 90% COD 85% WSP

4. Pollution load reduction efficiency at STWs: for irrigation reuse (STW): 8% for unsewered area: High: 8% Low & Medium: 0%

Table 10.2.2.1 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 2, 2005)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)											
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area						
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/irrigation	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manyame River (Upstream) S/B																						
Goromonzi Rural								348				348									17	
Harare Rural								2				2									0	
Manyame Rural								32				32									2	
Total								381				381									19	
2. Ruwa River S/B																						
Harare City			1,240			1,240																
Ruwa Local Board	2	0	20	0	450	472															19	
Epworth Local Board			616	18		634															190	
Goromonzi Rural												83									4	
Harare Rural												55									3	
Total	2	0	1,875	18	450	2,346					138										259	
3. Seke & Harava Dams S/B																						
Harare City	8		71			78																
Epworth Local Board			67	2		69																
Goromonzi Rural												2										
Harare Rural												30									2	
Manyame Rural												13									1	
Total	8		137	2		147					45										2	
4. Nyatsime River S/B																						
Chitungwiza Municipality			257	5,558	533	59	6,407															895
Manyame Rural												137									7	
Marondera Rural												101									5	
Total			257	5,558	533	59	6,407				238										895	
5. Muloveri River S/B																						
Harare City	552	1,076	7,398	4,491	3,301	####	473				11	494									2,309	
Epworth Local Board			241	7		249																
Harare Rural												25									1	
Zvimbba Rural												6									0	
Total	552	1,076	7,640	4,498	3,301	####	473				11	514									2,309	
6. Manyame River (Downstream) S/B																						
Harare City			92		1,355	1,445																309
Chitungwiza Municipality			1,558			1,558																
Harare Rural												37									2	
Manyame Rural												20									1	
Total			18		1,355	3,023						57										309

Table 10.2.21 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 2, 2005)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Irrigation	Total	Low	Med.	High	C & I	Ind.	Total	
7. Marimba River S/B																					
Harare City	521	955	6,141	1,123	349	9,120	-	-	-	-	-	-	-	1,296	-	-	-	-	-	-	
Zimbabwe Rural	-	-	-	-	-	-	-	35	-	-	35	-	-	-	-	-	-	2	-	-	2
Total	521	955	6,141	1,123	349	9,120	-	35	-	-	35	-	-	1,296	-	-	-	2	-	-	2
8. Lake Chivero S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	183	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	19	-	-	19	-	-	-	-	-	-	1	-	-	1
Manvane Rural	-	-	-	-	-	-	-	27	-	-	27	-	-	-	-	-	-	1	-	-	1
Zimbabwe Rural	-	-	-	-	-	-	-	63	-	-	63	-	-	-	-	-	-	3	-	-	3
Total	-	-	-	-	-	-	-	109	-	-	109	-	-	-	183	-	-	5	-	-	5
9. Muzuru River S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	185	-	-	185	-	-	-	-	-	-	9	-	-	9
Total	-	-	-	-	-	-	-	185	-	-	185	-	-	-	-	-	-	9	-	-	9
10. Gwebi River S/B																					
Harare City	170	-	-	-	-	170	1,184	-	-	-	1,184	-	-	7	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	168	-	-	168	-	-	-	-	-	-	8	-	-	8
Zimbabwe Rural	-	-	-	-	-	-	-	268	-	-	268	-	-	-	-	-	-	13	-	-	13
Total	170	-	-	-	-	170	1,184	-	-	436	1,620	-	-	7	-	-	-	22	-	-	22
11. Lake Manyame S/B																					
Norton Town	19	26	260	5	188	500	-	-	-	131	131	-	-	28	-	-	-	-	-	-	10
Chegutu Rural	-	-	-	-	-	-	-	-	-	81	81	-	-	-	-	-	-	4	-	-	4
Zimbabwe Rural	-	-	-	-	-	-	-	-	-	165	165	-	-	-	-	-	-	8	-	-	8
Total	19	26	260	5	188	500	-	-	-	247	378	-	-	28	-	-	-	12	-	-	10
Grand Total	1,271	2,333	23,261	6,180	3,742	37,427	1,657	-	-	1,901	3,699	-	-	5,285	-	-	-	95	-	-	111

Note 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100%

4. Pollution load reduction efficiency at STWs:

T-N 80% BNR 80% TF 30% WSP 50%

for irrigation reuse (STW): 8%

for unsewered area: High: 8% Low & Medium: 0%

Table 10.2.22 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 2, 2015)

Sub-basin/District	Generated T-N (kg/day)										Concentrated T-N (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manvame River (Upstream) S/B																				
Goromonzi Rural	-	-	-	-	-	-	-	419	-	-	-	419	-	-	21	-	-	-	21	
Harare Rural	-	-	-	-	-	-	-	2	-	-	-	2	-	-	0	-	-	-	0	
Manyame Rural	-	-	-	-	-	-	-	38	-	-	-	38	-	-	2	-	-	-	2	
Total	-	-	-	-	-	-	-	459	-	-	-	459	-	-	23	-	-	-	23	
2. Ruwa River S/B																				
Harare City	-	-	1,605	-	880	2,485	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ruwa Local Board	2	2	22	0	588	614	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	742	24	-	766	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goromonzi Rural	-	-	-	-	-	-	-	100	-	-	-	100	-	-	5	-	-	-	5	
Harare Rural	-	-	-	-	-	-	-	66	-	-	-	66	-	-	3	-	-	-	3	
Total	2	2	2,369	24	1,468	3,865	-	166	-	-	166	-	-	8	-	-	-	8	-	
3. Seka & Harava Dams S/B																				
Harare City	10	-	91	-	-	101	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	80	3	-	83	-	-	-	-	-	-	-	-	-	-	-	-	-	
Goromonzi Rural	-	-	-	-	-	-	-	2	-	-	-	2	-	-	0	-	-	-	0	
Harare Rural	-	-	-	-	-	-	-	36	-	-	-	36	-	-	2	-	-	-	2	
Manyame Rural	-	-	-	-	-	-	-	16	-	-	-	16	-	-	1	-	-	-	1	
Total	10	-	172	3	-	184	-	54	-	-	54	-	-	3	-	-	-	3	-	
4. Nyatsime River S/B																				
Chitungoza Municipality	50	671	7,686	433	450	9,290	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manyame Rural	-	-	-	-	-	-	-	165	-	-	-	165	-	-	8	-	-	-	8	
Marondera Rural	-	-	-	-	-	-	-	121	-	-	-	121	-	-	6	-	-	-	6	
Total	50	671	7,686	433	450	9,290	-	287	-	-	287	-	-	14	-	-	-	14	-	
5. Mukovisi River S/B																				
Harare City	698	1,300	9,676	7,950	1,432	21,056	612	-	-	11	623	-	-	-	-	-	-	1	1	
Epworth Local Board	-	-	291	9	-	300	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	30	-	-	-	30	-	-	1	-	-	-	1	
Zvinda Rural	-	-	-	-	-	-	-	7	-	-	-	7	-	-	0	-	-	-	0	
Total	698	1,300	9,967	7,960	1,432	21,356	612	37	-	11	659	-	-	2	-	-	-	3	3	
6. Manyame River (Downstream) S/B																				
Harare City	-	7	134	-	1,555	1,496	-	-	-	-	-	-	-	-	-	-	-	-	-	
Chitungoza Municipality	-	-	2,243	-	85	2,328	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	45	-	-	-	45	-	-	2	-	-	-	2	
Manyame Rural	-	-	-	-	-	-	-	24	-	-	-	24	-	-	1	-	-	-	1	
Total	-	7	2,378	-	1,440	3,824	-	69	-	-	69	-	-	3	-	-	-	-	3	

Table 10.2.22 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-N (Scenario 2, 2015)

Sub-basin/District	Generated T-N (kg/day)												Concentrated T-N (kg/day)											
	Sewered Area				Unsewered Area				Sewered Area				Unsewered Area				Sewered Area				Unsewered Area			
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total
7. Marimba River S/B	618	1,232	8,003	1,988	389	12,229	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	618	1,232	8,003	1,988	389	12,229	-	-	43	43	43	-	-	-	-	-	-	-	-	-	-	-	-	-
8. Lake Chivero S/B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	22	22	22	-	-	-	-	-	-	-	-	-	-	-	-	-
Manyame Rural	-	-	-	-	-	-	-	-	33	33	33	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	76	76	76	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	131	131	131	-	-	-	-	-	-	-	-	-	-	-	-	-
9. Mazururu River S/B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	222	222	222	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	222	222	222	-	-	-	-	-	-	-	-	-	-	-	-	-
10. Gwebi River S/B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Harare City	220	-	-	-	-	220	1,533	-	-	-	1,533	-	-	-	-	-	-	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	202	202	202	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	323	323	323	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	220	-	-	-	-	220	1,533	-	525	2,057	2,057	-	-	-	-	-	-	-	-	-	-	-	-	-
11. Lake Manyame S/B	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Norton Town	45	47	281	4	872	1,249	-	-	-	131	131	-	-	-	-	-	-	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	98	98	98	-	-	-	-	-	-	-	-	-	-	-	-	-
Zvimba Rural	-	-	-	-	-	-	-	-	199	199	199	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	45	47	281	4	872	1,249	-	-	297	428	428	-	-	-	-	-	-	-	-	-	-	-	-	-
Grand Total	1,642	3,258	30,855	10,411	6,051	52,217	2,144	-	2,289	142	4,575	-	-	-	-	-	-	-	-	-	-	-	-	-

Note 1. Residential density category is based on those shown in Section 12.2.3, Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 100%

4. Pollution load reduction efficiency at STWs:

T-N 80% BNR 80% TF 30% WSP 50%

for irrigation reuse (STW):

BNR 80% TF 30% WSP 50%

for unsewered area:

High: 8% Low & Medium: 0%

Table 10.2.23 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 2, 2005)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)									
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area				
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total		
1. Manyame River (Upstream) S/B																				
Gezomonzi Rural	-	-	-	-	-	-	-	38	-	-	-	38	-	-	-	-	-	-	2	
Harare Rural	-	-	-	-	-	-	-	0	-	-	-	0	-	-	-	-	-	-	0	
Manyame Rural	-	-	-	-	-	-	-	3	-	-	-	3	-	-	-	-	-	-	0	
Total	-	-	-	-	-	-	-	42	-	-	-	42	-	-	-	-	-	-	2	
2. Ruwa River S/B																				
Harare City	-	-	135	-	-	135	-	-	-	-	-	-	-	-	-	-	-	-	-	
Ruwa Local Board	0	0	2	0	56	58	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	67	2	-	69	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gezomonzi Rural	-	-	-	-	-	-	-	9	-	-	-	9	-	-	-	-	-	-	0	
Harare Rural	-	-	-	-	-	-	-	6	-	-	-	6	-	-	-	-	-	-	0	
Total	0	0	205	2	56	263	-	15	-	-	15	-	-	-	-	-	-	1	1	
3. Seke & Harava Dams S/B																				
Harare City	1	-	8	-	-	9	-	-	-	-	-	-	-	-	-	-	-	-	-	
Epworth Local Board	-	-	7	0	-	7	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gezomonzi Rural	-	-	-	-	-	-	-	0	-	-	-	0	-	-	-	-	-	-	0	
Harare Rural	-	-	-	-	-	-	-	3	-	-	-	3	-	-	-	-	-	-	0	
Manyame Rural	-	-	-	-	-	-	-	1	-	-	-	1	-	-	-	-	-	-	0	
Total	1	-	15	0	-	16	-	5	-	-	5	-	-	-	-	-	-	-	0	
4. Nyatsime River S/B																				
Chitungwiza Municipality	-	28	606	58	25	717	-	-	-	-	-	-	-	-	-	-	-	-	-	
Manyame Rural	-	-	-	-	-	-	-	15	-	-	-	15	-	-	-	-	-	-	1	
Marondera Rural	-	-	-	-	-	-	-	11	-	-	-	11	-	-	-	-	-	-	1	
Total	-	28	606	58	25	717	-	26	-	-	26	-	-	-	-	-	-	-	1	
5. Mulavisi River S/B																				
Harare City	59	117	807	489	404	1,876	51	-	-	3	54	365	-	-	-	-	-	-	0	
Epworth Local Board	-	-	26	1	-	27	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	3	-	-	3	-	-	-	-	-	-	-	0	
Zomba Rural	-	-	-	-	-	-	-	1	-	-	1	-	-	-	-	-	-	-	0	
Total	59	117	833	489	404	1,903	51	3	-	3	57	365	-	-	-	-	-	-	0	
6. Manyame River (D.stream) S/B																				
Harare City	-	2	10	-	421	433	-	-	-	-	-	110	-	-	-	-	-	-	-	
Chitungwiza Municipality	-	-	170	-	-	170	-	-	-	-	-	-	-	-	-	-	-	-	-	
Harare Rural	-	-	-	-	-	-	-	4	-	-	4	-	-	-	-	-	-	-	0	
Maovane Rural	-	-	-	-	-	-	-	2	-	-	2	-	-	-	-	-	-	-	0	
Total	-	2	180	-	421	603	-	6	-	-	6	-	-	-	-	-	-	-	0	

Table 10.2.23 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - T-P (Scenario 2, 2005)

Sub-basin/District	Generated T-P (kg/day)										Concentrated T-P (kg/day)										
	Sewered Area					Unsewered Area					Sewered Area					Unsewered Area					
	Low	Med.	High	C & I	Ind.	Total	Low	Med.	High	C & I	Ind.	Total	STW Discharge/Irrigation	Total	Low	Med.	High	C & I	Ind.	Total	
7. Manimba River S/B																					
Harare City	56	104	670	122	121	1,073	-	-	-	-	-	-	Crowborough (BNR, TF)	184	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	4	-	4	-	-	-	-	-	0	-	-	-	0
Total	56	104	670	122	121	1,073	-	-	4	-	4	-	-	184	-	-	0	-	-	-	0
8. Lake Chivero S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	Fire STW (Irrigation farm)	23	-	-	-	-	-	-	-
Chegutu Rural	-	-	-	-	-	-	-	-	2	-	2	-	-	-	-	-	0	-	-	-	0
Manvane Rural	-	-	-	-	-	-	-	-	3	-	3	-	-	-	-	-	0	-	-	-	0
Zimbabwe Rural	-	-	-	-	-	-	-	-	7	-	7	-	-	-	-	-	0	-	-	-	0
Total	-	-	-	-	-	-	-	-	12	-	12	-	-	23	-	-	0	-	-	-	0
9. Muzuru River S/B																					
Harare City	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Zimbabwe Rural	-	-	-	-	-	-	-	-	20	-	20	-	-	-	-	-	1	-	-	-	1
Total	-	-	-	-	-	-	-	-	20	-	20	-	-	-	-	-	1	-	-	-	1
10. Gwebi River S/B																					
Harare City	18	-	-	-	-	18	128	-	-	-	128	-	Mariborough (WSP)	1	-	-	-	-	-	-	-
Mazowe Rural	-	-	-	-	-	-	-	-	18	-	18	-	-	-	-	-	1	-	-	-	1
Zimbabwe Rural	-	-	-	-	-	-	-	-	29	-	29	-	-	-	-	-	1	-	-	-	1
Total	18	-	-	-	-	18	128	-	48	-	175	-	-	1	-	-	2	-	-	-	2
11. Lake Manvane S/B																					
Norton Town	2	3	28	1	31	65	-	-	-	21	21	-	Norton (TF)	4	-	-	-	-	-	-	1
Chegutu Rural	-	-	-	-	-	-	-	-	9	-	9	-	-	-	-	-	0	-	-	-	0
Zimbabwe Rural	-	-	-	-	-	-	-	-	18	-	18	-	-	-	-	-	1	-	-	-	1
Total	2	3	28	1	31	65	-	-	27	-	48	-	-	4	-	-	1	-	-	-	2
Grand Total	137	253	2,536	673	1,058	4,658	178	-	207	-	410	-	-	843	-	-	10	-	-	-	12

Note 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report

2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW 100%

4. Pollution load reduction efficiency at STWs:

T-P 75%

BNR 30%

TF 30%

WSP 30%

for irrigation reuse (STW):

BNR 75%

TF 30%

WSP 30%

for unsewered area:

High: 8%

Low & Medium:

0%