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)

$$Ld = \{Lu \cdot La / (2.31 \cdot kr)\} \times 10^{(-kr^2)} + La / (2.31 \cdot kr)$$

where; L: BOD (ppm)

d-- at downstream, u -- at upstream

La -- BOD added from river bed (ppn/day)

kr: BOD reduction coefficient (self-purification coefficient)

(= k1 + k3) (1/day)

k1 -- deoxygenation coefficient

k2 -- re-aeration coefficient

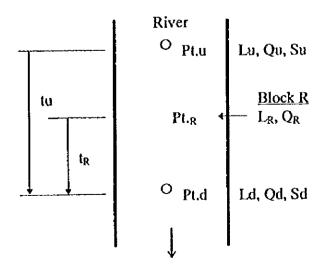
k3 -- physical coefficient

t: time of flow from upstream to downstream

Assuming La is negligible (=0), above equation becomes as follows;

$$Ld = Lu \times 10^{(kr.t)}$$
 or $Lu \times e^{(Kr.t)}$

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



Lu: Run-of pollution load at upstream point

Qu: Flow rate at Pt.u

Su: Water Quality at Pt.u

L_R: Concentrated pollution load from Block R

Q_R: Flow from Block R

Ld: Run-off pollution load at downstream point

Od: Flow rate at Pt.d

Sd: Water Quality at Pt.d

tu: Time of flow (Pt.u - Pt.d)

t_R: Time of flow (Pt._R - Pt.d)

In the above figure,

$$Qu + Q_R = Qd$$

$$Su = Lu / Qu$$
, $Sd = Ld / Qd$

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

$$Ld = Lu \cdot 10^{(-kr^*t0)} + L_R \cdot 10^{(-kr^*tR)}$$

The self-purification coefficient (kr), is a summation of k1 (deoxidization coefficient) and k3 (physical coefficient). The range of k1 is rather small with 0.05 - 0.3, however, k3 fluctuates depending on the characteristics of water quality, especially related to physical conditions (suspended solid).

Frame Values and Pollution Load by Sub-basin Table 10.2.1 Population by Sewered/Unsewered by Sub-basin (Scenario 1, 2005) FUTUTE WATER POLLUTION ANALYSIS SECTION 10 10.2

3

Sub-basinDistrict	Total Population	ation	Projected		Sewered Area	Area			Unsewered Area	ed Area	
	Sewered U	Unsewered	Sewered %	Low	Medium	High	Total	Low	Medium	High	Total
1. Manyame River (U.stream) S/B	 		-								
Goromonzi Rural	•	31,666	%0 %0		•	•	-		,	31,666	31,666
Harare Rural	•	145	%0	,	3	•	•	•	•	145	145
Manyame Rural		2,868	<u>%</u> 0	,	•	1	I	•	•	2,868	2,868
Total		34,679		•	•	•			•	34,679	34.679
2. Ruwa River S/B					-		,				Ī
Harare City	105,800	,	100%	•	•	105,800	105,800		•	•	,
Ruwa Local Board	70.638	-	100%	11,328	810	58.500	70,638	•	•	•	•
Eoworth Local Board	55,988	,	100%	,	1	55.988	\$86,55	•	•	•	•
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	232,426	•	•	12,502	12,502
3. Seke & Harava Dams S/B					-		# C				
Harare City	47,760		100%	3,960	,	43,800	47,760		•	•	•
Epworth Local Board	6.053		100%	1	•	6,053	6.053	•	•	•	•
Goromonzi Rural	1	143	% 0	•		•	•		1	143	143
Hararc Rural	,	2,749	200	•		•	1	-	•	2.749	2,749
Manyame Rural	_	1.193	%0	•	•	•	1	1	_	1,193	1,193
Total	53,813	4,085		3,960	,	49,853	53,813	•	-	4.085	4,085
4. Nyatsime River S/B											
Chitungwiza Municipality	370,675	•	100%	1	15,075	355,600	370,675	,	•	•	,
Manyame Rural	,	12,482	% 0	,	1	1	•	•	•	12,482	12,482
Marondera Rural		9.156	%0			,			•	9,156	9.156
Total	370,675	21.638		•	15,075	355,600	370,675	•	'	21,638	21.638
5. Mukuvisi River S/B											
Harare City	764,305	49,356	94%	42,451	620'86	623,826	764,305	49,356	,	,	49,356
Epworth Local Board	21,942		3001		•	21,942	21.942	•	•	•	
Harare Rural	,	2,260	%0	1	•	•	•	·	•	2,260	2,260
Zvimba Rural	•	516	%0	•		•	•	,	•	516	516
Total	786,247	52,132		42,451	98,029	645,768	786,247	49,356	-	2,776	52,132

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

6. Manyame River (D.stream) S/B Harare City Chitungwiza Municipality Ghitungwiza Municipality Harare Rural Manyame Rural 7. Marimba River S/B Harare City Zwimba Rural Total Sewan	╎╶╏╌╏╌╏ ╌╏	ered	Contract of	,,	Madine	High	Total	1 000	Madine	Link	1,000
Manyame River (D.stream) S/B Harare City Chitungwiza Municipality Harare Rural Manyame Rural Total Marimbu River S/B Harare City Zvimba Rural Total Total Total Harare City	98	l	E STORY	MO"	'VICAUITI	1,2,7,7	10131	wo.	Wednern	ואונים	1 07.31
unicipality	33,810	4 ,4									
micipality	68.800	r	100%	,	20,610	113,200	133.810	•	٠	•	•
		-	100%	-	•	68,800	68,800	-	•	•	•
		3,404	0%0	•	•			•		3,404	3,404
		1.797	0%0	•	•	•		,	,	1.797	1.797
	202,610	5.201		•	20,610	182,000	202.610	•	•	5,201	5,201
			n 7#2				القضا			,	
	861,729	,	100%	53,923	94,807	713,000	861,729	•			ı
	-	3,218	%0	•	•	•		-	1	3,218	3.218
	861,729	3,218	-	53,923	94.807	713,000	861.729	-	-	3,218	3,218
				1							
	162,000	,	% 0	·	•	162,000	162,000		•	•	•
ral	 - -	1,697	% 0	•	•		•			1.697	1.697
Manyame Rural		2,474	260		•	•	•		•	2,474	2,474
Zvimba Rural		5,780	% 0		,		,		,	5,700	5,700
	162,000	9.871		,	,	162,000	162,000	,		9,871	9,871
River S/B		rarso	to see								
	150,000		260	-	•	150,000	150.000	•	•	•	
[a]	 - 	16,797	% 0	٠	•		٠	,		16,797	16,797
	150,000	16,797		-	•	150,000	150,000	٠	٠	16.797	16,797
10. Gwebi River S/B			20.0 00								
Harare City	12,576	29,184	30%	12.576	•	~	12.576	29,184	•	•	29,184
	•	15,233	%0	-	•	•	,		•	15,233	15,233
Zvimba Rural	•	24,385	000	•	٠	ı	•	•	•	24,385	24.385
	12,576	68,802	er gala	12,576	•	•	12,576	29,184	•	39,618	68,802
11. Lake Manyame S/B			-								
Norton Town	62.358	,	100%	6,468	9,540	46,350	62.358	-	•	•	-
Cheguta Rural	•	7,389	0%0	,	-	,	,		•	7,389	7.389
ba Rural	•	15,021	0%0	•	•	•	1		-	15,021	15.021
	62,358	22,410	PED/IS	6,468	9,540	46,350	62,358			22,410	22,410
Grand Total 2,85	2,894,434	251,335	92%	130,706 }	238.870	2,524,859	2,894,434	78,540	•	172,795	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)

I

Sob-basin District	Total Po	Total Population	Projected		Sewered Arca	Area			Unsewered Area	ed Area	
	Sewered	Unsewered	Sewered %	Low	Medium	High	Total	Low	Medium	High	Total
1 Nanyame River (I Stream) S/B					_						
Common Ones		38 130	200	,	,	,	•		•	38,130	38,130
Large Dies		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	153,000	,	100%		1	153,000	153,000	t		,	'
Ruwa Local Board	90,798	•	100%	11,328	11,970	67,500	90,798	•	-	5	•
Epworth Local Board	67,417		100%		•	67,417	67,417	•	•	•	,
Goromonzi Rural		9,047	00%		1	•	-	•		9,047	9,047
Harare Rural	,	800'9	%0	,	•	•	1	•	•	800'9	800.9
Total	311.215	15,055		11,328	11.970	287.917	311,215	٠	•	15.055	15.055
3. Seke & Harava Dams S/B											
Harare City	47,760		100%	3,960	, -	43,800	47,760	,	b	,	,
Epworth Local Board	7,288		100%	;	•	7,288	7.288	•	ı	,	٠
Goromonzi Rural	-	173	%0	•	,	•	-	ŧ	1	173	173
Harare Rural	•	3,310	%0	•	,	,	•	-		3,310	3,310
Manyame Rural		1,436	%0				-		4	1,436	1.436
Total	55,048			3,960	•	51.088	55,048	-	•	4.919	4,919
4. Nvatsime River S/B											
Chitungwiza Municipality	504,338	•	100%	2.568	37.170	464,600	504,338	•		•	•
Manyame Rural		15,030	260	-	-	•	-	-	,	15,030	15.030
Marondera Rural		11,026		-	-	•	•		•	11,026	11,026
Total	504,338	26,056		2,568	37,170	464,600	504,338	•	,	26,056	26.056
5. Mukuvisi River S/B											
Harare City	\$20,661	49,356	94%	44,407	98,029	678.226	820,661	49,356			49.356
Epworth Local Board	26,421	•	100%	•	•	26.421	26.421	· ·	1	1	
Harare Rural		2,721	260	•	-	•	,	-	•	2,721	2,721
Zvimba Rural	,	622	%0 E	1	•	ŧ	•	٠	•	622	622
Total	847,082	52,699		44,407	98,029	704,647	847.082	49,356	,	3,343	52.699

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

Sub-basin/District	Total Po	Total Population	Projected		Sewere	Sewered Area			Unsewered Area	red Area	
	Sewered	Unsewered	Sewered %	Low	Medium	High	Total	wo.]	Medium	High	Total
6. Manyame River (D.stream) S/B											
Harare City	476,410	,	100%	•	20,610	455,800	476,410				,
Chitungwiza Municipality	008'89	,	100%		•	68.800	68.800		-	,	•
Harare Rural	1	4,099	%0	,	•	•	-		-	4,099	4,099
Manyame Rural	1	2,164	%0			-	•			2.164	2,164
Total	\$ 545.210	6,263			20.610	524,600	545.210			6,263	6,263
7. Marimba River S/B											
Harare City	996,585	•	100%	60,180	107,435	828,971	585,966	•	•	•	,
Svimba Rural)	3,875	% 0		•	-	•		,	3,875	3.875
Total	996.585	3,875		60.180	107,435	828,971	585'966	1	,	3,875	3,875
8. Lake Chivero S/B											
Harare City	194,800		%0	•	•	194.800	194,800	-	•	•	
Chegutu Rural	-	2,044	0%0	•	-	•	•	1	•	2,044	2,044
Manyame Rural	234787	2,979	260	•	•	•	,		•	2,979	2,979
Zvimba Rural	J.	6,864	260	٠	٠	•	,	1	•	6,864	6,864
Total	194,800	11.887		_	•	194,800	194,800	•	•	11,887	11.887
9. Muzururu River S/B											
Harare City	150,000	-	%0	•	,	150,000	150,000	3	•	,	,
Zvimba Rural	-	20,226	260	•	•	•		•	•	20.226	20.226
Total	150,000	20,226		•	-	150,000	150,000	-	-	20,226	20,226
10. Gwebi River S/B									~		
Harare City	21,324	33,780	39%	21,324	•		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		-	21,324	33.780	•	47.706	81,486
11. Lake Manyame S/B	43 E	-254									
Norton Town	118,290	1	100%	21.540	24.750	72,000	118,290	-	,	,	•
Chegoto Rural	,	8,897	%0	•	•		1		•	8,897	8,897
Zvimba Rural	16-0	18.087	%0		•		•		•	18,087	18,087
Total	118,290	26,984		21.540	24,750	72,000	118,290		-	26,984	26,984
Grand Total	3,743,892	291,208	93%	165,307	296,963	3,278,623	3,743,892	83,136	•	208,072	291.208
					+					ı	

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)

Ţ

Sub Bacin Dietnice	Total Po	Total Population	Projected		Sewered Area	1 Area			Unsewered Area	ed Area	
	Sewered	Unsewered	Sewered %	Low	Medium	High	Total	Low	Medium	High	Total
11 Nanvame River (U. stream) S/B											
Gotomonzi Rural		31.666	%0	,		<u></u>	,		•	31,666	31.666
Harare Rural	,	145	%0				•	•	,	145	145
Manyame Rura		2,868	%0	,	•	,	ı	•		2,868	2.868
Total		34.679			-	•			•	34,679	34.679
2. Ruwa River S/B											
Harare City	112,726	,	100%		,	112,726	112,726		•	•	-
Ruwa Local Board	1,941	,	100%	155	11	1.775	1,941		•	,	•
Epworth Local Board	55,988		100%	·	,	55,988	55,988		•	•	•
Goromonzi Rural		7.513	%0	nera		1	•	•	1	7,513	7,513
Hararc Rural		4.989	%0		٠	•	,			4.989	4.989
Total	170,655			155	11	170,489	170,655		٠	12,502	12,502
3. Seke & Harava Dams S/B											
Harare City	6.994	,	100%	085		6,414	6,994		•	•	•
Epworth Local Board	6,053		100%	•	•	6:053	6.053) Income	•	•	•
Goromonzi Rural	·	143	%0		٠		1		•	143	143
Harare Rural	, ,	2,749	260	,			•			2,749	2,749
Manyame Rural	,	1,193	%0	1	,	,	,		•	1,193	1,193
Total	13,047			580	,	12,467	13,047		E	4,085	4,085
4. Nvatsime River S/B											
Chitungwiza Municipality	526,688	•	100%		21,420	505,268	526,688		1	'	
Manyame Rural		12,482		,	-	-	•	1	•	12,482	12,482
Marondera Rural	•	9,156	%0	,			•	l	1	9,156	9,156
Total	\$26,688	31.638	zaz.		21,420	505,268	526,688	•	•	21,638	21,638
5. Mukuvisi River S/B	7204		-								
Harare City	804,669	36,347	%96	42,446	89,664	672,560	804,669	36,347			36,347
Epworth Local Board	21,942	-	100%	•	•	21.942	21,942	736206	•		,
Harare Rural		2,260	%0	•	•		•			2,260	2.260
Zvimba Rural	1	516	-	***	•	•			,	516	516
Total	826,611	39	- MD-P	42,446	89,664	694,502	826,611	36,347	•	2,776	39,123

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

Sub-basin/District	Total P	Total Population	Projected		Sewered Area	i Area	P-120-1		Unsewered Area	ed Area	
	Sewered	Unsewered	Scwered %	Low	Medium	High]	Total	l.ow	Medium	High	Total
6. Manyame River (D.stream) S/B							-cal				
Harare City	7586	٠	100%	•	1,517	8.330	9.847		•	•	•
Chitungwiza Municipality	141,618		100%	•	•	141,618	141,618	1	•	•	•
Harare Rural	,	3,404	%0		,	•	•	_	_	3,404	3,404
Manyame Rural	· ·	1,797	260		'	,	•	-	•	1,797	1.797
Total	151,465			,	1.517	149,948	151,465	•	,	5,201	5,201
7. Marimba River S/B	- Transco						c met des				
Harare City	678,007		100%	40,072	79,619	558,316	678,007	,		•	•
Zvimba Rural		3,218	260	,	•	•	-	•	•	3.218	3,218
Total	678,007			40,072	79,619	558,316	678,007	٠	•	3.218	3,218
8. Lake Chivero S/B	1111/2						~=				
Harare City	,	•	100%	•	,	1	•	•	•	1	,
Chegutu Rural	1	1,697	%0	•	ı	•	,			1,697	1,697
Manyame Rural	1	2,474	%0	•	•	•		•	-	2,474	2,474
Zvimba Rural	, man	5.700	260	•		-	•	•	-	5.700	5,700
Total	i i	9,871			1		1	1	•	9,871	9,871
9. Muzururu River S/B							1.000 == 1.000 ==				
Harare City	,	1	100%	•	•	•	1	•	•	-	٠
Zvimba Rural	,	16.797	260	•	•			•	•	16.797	16.797
Total		16.797		•	1	•	•	•	-	16.797	16.797
10. Gwebi River S/B	-						CHRIS				
Harare City	13,068	91.078	13%	13,068	•	'	13.068	91.078	•		91.078
Mazowe Rural	-	15.233	%0		•	•	1	•	•	15,233	15,233
Zvimba Rural	1	24,385	%0	•	•	•	•	•		24,385	24.385
Total	13.068	130,696		13.068	•	•	13,068	91,078		39.618	130.696
11. Lake Manyame S/B						-	-				
Norton Town	27,362		100%	1,487	2,193	23,681	27,362	•			•
Chegutu Rural		7.389	0%		•	•		•	-	7,389	7,389
Zvimba Rural	1		0%	,	•	\$	1	•	•	15.021	15,021
Total	27,362	22,410		1,487	2,193	23,681	27.362	•	•	22,410	22,410
Grand Total	2,406,903	3	%68	208'26	194,423	2.114.672	2,406,903	127,425	+	172,795	300,220
Note: 1 Estimated accordation and land use are based on Section 12 2 3	and nee are had	CL action 10	1 -	Chapter 2 Supporting Panors	inArt						

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	ulation	Projected		Sewered Area	l Arca			Unsewered Area	ed Area	
	Sewered	Unsewered	Sewered %	Low	Medium	High	Total	Low	Medium	High	Total
1. Manyame River (U.stream) S/B	-										
Goromonzi Rural		38,130	% 0	•	•	•	•	•	-	38,130	38.130
Harare Rural	-	174	%0	•		-	i e	•	-	174	174
Manyame Rural		3,454	%0	•	,	•	•		,	3,454	3.454
Total		41.758		,	•	-	•	•	•	41.758	41,758
2. Ruwa River S/B							= TOP				
Harare City	145,926	-	100%	•	-	145,926	145,926	•	4	•	
Ruwa Local Board	2,337	•	100%	153	191	2.023	2,337	•		1	٠
Epworth Local Board	67,417	1	100%	,	•	67,417	67,417	-	•	•	٠
Goromonzi Rural		9.047	%0		•	•	•	•		9,047	9,047
Harare Rural		900'9	%0	,		1		•		800'9	6,008
Total	215,680	15.055		153	161	215.366	215,680	-		15.055	15,055
3. Seke & Harava Dams S/B							49.0				
Harare City	9,054	•	100%	751	•	8,303	9,054	-	•		•
Epworth Local Board	7,288		100%	,	ı	7,288	7,288	•	_		٠
Goromonzi Rural	1	173	%0		í	•	ı		•	173	173
Harare Rural		3,310	%0	-	•	•		ŀ	•	3,310	3,310
Manyame Rural	1	1,436	%0	•	-	-	Ł		-	1.436	1,436
Total	16,342	4,919		751	-	15,591	16.342	1	-	4,919	4.919
4. Nyatsime River S/B											
Chitungwiza Municipality	758,507		2001	3,862	55,902	698,742	758,507	•	•	1	,
Manyame Rural	,	15,030	%0	•	•		•	•	1	15,030	15,030
Marondera Rural	,	11,026	%0	•	•	-	1	•	•	11.026	11,026
Total	758.507	26,056		3.862	55,902	698,742	758,507	1	•	26.056	26.056
5. Mukuvisi River S/B											
Harare City	1.041.656	47,052	26%	53.691	108,314	879,652	1,041,656	47,052	•	,	47.052
Epworth Local Board	26,421	•	100%	•	•	26,421	26,421	•	,	,	1
Harare Rural	-	2,721	%0 k			•	-	•	•	2,721	2,721
Zvimba Rural		622	%0		-	1	•	•	•	622	622
Total	1,068,077	50,395	e de la constanta de la consta	53,691	108,314	500'906	1.068.077	47.052	-	3,343	50,395

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

American River (D. creen) State (D. creenerd) State (D. creener	Sub-basin/District	Total Pc	Total Population	Projected		Sewere	Sewered Area			Unsewered Area	cd Arca	
Hater Charten) StB 12.74 100% 551 12.196 12.747 100% 6.503 12.196 12.747 10.00% 6.503 10.00% 6.5		Sewered	Unsewered	Sewered %	Low	Medium	High	Total	wo.I	Medium	High	Total
Hanne City 12,727 100% 551 12,1240 12,7247 1 Hanne City 21,043 0.6 1 100% 1 20,059 20,059 1 Hanne Runal 21,044 0.6 1	6. Manyame River (D.stream) S/B											
Chiungwiza Municipality 203.950 100% <th< td=""><td>Harare City</td><td>12,747</td><td>1</td><td>100%</td><td></td><td>551</td><td>12,196</td><td>12,747</td><td>,</td><td></td><td></td><td></td></th<>	Harare City	12,747	1	100%		551	12,196	12,747	,			
Harner Rural - 4099 0% - 2,099 Manyanne Sural 2,164 0% - - 2,164 Toal 1,064 - - - - - Manyanne Sural 2,164 0% - - - - - Manyanne Rural 877,690 -	Chitungwiza Municipality	203,950	•	100%	,		203,950	203,950	•			,
Manyame Runil 2.164 Offs - 2.164 <td>Harare Rural</td> <td></td> <td>4,099</td> <td>260</td> <td></td> <td>ı</td> <td>•</td> <td></td> <td>•</td> <td></td> <td>4,099</td> <td>660;≯</td>	Harare Rural		4,099	260		ı	•		•		4,099	660;≯
Mountain Size 6.265 6.265 5.55 7.66.467 6.265 7.56.16 2.16.649 2.16.659 6.265 Mountain Siver Size 8.77.650 3.875 0% 47.516 102.633 727.541 877.650 . 3.875 Zvimba Rural 6.77.650 3.875 47.516 102.633 727.541 877.650 . 3.875 Ase Changell Rural 6.77.650 0.6% 3.875 Ase Changell Rural 0.75 0.6% .	Manyame Rural	-	2,164	%0	•	•		eu s	1		2.164	2.164
Marinting River STB STT,680 - 47,516 102,633 727,541 877,690 - 3,875 Hanne City STT,680 3,875 - 47,516 102,633 727,541 877,690 - 3,875 Total Anne City STT,680 3,875 - 47,516 102,633 727,541 877,690 - 3,875 Total Anne City Anaise City - 2,974 0% - 2,974 - 2,974 - 2,974 Manyame Runi - 2,974 0% - 2,974 0% - 2,974 - 2,974 Manyame Runi - 3,874 0% - 2,974 0% - 2,974 0% - 2,974 Manyame Runi - 3,974 0% - 2,974 0% - 2,974 - 2,974 Manyame Runi - 3,974 0% - 2,974 - 2,974 - 2,974 Manyame Runi - 3,975 - 3,874 - 3,874 - 3,874 - 3,874 Zoinba Runi - 3,975 - 3,976 - 3,976 - 3,976 - 3,976 - 3,975 Hanze City - 3,974	Total	216,697	6.263		,	551	216,146	216.697	•	-	6.263	6.263
Haare City 877,690 47,516 100,653 777,551 877,690 3,875 Zoulnob Rural 877,690 3,875 0% 47,516 100,633 727,541 877,690 3,875 Jake Chivero S/B Harare City 100% 100,633 727,541 877,690 3,875 Harare City 2,979 0% 100,600 100,600 100,600 100,600 100,600 100,600 100,600 100,600 100,600 11,887 100,600 100,600 11,887 100,600	7. Marimba River S/B							()ecra.				
Zyimbo Rural 3,875 0% 47,516 10,043 777,541 877,660 3,875 7,875 Total Total 100% 47,516 10,243 777,541 877,660 - 3,875 Harare Cty Chegun Rural 2,044 0% - - 2,044 - 2,044 Chegun Rural - 2,044 0% - - 2,044 - 2,044 Zyinba Rural - 11,857 0% - - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - 2,044 - - <	Harare City	069'118		100%	47,516	102,633	727.541	877,690			 -	,
Total S77,650 3,875 47,516 100,633 777,541 877,650	Zvimba Rural		3.875	% 0	,					,	3.875	3.875
Autonome S/B Hazare Cliv 100% </td <td>Total</td> <td>877,690</td> <td>3,875</td> <td></td> <td>47,516</td> <td>102,633</td> <td>727.541</td> <td>069'448</td> <td></td> <td>-</td> <td>3,875</td> <td>3.875</td>	Total	877,690	3,875		47,516	102,633	727.541	069'448		-	3,875	3.875
Harare City Locate Div 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 100% 11.887								gusor a				
Chegura Rural 2,044 0% . . 2,044 0% . . 2,044 .<	Harare City		-	100%	-			,			-	
Manyame Rural 2.979 Ope . . 2.979 Ope . . 2.979 . . 2.979 .	Chegutu Rural	,	2,044	%6	,		_	1			2044	2044
Zvimba Rural 6.864 0% - - 6.864 Total Acare City 11.887 -	Manyame Rural	,	2,979	%0		,		•		,	2.979	2,970
Total Total 11.887 11.888 <td>Zvimba Rural</td> <td>,</td> <td>6.864</td> <td>260</td> <td></td> <td></td> <td>1</td> <td>1</td> <td>,</td> <td></td> <td>6.864</td> <td>6.864</td>	Zvimba Rural	,	6.864	260			1	1	,		6.864	6.864
Hazare City 20,226 0% . . 20,226 Zvimba Rural - 20,226 .	Total	_	11.887				,	g-source &		_	11.887	11.887
Kanare City Combine Rural 100%<							 					
Zvimba Rural 20,226 0% 20,226 20,22	Harare City	٠		100%	-	•		Lanc.	,		,	Ι,
Total 20,226 Cowebi River S/B Cowebi River S/B Cowebi River S/B 20,226 20,236 20	Zvimba Rural		20,226	020	•			,	-		20,226	20.226
Gwebi River S/B 16,917 17,902 13% 16,917 - 16,917 117,902 - - 18,343 - - 18,343 - - 18,343 - - - 18,343 - <td>Total</td> <td></td> <td>20.226</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>20.226</td> <td>20.226</td>	Total		20.226		-						20.226	20.226
Harare City 16,917 117,902 13% 16,917 - 16,917 117,902 - - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 18,343 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - 29,363 - - 29,363 - - 29,363 - - - 29,363 - - - - - - - - - - - - - - -	10. Gwebi River S/B							i de la constante de la consta				
Mazowe Rural 18,343 0% - 18,343 0% - 18,343 Zvinba Rural - 29,363 0% - - 29,363 Total 16,917 16,917 - - - 29,363 Lake Manyame S/B 16,917 - - - 47,706 Norton Town 32,947 - - - - Chegutu Rural - 8,897 0% - - Zviniba Rural - 18,087 - - 8,897 Zviniba Rural - 18,087 - - 18,087 Zoxinba Rural - 18,087 - - - 8,897 Zoxinba Rural - 18,087 -	Harare City	16,917	117,902	13%	16,917			16,917	117,902	,	·	117,902
Zvimba Rural 29,363 0% - - 29,363 - 29,363 Total Total 16,917 - 16,917 - - 29,363 Lake Manyame S/B 32,947 - 100% 3,440 3.953 25,554 32,947 - 47,706 Chegutu Rural - 18,087 - - - 8,897 - - 8,897 Zvimba Rural - 18,087 - - - - 8,897 Zvimba Rural - 18,087 - - - - 8,897 Zvimba Rural - 18,087 - </td <td>Mazowe Rural</td> <td></td> <td>18,343</td> <td>200</td> <td>•</td> <td>•</td> <td></td> <td>1</td> <td></td> <td>,</td> <td>18.343</td> <td>18.343</td>	Mazowe Rural		18,343	200	•	•		1		,	18.343	18.343
Total Total 16,917 16,917 117,902 47,706 Lake Manyame S/B 32,947 100% 3,440 3.953 25,554 32,947 47,706 47,706 Chegutu Rural 8,897 0% - - - 8,897 - - 8,897 - - 18,087 -	Zvimba Rural		29,363	%0	-			,			29.363	29.363
Lake Manyame S/B 100% 3.440 3.953 25.554 32,947 8.897 8.897 Obegutu Rural 18.087 0% - 18.087 - 18.087 Zvimba Rural 32.947 26.984 3.440 3.953 25.554 32.947 - 18.087 Total 32.02,857 373,026 90% 126,330 271,515 2,805,013 3,202,857 164,954 208,072	Total	16.917	165,608	Ap.	16,917	,	ļ	16.917	117,902		47.706	165.608
nn Town 32,947 - 100% 3,440 3.953 25,554 32,947 - 8,897 ba Rural - 18,087 0% - - 18,087 - 18,087 ba Rural 32,947 26,984 - 3,440 3,953 25,554 32,947 - 18,087 Grand Total 3,202,857 373,026 90% 126,330 271,515 2,805,013 3,202,857 164,954 - 208,072	11. Lake Manyame S/B		3,30	anti-Su								
utu Rural 8,897 0% . . 8,897 . . 8,897 ba Rural . 18,087 0% 18,087 Arral 32,947 26,984 .	Norton Town	32,947	,	2001	3,440	3.953	25,554	32,947		,	-	
ba Rural 18,087 0% 18,087 18,087 Grand Total 3,202,857 3,202,857 164,954 208,072	Cheguta Rural	1	8,897	260	•			-		1 ,	8,897	8.897
Grand Total 3.202,857 373,026 90% 126,330 271.515 2,805,013 3,202,857 164,954 . 208,072	Zvimba Rural	,	18,087	%0	•	,	,	,	,		18.087	18.087
3,202,857 373,026 90% 126,330 271,515 2,805,013 3,202,857 164,954 - 208,072	Total	32.947	26,984	·	3,440	3,953	25.554	32,947	,		26,984	26.984
	Grand Total	3,202,857	373,026	%06	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 10.2.5 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 1, 2005)

1

				General	ted/Discha	Generated/Discharged Wastewater Quanity (m3/day	water Oual	nity (m3/d.	(AE,			
Sub-basin/District			Sewered Area	l Area					Unsewer	Unsewered Area		
		Domestic		Com. &	indust-	-		Domestic		Com. &	Indust-	
	Low	Medium	High	Inst.	rial	Total	Low	Medium	High	Inst.	rial	Total
1. Manyame River (Upstream) S/B												
Goromonzi Rural	,	,			 -	•	,	•	2,058	•	•	2,058
Hararc Rural			,		,	,		1	6	•	•	6
Manyame Rural	•	•		1		,	•	•	186		•	186
Total		<u> </u>	,				•	-	2,254	٠	•	2,254
2. Ruwa River S/B												
Harare City		,	6.877		•	6.877	•	٠	,	,	'	•
Ruwa Local Board	3.568	170	3,803	377	3,545	11,463	•	٠	•	·	'	•
Epworth Local Board	•		3,639	182		3,821			•			•
Goromonzi Rural	•	•	1	•	•	•		٠	488	•	'	488
Harare Rural		•		•		•	•	,	324	-	•	324
Total	3,568	170	14,319	559	3,545	22,161	-	•	813	ţ	٠	813
3. Seke & Harava Dams S/B												
Harare City	1,247	,	2.847	,		4.094	•	•	•		·	۱
Epworth Local Board	,	•	393	20	•	413	1	٠		•		,
Goromonzi Rural	•	•	•	1	•		ı	•	6		,	δ
Harare Rural	١,	, 		,	•			•	179	•	'	179
Manyame Rural				,	1	,	,	•	78	-	•	82
Total	1.247	٠	3,240	20	•	4.508	,		266	-	٠	266
4. Nyatsime River S/B												
Chitungwiza Municipality	,	3,166	23,114	1,321	1,401	26,280	-	-	•	,		٠
Manyame Rural	,	,		,	٠	٠		-	811		1	811
Marondera Rural	,	•		•	•	,	1	•	595	•		595
Total	1	3,166	23,114	1.321	1.401	26,280		- 1	1,406	-	•	1,406
5. Mukuvisi River S/B												
Harare City	13,372	20,586	40,549	55.860	37,932	168,299	15,547	1	•	•	325	15.872
Epworth Local Board	٠	•	1,426	71		1,498		•	•		•	,
Harare Rural	,	•	1	•	•	4		•	147	•	,	147
Zvimba Rural	-	•	-	,	•		1	•		,	•	,
Total	13,372	20.586	41.975	55.931	37,932	169,796	15.547	1	147		325	16,019

Table 10.2.5 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 1, 2005)

			Total		147	8	15,728	117	16,025			502	602			110	161	371	642		Į.	1.092	1.092		9.193	8	1.585	11,768		3.451	480	976	4,908	55,401
		Indust-	rial			,									1		[,] -		3.451			3.451	3,776
	Unsewered Area	Com. &	Inst.				,					•			,	,		,	,			,	,										Ţ.	ľ
ay)	Unsewe		High		147	34	180	117	478		٠	209	209		•	110	191	371	\$2			1.092	1.092			066	1,585	2.575		,	480	926	1,457	11,338
bity (m3/d		Domestic	Medium		-	,	_	•	,		,	•	•	-	•	•	•	,	,		,				 -	,	,	,		,	,	•	•	•
vater Ouai			%«کا		•	-	15.547	,	15,547		·	•	-		•	•	•	•	•			,	,		9,193		1	9,193		,		•	•	40,287
Generated/Discharged Wastewater Quanity (m3/day)	-	-a.sc	Total		39,533	,	75.933	,	115,466		108.597	ì	108.597	,	10,530	area.	-	•	10,530	******	9,750		9,750		3,961		•	3.961		10,792	,		10,792	481,841
ted/Discha		Indust-	rial		39,533	-	-	•	39,533		11,392	•	11,392		•	•	-	•	•			,					•	•		3,386	•	•	3386	97.189
Genera	Arca	Com. &	lnst.		1	-	-	•	-		13,965	ı	13,965	7	-	•	-	,			,	•			•	_	1	•		353	,	•	353	72,149
	Sewered Area		માંદ્રમ		-		41,975	•	41.975		46,345	•	46,345		10,530	•	•	,	10,530		9.750	-	9,750			•	•	1		3,013	,	-	3,013	194,261
		Domestic	Medium		-	,	20,586	•	20,586		19,909	,	19,909	-	,	•	•	•	•		,	•	•			-		•		2,003	•		2,003	66,421
			Low		•	-	13,372	-	13,372		16,986	•	16,986		•	,		•	•		•	,	-		3,961	•	•	3,961		2,037	•	ı	2,037	\$4.544
	Sub-basin/District			6. Manyame River (D.stream) S/B	Harare City	Chitungwiza Municipality	Harare Rural	Manyame Rural	Total	7. Marimba River S/B	Harare City	Zvimba Rural	Total	8. Lake Chivero S/B	Harare City	Chegutu Rural	Manyame Rural	Zvimba Rural	Total	9. Muzururu River S/B	Harare City	Zvimba Rural	Total	10. Gwebi River S/B	Harare City	Mazowe Rural	Zvimba Rural	Total	11. Lake Manyame S/B	Norton Town	Chegutu Rural	Zvimba Rurai	Total	Grand Total

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 10.2.6 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 1, 2015)

				Genera	ted/Dischar	Generated/Discharged Wastewater Ovanity (m3/day)	vater Quar	uty (m3/d	ay)			
Sub-basin/District			Sewered Area	d Area					Unsewei	Unsewered Area		
		Domestic		Com. &	Inchust-			Domestic		Com. &	Indust-	
	Low	Medium	High	Inst.	rial	Total	Low	Medium	Figh	Inst.	rial	Total
1. Manyame River (Upstream) S/B												
Goromonzi Rural	,	'	•		,		-	•	2,669	•	-	2,669
Marare Rural	,	,	•	,	,		•	-	12	•		12
Manyame Rural		,	ľ			,	•	,	242	-		242
Total		-			-	-	٠	,	2.923		4	2,923
2. Ruwa River S/B												
Harare City	•		10,710	•	25,642	36,352	•	-	•	·	•	,
Ruwa Local Board	3.568	2.514	4,725	240	4,632	15.979	•	•	•	•		,
Epworth Local Board	,		4.719	236	,	4,955		•	•	•	,	,
Goromonzi Rural		•		•	,	Þ	-	,	633	•	•	633
Harare Rural	•	•	•	-	•	•	•	•	421	•	1	421
Total	3,568	2,514	20.154	776	30,274	57,287		-	1,054	•	•	1,054
3. Seke & Harava Dams S/B						A						
Harare City	1,247	,	3,066	•	•	4,313	•	ı	•	,	•	·
Epworth Local Board	•	•	510	26	•	\$36	8	•	,	,		•
Goromonzi Rural	ŀ	•	•	•	•	•	•	-	12		_	12
Harare Rural		•	•		-	•	•	•	232	•		232
Manyame Rural		1	•		,		•	•	101	•	,	101
Total	1,247	•	3,576	26	•	4,849	•	٠	344	-	,	34
4. Nyatsime River S/B												
Chitungwiza Municipality	808	7,806	32,522	3,869	10,740	41,137	•		,	•	,	
Manyame Rural	•	•	•	•	•	•	•		1,052	,	,	1,052
Marondera Rural	•	•	1	•	•	ě	•	•	772		·	772
Total	809	7,806	32,522	3,869	10,740	41,137	٠		1,824	,	'	1,824
5. Mukuvisi River S/B												
Harare City	13,988	20.586	47.476	78,452	41,762	202,264	15,547	•	-		325	15.872
Epworth Local Board	•	•	1.849	92	•	1,942			ı	,	·	١
Harare Rural	1	1	•	•	•	,		•	190	-	•	<u>8</u>
Zvimba Rural	ę.	,		•	,		,	1	4	·		4
Total	13,988	20,586	49,325	78,545	41,762	204.206	15.547	,	234	•	325	16,106

Table 10.2.6 Projected Wastewater Quantity by Sewered/Unsewered Area by Sub-basin (Scenario 1, 2015)

				Gener	ated/Discha	Generated/Discharged Wastewater Ouanity (m3/day)	water Oua	nity (m3/d	av)			
Sub-basin/District			Sewere	Sewered Area		eza.			Unsewer	Unsewered Area		
		Domestic		Com. &	Indust-	Second		Domestic		Com. &	Indust-	
	MO.	Medium	High	Inst.	rial	Total	Low	Medium	High	Imst.	rial	Total
6. Manyame River (D.stream) S/B												
Harare City		4,328	31.906	•	39,533	75.767	,		•	•	•	1
Chitungwiza Municipality			4,816	•	2,024	6,840	1	-	-		ı	•
Harare Rural		,	•	•	•	l I	•	•	287	•	•	287
Manyame Rural	٠		,	1	•	1	•	•	151	•	•	151
Total	١,	4,328	36.722	-	41,557	82.607	•	•	438	•		438
7. Marimba River S/B											-	
Harare City	18,957	22,561	58.028	19.613	11,392	130,551	•	•	•	•	•	,
Zvimba Rural		,			•	•	•	-	271	•	-	271
Total	18.957	22,561	58,028	19.613	11,392	130,551	,	•	271	•	•	271
3. Lake Chivero S/B						A.55594						
Harare City	•	•	13,626	,	•	13,636		,	•	•	•	
Chegutu Rural		-	-	-	•	,		•	143	•	•	143
Manyame Rural	,	-	•		•	,		•	209	•	•	209
Zvimba Rural	•	•			•		•	•	480	•	•	480
Total	•	•	13,636	•	,	13,636	1		832	•	•	832
9. Muzunun River S/B						e de la composição de l						
Harare City	•	•	10,500	•	,	10,500	,	•	-	•	-	
Zvimba Rural	•	•	•	•	•	a acus	•	-	1,416	•	-	1.416
Total	,	,	10.500	•	1	10,500	1	,	1.416	•	,	1,416
10. Gwebi River S/B						-reGr						
Harare City	6.717	-	,	_		6,717	10,641	-	-	•	-	10,641
Mazowe Rural	•	•	•	•	•	1	•	•	1.284	•	•	1,284
Zvimba Rural		ı	•		ı			•	2,055	•	•	2,055
Total	6.717	1	•	1	1	6.717	10,641	1	3,339	•	,	13,980
11. Lake Manyame S/B						**************************************						
Norton Town	6,785	5,198	5.040	851	18.042	35.916	•	,		•	3,451	3,451
Chegutu Rural	,		1	1	•	,	٠	•	623	•	•	623
Zvimba Rural	·		•		•	-	•	•	1,266	•	•	1.266
Total	6,785	5,198	5,040	851	18,042	35,916	•	•	1,889	•	3,451	5,340
Grand Total	52,072	62,992	229,504	103.679	153,767	587,405	26,188	-	14,565	•	3.776	44,529

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

				General	ed/Dischar	Generated/Discharged Wastewater Quanity (m3/day)	vater Qua	oity (m3/d	ay)			
Sub-basin/District			Sewered Area	Area		10,00			Unsewered Area	ed Area		
		Domestic		San. &	Indust-	e march		Domestic		Com. &	Indust-	
	Low	Medium	High	Inst.	rial	Total	wo.	Medium	High	Inst.	rial	Total
1 Manyame River (Uostream) S/B	1					to Tac						
Goromonzi Rural				, '	,		-	,	2,058		•	2.058
Harare Rural	,	,	,	 -	ļ	1	•	•	6	•	•	٥
Manyame Rural					,	,	١.	•	186			186
Total	•	•	,	•	,	,		•	2,254	,	,	2,254
2. Ruwa River S/B						72.0						
Harare City	,		7,327	-	,	7,327	•	•		'	•	•
Ruwa Local Board	49	2	115	8	3.545	3,720	ı	•	·	•	,	,
Epworth Local Board		-	3,639	182	•	3.821	٠	•	,	,		
Goromonzi Rural		•	•	-	•		•	•	488	,		458
Harare Rural	,	,	•	•		,	•	•	324		•	324
Total	65	C.3	11,082	190	3,545	14,868	•	-	813	1	•	813
3. Seke & Harava Dams S/B	فراوور					5						
Harare City	183		417	•		009	٠	,		•	•	,
Epworth Local Board		-	393	20	,	413	i i	•	1	•	,	
Goromonzi Rural	,	-	•	٠	•			•	6	٠	•	$^{\circ}$
Harare Rural	,	•	,	1	,	,	•	1	179	,		179
Manyame Rural			,	٠	,	1	,	•	78		•	78
Total	183		810	20	Ţ	1,013		-	266	•	·	566
4. Nyatsime River S/B												_ _ _
Chitungwiza Municipality		4,498	32,842	1.910	1,401	37,341	•	•		'	٠	1
Manyame Rural	_	-	•	•	-	-	•		811	•		811
Marondera Rural	-	•	•		•	•	•		595		•	595
Total	,	4,498	32,842	1.910	1,401	37,341	•	•	1,406	,	·	1.408
5. Mukuvisi River S/B	reprint.			1		2022						
Harare City	13,370	18,829	43,716	49,169	37.932	163,017	11.449	-	·		325	11.774
Epworth Local Board	1		1,426	71	•	1,498	-	٠	- - -			.
Harare Rural	1	,	•	•	•	•	٠	1	147	_	,	147
Zvimba Rural		•	•	-	•	•		,	33	,		3.
Total	13.370	18,829	45,143	49,240	37.932	164,514	11,449		180		325	11,955

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

				Genera	ated/Discha	Generated/Discharged Wastewater Quanity (m3/day)	water Oua	unity (m3/c	lay)			
Sub-basin/District			Sewered Area	d Area					Unsewer	Unsewered Area		
		Domestic		Com. &	Indust-	1E-34		Domestic		Com. &	Indust-	
	Low	Mcdium	High	Inst.	ria!	Total	γογ	Medium	High	lnst.	rial	Total
6. Manyame River (D.stream) S/B												
Harare City	,	319	541	٠	39.533	40,393		,		,	•	,
Chitungwiza Municipality	•	•	9,205	•		9,205	,	-	•			
Harare Rural	•			-	•		•	-]	221	,		221
Manyame Rural	•				•	•	•	1	117	<u> </u>		117
Total		319	9,747		39,533	49,598	1	•	338		,	338
7. Marimba River S/B					-							
Harare City	12,623	16,720	36.291	12,292	11,392	89,317	ı	1	•	•		
Zvimba Rural	•	•	•	,	•	•	4	,	200	,	,	88
Total	12,623	16,720	36,291	12,292	11,392	89,317	•	•	209	,		209
8. Lake Chivero S/B												
Harare City	-	-	-	•	•	,		1	,	,		
Chegutu Rurai	-	-	-	-			•	-	110			110
Manyame Rural	,	-	,	•	•	t	•	-	161	,		161
Zvimba Rural	•	•	1	•	•	•	•	•	371			371
Total	•	•	•	•	,	*******	1	-	642			642
9. Muzururu River S/B												
Harare City		-	•	,	•		1	•				,
Zvimba Rural	•	•	•	•	1	,	4	-	1,092	,		1,092
Total	•	•	4		•	1	¢		1,092			1.092
10. Gwebi River S/B						34.37.3						
Harare City	4,116	,	•	ı	,	4,116	28,690	-	•		١	28,690
Mazowe Rural	•	,	•	•	•	•	•	•	066	,	•	8
Zvimba Rural		•	•	•	•	•	4		1,585	•	,	1.585
Total	4,116	•	•	•	•	4,116	28,690	-	2,575	,		31,265
11. Lake Manyame S/B						chéss						
Norton Town	468	461	1,539	123	3,386	5.978		•	•	,	3,451	3,451
Chegutu Rural	•	-	,	•	•	-	•	-	480	ı		480
Zvimba Rural	•	•	4	•	•	ı	•	-	926	,	,	976
Total	468	461	1,539	123	3,386	5,978	•	-	1,457	٠	3,451	4,908
Grand Total	30,809	40,829	137.454	63.776	97,189	366,745	40,139	-	11,232	•	3,776	55.147
	-	-			Í							

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)

				Genetral	ed/Dischar	Generated/Discharged Wastewater Ougnity (m3/day)	vater Oua	oity (m3/d	ay)			
Sub-basin/District			Sewered Area	1 Arca					Unsewered Area	ed Area		
		Domestic		Son. &	Indust-	-		Domestic		இய். &	-tsnpur	
-	*9	Medium	High	Inst.	rial	Total	Low	Medium	High	Inst.	rial	Total
1 Manyame River (Unstream) S/B												
Goromonzi Rural	,	١.	ļ .		 		١.	•	2,669	•	•	2,669
Harare Rural		,			١.	,	١.	,	12	•	•	12
Manyame Rural		,			,		١.	,	242	•	•	242
Total	,	•	,	,	,	,	-	•	2,923	1	•	2,923
2. Ruwa River S/B												
Harare City	٠	,	10,215		25,642	35.857	ı	•	•	-	•	•
Ruwa Local Board	84	8	142	11	4,632	4,867	•	•	•	,	١	•
Epworth Local Board			4,719	236	,	4,955	•	-	-	•	٠	,
Goromonzi Rural		,	•	•	•	•	-	•	633	'	,	633
Harare Rural	•	•	,		•	in in the	,	-	421	•	•	421
Total	48	34	15,076	247	30,274	45,679	•	-	1,054	•		1.054
3. Seke & Harava Dams S/B												
Harare City	236	·	581	•	•	818		,	,	١	•	•
Epworth Local Board	٠	•	510	78	-	536	•	,	,	•	,	١
Goromonzi Rural	,		•	ı	•	1		4	12	·	٠	12
Harare Rural	,				•		,	1	232	•	٠	232
Manyame Rural			,	,	,	-		•	101	٠		101
Total	236	•	1,091	26		1.353			344		-	¥
4. Nvatsime River S/B												
Chitungwiza Municipality	1,217	11,740	48,912	3,142	10,740	61,868			1	٠	-	
Manyame Rural	,			,	-	,		,	1,052	-\		1,052
Marondera Rural		,	E	-	•	•	•	•	772	٠		112
Total	1,217	11.740	48,912	3,142	10,740	61,868	•	,	1.824	٠	•	1,824
5. Mukuvisi River S/B												
Harare City	16,913	22,746	61,576	89.550	41,762	232,546	14,821	_	•	•	325	15,146
Epworth Local Board	١.		1,849	26	•	1,942	-	•	•	'	,	١
Harare Rural		•		•	•	•		,	190	1	'	190
Zvimba Rural	,	,	•	-	-	-	•	•	4	,		\$
Total	16,913	22,746	63,425	89.642	41,762	234,488	14,821	, 	234		325	15,380

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

G to				Gener	ated/Discha	Generated/Discharged Wastewater Ouanity (m3/day)	water Oua	mity (m3/c	lay)			
Sub-basin/District			Sewere	Sewered Area					Unsewe	Unsewered Area		
e e e e e e e e e e e e e e e e e e e		Domestic		Com. &	Indust-			Domestic		Сот. &	Indust-	
	wo.	Medium	High	Inst.	rial	Total	Low	Medium	High	Inst.	rial	Total
6. Manyame River (D.stream) S/B									1			
Harare City		116	854	•	39,533	40,502	-	-	•	-	-	•
Chitungwiza Municipality		•	14.277	-	2,024	16,301			٠	,	•	
Harare Rural		•	•	•	•	,	-	- 1	287	-	-	287
Manyame Rural		-	•	•	•	•	ı	-	151	•	,	151
Total	,	116	15,130	•	41,557	56,803	,	•	438	-		438
7. Marimba River S/B										}		
Harare City	14,968	21,553	50,928	22,387	11,392	121,228		•	-		•	
Zvimba Rural	1	•	•	•	•		•	•	271	•	•	271
Total	14,968	21.553	\$26,05	22,387	11,392	121,228	•	•	271	•	•	271
8. Lake Chivero S/B										-		
Harare City	1	•	•	•	*	,	٠	•	,	•	•	•
Chegutu Rural	,	,		-	,)	1	-	143	•	•	143
Manyame Rural		•	•	•	•	•	•	-	209		•	209
Zwimba Rural		•	-			•	•	•	480	•	-	480
Total	•	,	,		•		•	-	832	•	•	832
9. Muzururu River S/B												
Harare City		•	•	•	,	,	1	- [•	,	
Zvimba Rural	-	,	-	-	_	•	•		1,416	•	•	1,416
Total	•	•	•	-	•	,		-	1,416	-	_	1,416
10. Gwebi River S/B												
Harare City	5,329	•	•	-	•	5,329	37,139	•	1	1	,	37,139
Mazowe Rural	•	,	٠	4	1	,		-	1,284	•	•	1,284
Zvimba Rural	•	,	•	•	1	•	•	•	2,055	F.	•	2,055
Total	5,329	•	•	·	٠	5.329	37,139		3,339	•		40,479
11. Lake Manyame S/B												
Norton Town	1,084	830	1,789	185	18.042	21,930	•	-	•	•	3,451	3.451
Chegutu Rural	ı		,	•	•	•		•	623	,	•	623
Zvimba Rural	•	•	•	•	•	1	٠	1	1,266	1	,	1.266
Total	1,084	830	1,789	185	18,042	21,930	,	-	1.889	1	3,451	5.340
Grand Total	39,794	57.018	196,351	115,629	153,767	548,677	51,961	•	14,565		3,776	70,302
N				000	,	ľ						

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-basia/District Manyame River (Uostream) S/B					5	Constant Constant)							
1. Manyamo River (Upstream) S/B			Sewered Area	d Area					Unsewered	d Area			Sewered Area)		ຸລັ	Unsewered Area	3 Area		
1. Manyame River (Upstream) S/B	wo.	Med.	High	C & 1	Ind.	Total	Low	Med	High C	1 3	Ind.	Total	STW Dischrge/Imigation	Total	NO.	Med. H	High C	C.& I Ind.		Total
						-									1	+	\dashv	-	4	1
Goromonzi Rutal		i -	,	<u> </u>		,	•		1,393	-		1,393	1	,	-	-	E	-	\dashv	Ξ
Harane Rura!	,		•	·	•	•			ç	•	•	¢	,	-		-	-	-	-	7
Manuame Rural		۱,			١.		•	-	126		-	126	•		•		9	-	-	위
Total				 -	•	•			1,526	- .	•	1,526		,	•	-	អ		-	ដ
2. Riwa River S/B									-		-				-	1	-	-	-	Ì
Home City	,		4.655	١.	ļ .	4,655		ļ- ·		- <u> </u>	-		Donnybrook (WSP)	32	-	-			-	٠,
Ruwa Local Board	§,	38	2,574	05.1	2,543	5,830	,	-	<u> </u>	-	•	•	Ruwa (WSP)	5					-	.
Foworth Local Board			2,463	k	-	2,537	,		,		 	•	Harare Past (BNR)	81	+	-	-	-}	-	٠ĺ
Goromonzi Rural				,			•	•	331	-		331	•	,	-	-	ક્ષ			ន
Marace Rucal			,	•			<u> </u>	 	220		•	220	1	,	•	-	×			≃
Total	38	85.	6,693	333	2,543	13,072	,		920		,	550		275	•	,	4	'	-	4
3. Seke & Harava Dams S/B									L			-			1	1	+	1	-	1
Harare City	š		1.87			2,125	<u> </u>			-	۰	•	To Harare South			1	-		-	٠
Enworth Local Board			566	æ		274			 -		•	•	To Harare East		-	-	-		-	٠l
Goromonzi Rural	•	١.	•		•	,	•	- •	9	•	•	4			-	<u>, </u>	-	-	-	٦
Harare Rural					•			•	121		 ا	121	•	-	-	-	핅			위
Manyame Rural		·			,	,	•	•	52	•	•	52	•	,	-	1	3			4
Total	198	-	2,1%	8	•	2.399	•	-	180		,	180		·	•	·	7	,	-	7
4. Nvatsime River S/B	J			-								-			1		1		1	
Chitungwiza Municipality	,	202	15,646	819	1,641	18,815	-		-	•	•	,	Zengeza (BNR)	310	-	1	1	-	1	٠
Manyame Rural		•	•		•	-	•	-	549	•	·	\$40	•		-	-	\$	-	-	4
Marondera Rural	•	•	•	•	•			-	403	•	'	403	-	•	·	1	2	1	-	띪
Total		%	15,646	819	1,641	18,815			556	•	•	952		210	•	-	%	-		3
5. Mukrvisi River S/B		{														1	1	+	+	
Harare City	2,123	4,607	27,448	25,095	42,715	101,988	2,468	•	·		346	2,874	Firle (BNR)	4,357	•	-	+	-	83	8,
Epworth Local Board	-	,	596	દ		904	·	-		-	-	-	To Harare East	·		-	-	1	+	ı
Harare Rural	•	•	•	•	•	•	ì		8	-	-	8	*			1	z	-	+	٣
Zvimba Rural		•		•	•	-	1	•	·	-	<u> </u>	1		·	<u>.</u>	-	1	1	+	\cdot
Total	2,123	4,607	28,414	25.123	42,715	102,982	2,468	-	8		366	2.933		4,357		-	×	-	۶,	8
6. Manyame River (D. stream) S/B																	1	+	+	
Harare City		•	•		44,516	44,516			8	•		8	Harare South (BNR)	2,332	-		~		_	*
Chitungwiza Municipality		٠	•	•	•	•	•	•	33			IJ	to Zengeza STW	•	,	•	ć,	-	-	£ \$
Harare Rural	2,123	4,607	28,414	-		35,144	2,468		13		-	2,590					S	7	+	5
Manyame Rural		•	•	-	•	•		•	ደ	_	•	70	•			-	3	1	-	٦
Total	2.123	4,607	28,414	<u> </u>	44,516	79,660	2,468	•	33	•		2.791		2,332	•	-	36			ឥ

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

					اً ا	Concessed BOD	POD (voldov)							Constituted BOD Anderson	4 200	barbana)			
Sub-basin/District			Scavo	Sewered Area					Unsewe	Unsewered Area			Sewered Area		3	12	Unsewered Area	Area	
	Low	Med.	High	C&1	[uq	Total	NO.	Med.	High	1 % C	Ind.	Total	STW Dischree/Irrigation	Total	Low	Med.	High C	C&I Ind.	Total
7. Manimba River S/B																			
Harare City	3,696	4,456	31 377	6,274	12,826	57,624		-	-	- -	,		Crowhorough (BNR, TF)	2,391			- ,	•	
Zvimba Rural	•	•							142	-		142		,	-		11	Ŀ	-
Total	2,696	4,456	31,372	6,274	12,826	57,624			142	-		142		2,391	-		H	 - 	F
8. Lake Chivero S/B										<u> </u>	<u> </u>						_		_
Harare City	,	٠	7,128	-		7,128				<u> </u>		,	First STW (Imigation farm)	176		,	-	· 	•
Chegutu Rural	-		•	•	•	٠	٠	,	7.5	-	-	75	•				v	· 	£
Manyame Rural	•	,		•			-	-	601	-	•	100	•	•		•	٥	-	
Zvímba Rural	'	•				•	,	-	251		•	351		•		•	92	-	ន
Total		ı	7,128			7,128		-	434	- - 	,	434		176		-	35	_	35
9. Muzunun River S/8											•					-	 		_
Harare City	,		6,600			9,600	,	,	•	-		Ī,	,	i,	 -	-	-	-	
Zvimba Rura		•		•	•	•	•	•	556	-		739	1	,			30	,	φ.
Total	,	,	6,600	1		009'9	•	,	739	•	-	739		,	•		L	<u>.</u>	28
10. Gwebi River S/B															-		-	-	
Harare City	029	•	,	•	•	629	1,459	•	•	-	•	1,459	Marlborough (WSP)	5		- -	-		
Mazowe Rural	,	ı		١	•		•		670	-	-	670	•			-	54	ŀ	3.
Zvimba Rural	,	•	•	•	•		·	-	1,073	-		1,00,1	•	•	-	-	£		*
Total	629	•	•	,	•	629	1.459		1,743	•		3,202		3	-	 	139	·	139
111. Lake Manyame S/B										 - 		мтег			-	-		_	_
Norton Town	323	448	2,039	141	5,891	8,843	•	-	•		7,850	7,850	Norton (TF)	71			-	£29	628
Chegutu Rural	•	·		•	•		•	•	325		•	325	-			-	82	- -	%
Zvimba Rural	'	ا.	•	'	·		•	,	[99]		•	661	•	,	-	•	53	Ŀ	83
Total	323	448	2,039	141	5,891	8,843	•		986	- -	7,850	8,836		71	-		ļ	\$29	ľ
Grand Total	8.658	14,866	8,658 14,866 131,500		32,597 110,132 297	297,752	6.395	•	2676	-	8,216	22,286		9,817	-		614	657	Ľ

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.

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

for unsewered area: for imgation reuse (STW): 8% WSP 90% ĽŠ 100% BNR 95% 800 4. Pollution load reduction efficiency at STWs.

ક

Low & Medium;

High; 8%

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

					٥	Consisted BOD	SOD (res/day)					-	\ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \	Concentrated BOD (kg/day)	GOR P	ky/day)) to .
To the second of			Sewer	Sewered Area					Unsewered Area	d Area		_	Sewered Area	e.v.			Unsewered Area	d Area		
	3	Med.	High	C&1	Ind.	Total	, Oor	Med.	High (C&1 1	Ind.	Tota!	STW Dischree/Imgation	Total	Por	Kel	YES HES	CRI	Inc.	Total
Manyame River (Upstream) S/B	<u> </u>							H		-						-	1	-	+	Ī
Goromonzi Rural			•		•	•	•	·	1,678	•		1,678	•		,	- [4	-	+	Ż.
Harare Rural		•	•	•	-	•	•		×	•	•	80	•	·	-	•	r-1	-	-	-
Manyathe Rural	,	,	,	•	•	•		-	152			152	•	·	-	-	12	 •	-	12
Total			•	-	•		•	H	1.837		-	1.837			-	-	<u>.</u>	-		147
Ruwa River S/B								-				rate.'*;				-		-	-	Ī
Hame City			6,732		25,877	32,609		,	- 	,		•	Donnybrook (WSP)	\$4	ŀ	-	-	-	-	7
Ruwa Local Board	266	563	2,970	205	3,322	7,626		-	•	-	-	p:	Ruwa (WSP)	61	4	-	·	-	-	-
Epworth Local Board	,		996'2		_	3,063	,	•	•		•	me-	Harare East (BNR)	1,524	<u>-</u>	·	-		-	-
Goromongi Rural					-		-	-	398	•		398	ij		·		32	-	-	8
Harare Rural	,	[.					•	-	364	<u></u>	-	264	•	·	•	٠,	3	-	_	53
Total	\$88	282	12,668	301	29,199	43,298			662	H		662		1.638	·		S	-	-	23
Seke & Harava Dams S/B										_								-	-	٦
Harare City	198	-	1,927	•		2,125	•	-	·	•	•	-	To Harare South	•	7	+	,	1		Ī
Epworth Local Board		,	126	10	-	331		-	•	1		•	To Harare East	·	•	-	'	1	-	Ī
Goromonzi Rurai		,		-	-		1	-	8	_	•	×	•	·	·	'		-	-	-
Harare Rural		•	•	•	•	•			146	•	-	146	•		-	•	12			12
Manyame Rural			٠	_	-				63	-		63		١	·	'	~	-	-	'n
Total	198	[,	2,248	01 j	-	2,456		•	216	_		216		•	,	1	12		-	7.
4. Nvatsime River S/B										<u></u>	L	an.				-		-		Ī
Chitongwiza Municipality	123	1,747	20,442	1,267	12,585	36,170	,		,			ļ.,	Zengeza (BNR)	700	,			-	-	۱
Manyame Rural		 	L	_			١		199	-	-	198		·		•	53	-	┪	ß
Marondera Rural	•		•	•	•	•	•	•	4KS	_	,	485			·	·	8		-	8
Total	128	1,747	20,442	1.267	12,585	36,170	•	•	1,146	-	-	1,146		700	,	-	S	- -	-	8
5. Mukuvisi River S/B																		-	1	T
Harage City	2,220	4,607	29,842	35,581	47,026	119,277	2,468	•	•	•	366	2,874	Fire (BNR)	5,327	·	·	1	•	የ	۶
Epworth Local Board			1,163	æ	•	1,200		·	•			-	To Harare East		i	†	7	~ 	+	
Harare Rural		٠	•	•	•	•	•	·	120		•	120	1	-	·	-	2	7	 	ğ
Zvimba Rural		,			•	•	,		22	•	•	£	•	-	,	·ĺ	7		-	63
Total	2.20	4,607	31,004	35,619	47,026	120,477	2,468	•	147	•	366	2,981		5,327		·	12		৪	4
6. Manyame River (D.stream) S/B							-0									1	1	-	1	-
Harare City	-	696	20,055	·	44,516	65,540				,		-	Harare South (BNR)	3383	·	•	·		-	•
Chirungwiza Municipality		'	3,027		2,371	5,398	-		'	-	•	·	to Zeogeza STW		-	·	1	+	+	Ť
Herar Rural					•	٠	•		38	-	•	350	D			·	77	-	-	4
Manyame Rura	,	•	•	•	•		1		ጵ	•	•	\$	•	.		•	30	1	-	~
Total	•	696	23,082	•	46,887	70,938	٠	٠	276	•		276		3,383		•	Ħ	-	-	ន
			1																	

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

					1	OF Parents	Charleton)					~~		Concentrated ROD (keylday)	7 008 5	(Verlay)				
Sub-basin/Dustrici			Sewo.	Sewered Area					Unsewered Area	2d Area		-	Sewered Area				Unsewered Area	A Age		Ī
	J. S.	Med.	High	C&1	Ind.	Total	Low	Med.	High	C & 1	Ind.	Total	STW Dischree/Irrigation	Total	Š	Med.	High	1 3 3 2	Ind. To	Total
7. Marimba River S/B										-				anist Turk		-	-	_		
Harare City	3,009	5,049	36,475	568'8	12,726	66,254	•		•	•	•	,	Crowborough (RNR, TF)	2,XA2	•	•	•		_	Ţ -
Zvimba Rural			,			٠	٠	•	121	•		171	•	·	•	•	14			7.
Total	3,009	5,049	36,475	8.895	12,826	66,254	,	•	171	•	•	171		2,862	•	•	14			7
N. Lake Chivero S/B	-are																	- -		
Harare City			172,8		•	172,X		_			•		Firle STW (Imgation farm)	171	•	-	•			,
Cheguta Rural		•							8	•	•	8		•	•	-	7	-		F-
Manyame Rural		•	-	-		,			131	•	•	133	-	•	•	•	0:	•		0
Zvimba Rural		•	•		•		•	- 1	302	•	•	302	•	,	•	•	24	•		7,
Total			8,571			8.571	٠	- 1	523	•	•	125		171	•	•	42	•		ij
9. Muzururu River S/R								į								-				
Harare City	-	•	000'9			6,600		•	•	•	•	•		•	,	•	•	•		·
Zvimba Rural		-	•	•		•		•	860		•	890	•		•	,	77			۲
Total	١	•	9,600		•	6.600		•	890	,	-	890		-	•		11			7
10. Gwebi River S/B								+				•				-	-			
Harare City	1,066	-		-	1	1,066	1,689	•			1	1,689	Maethorough (WSP)	0	•	•	•	•	_	
Mazowe Rural	٠	•	•	•	•	•	•	•	X07	,	•	807	•	•	,	•	\$	 '		Ş
Zvimba Rura!	1	•	٠	,	•	٠	•	-	1,292	•	•	1.292		•	•	•	103		_	103
Total	1.066	•		-	•	1,066	1,689		2,099	,	•	3.788		6	-	•	168	•	•	35
11. Lake Manyame S/R																				
Norton Town	1,077	1,163	3,168	270	35,349	41,028	•	<u> </u>	-		7,850	7,850	Norton (TF)	328	-	-			878	ş
Chegutu Rural	1		•	•	•			•	391	-	-	391	•	•	•		31			31
Zvimba Rural		•	•	•	•	•	•	•	796	•		38	•	•	•	•	3	•		£
Total	1.077	1,163	3,168	270	35,349	41.028	-	-	1.187	,	7,850	9.037		328	-		95	•	62x	723
Grand Total	8.265	14.098	144,259	46,364	183,872	196.859	4,157	•	9.155	•	8,216	21.528		14.182		-	772	•	1 259	1,390
1	and bear	hase show	in Carrie		2 (1000)	to be and as about a faction in Common 1.9.2 Aprelan Common Description	-												Į	

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. Cooccentration ratios are; for direct discharge (STW); 11

4. Pollution load reduction efficiency at STWs:

for impation reuse (STW): WSP 90% F 8 100% BNR 95% BOD

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

% %

8

(3)

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

I

													Concentra	CO Page	(veb/oil) COD balestuscae	_			Γ
			,		3	Generated COD ((Kg/day)					Sewand Ama		3		Unsewered Area	A Area		<u> </u>
Sub-basin/District			Sewered Area	25.	Ī		ŀ	ļ	T CWCICO.	1	ł	╬		١.	Ĺ	0 40.5		10.0	12.51
	Nor	Med.	High	C&1	Ind.	Total	Tow No.	Mcd.	High I C & I	k I	Total	STW Dischrec/Imgahon	lolai		, Wed	usin.	1 2	╁	
1. Manyame River (Upstream) S/B							_		-	-	_				+	+	+	+	Ī
Goromonzi Rural	'		-		-	1	•	,,	2,787		2,7×7	7	•		+	žį	$\frac{1}{1}$	+	ī
Harare Rural			•			•	•	,	13	•	-	13	•	·	-	-	-	+	-
Manual Dura				,				<u> </u>	252		252	2		٠	-	20	-	-	ន
Total							,		3,052	.	3,052	2	•	1	•	24.	-	-	4
Course Green CAR						-	 -	 	_		 					-	-	-	-
Months Office			9.110			9,310	<u>.</u>	<u> </u> .	- -		 -	Doenybrook (WSP)	112	1		-	-		1
Rings Local Board	1.133	1,4	L	318	2,077	15,752	 	_ -	<u>'</u> .		_	Ruwa (WSP)	189					-	·
Foundth Local Board	,	,	L	<u> </u>		5.074		- -	- -	 - -	-	Harare East (BNR)	761	,	-	-	-	-	-
Communic Rural	,							-		 -	(%		k			83	-		£
Comment of the Commen						.	,	 -	439	 - -	439	6.	-		-	3.5	 •	-	35
Total	1.133	76	19,385	\$94	4006	30,136	<u> </u>	 - 	L	,	-	0.	1,062			38	-		3 <u>2</u>
1 Seke & Haraya Dams S/B			Ļ_					_	-						<u>-</u>	-	1	+	1
Harre Civ	385		3,854		, -	4,250		L-	L			To Harare South				-	-	+	1
Emorth Local Board	,		533	16		64.	•				_	To Harare East	'			-	-	+	1
Commonti Rural				<u> </u>				 .	ا در	 - .		13	,	,		-	-	-	-
Hararr Rural		ŀ	ŀ	Ŀ		•	•	 •	242	-		242	•	,	•	٥,	-	+	2
Manual Press	1	Į,	ŀ					- -	105		ř		٠	-	,	×	-	٠	x
Total	38	ŀ	4.387	16	ŀ	4.799		 -	359	 - -		359	•		,	8		-	£,
A Nyatsime Siver S/B							ľ	-	_							-	-	1	Ī
Chinnowiza Municipality		1,417	31.293	1.638	3,906	38.257		- .	-			Zengeza (BNR)	856			-	-	1	·
Manyame Rura			1	l_	<u> </u>			 	1,008		1,098	8%				· SE	-	-	ş
Mamodera Rural			١.					 ,	808	_	æ	806	٠	,	-	ž	-	-	£
Total		1.417	31,293	1,638	3,909	38.257	,	-	1,904		1.9	1.904	856		<u> </u>	152	+	-	35
5. Mukuvisi River S/B															†	+	+	-	Ī
Hame City	4,245	\$126	54,897	50,189	118,956	237,502	4,936		-	1,4	1,020 5,956	_	20,108			1	-	Š	£
Epworth Local Roard	•		1,931	58	•	1,988					-	To Harare East	•		1	1	+	-	1
Harare Rural		·	•	_		•	•	-	81		-	199	<u> </u>	-	-	2	†	+	٥
Zvimha Rural			•	•	•	,	•	•	•	_			-	_	1	-	┪	+	-
Total	4.245	9,215	\$28.828	50,247	118,956	239,490	4.936	•	199	- 1.0	.020 6,154	54	30,10%		•	12	-	53	8
6. Manyame River (D.stream) S/B							•			_				_		1	+	+	
Hararr City	•		•	1	173,960	123,960	•	•	100	-		199 Harare South (BNR)	12,821		•	9.	,		ý
Chitungwiza Municipality						•	•	•	45	-		45 to Zengeza STW	·		·	v	,	-	4
Harace Rural	4,245	9,215	56,838			782,07	4,936	-	244		.5.	5,180			•	8	-	-	ຊ
Manyame Rural	٠								158	-	-	158	.	, -		22	-	†	£ .
Total	4,245	\$12.6	5 56.828		123.960 194.24	194,247	4,936	,	87	-		5.582	12,821	اِ		22	1	-	22

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

					3	Generated COD (kg/dav)	(ke/dav)							Concentra	o pair	Concentrated COD (kg/dav)	٤	ĺ		
Sub-basin/District			Sewer	Sewered Area					Unsewered Area	d Area		-	Sewered Area				Unsewered Area	ed Area		
	wo.	Mcd.	High	C&1	Ind.	Total	Low	Med.	High (C&1	.pq.	Tota!	STW Dischree/Imigation	Total	MOT	Med.	High C	130	nd.	Total
7 Marimba River S/B										_								<u> </u>		-3
Harare City	5,392	8,912	62,744	12,547	35,721	125,316	•	•	•		•	4	Crowbornugh (BNR, TF)	10,144	[·	•		-		<u>.</u>
Zvimba Rural			•	,	٠	,	4		283	-	•	283	•		-	-	23		ļ.,	ដ
Total	5,392	8.912	62,744	12.547	35.721	125,316	•	- -	283	 -	•	283		10,144	-	-	23	- -	 .	អ
N. Lake Chivero S/13																	-	-		
Haram City	-		14,256		-	14,256			,	•	•	•	Firle STW (Imigation farm)	809	•	<u></u>	•	-	-	٠
Chegutu Rural	,				•	•	•	•	149	•	•	140	•			-	21	,		12
Manyame Rural	-	-	•		-	•	٠	•	218		•	218	•	•	-	,	12			1.7
Zvimba Rural	•	•	•	1		4	•	-	205		•	205	•	•	•		0*	<u> </u>	-	5
Total			14,256			14,256	-		698	-	•	69%		809		-	69	_		69
9. Muzurun River S/B												Lister			 -	L	<u></u>			
Harare City		١	13,200	•	•	13,200		'	•			-	•	,			- -	-	-	
Zvimba Rural	•	•	•		•	,	-1	•	1,478	-	~	1,478		•	_	-	138		_	118
Total		•	13,200	•	•	13,200		•	1,478		•	1.478		-	[•	•	118	•	-	118
10. Gwebi River S/B								-							1				-	
Harare City	1,258	•	•	•	•	1,258	2,918	•	·	•		2,918	Marlborough (WSP)	15	-	•			•	,
Mazowe Rutal	1	•	•	,		,	•	-	1,341		-	ž	•	•		•	1001		•	100
Zvimba Rural	,			,			•	•	2,146	-		2,146	-			 •	172	_	-	122
Total	1,258	٠	•			1,258	2,918	•	3,4%		•	6,405		15	,		622			33
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	2,683
Chegutu Rural	•	,		1	•	,	•	•	650	•	•	650	•			•	52	•	•	25
Zvimba Rural	•	,	•	•	·		·	-	1,322		•	1,322	•			•	106			25
Total	647	897	4,079	281	23,940	29,843	•	•	1.972	•	33,539	35.511		358		-	158	_	2,683	2.84:
Grand Total	17,316	29,731	29,731 262,999		65,194 315,563 690,803	690,803	12,790	•	15,350		34,559	62,698		45,972	-	-	ĬĬ.	-	2,765	3,993
																			I	

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.

for unsewered area: 3. Concentration ratios are; for direct discharge (STW): 4. Pollution load reduction efficiency at STWs:

ŝ

Low & Medium;

High; 8%

for impartion retace (STW): 8% WSP 85% TF 85% 80.8 8.8 8.8 000

10-2-22



Table 10.2,12 Projected Domestic, Commercial & Institutional and Industrial Pollution Load by Sewered/Unsewered Area by Sub-basin - COD (Scenario 1, 2015)

					,	200	7.57					-		Concen	2	Concentrated COD (ke/day)	120			
			Janes.	Sowered Area	3	Ceneration COD (Application	A DOMAN		Unsewered Area	Arca		-	Sowered Area				Unsewered Area	d Area		
	wo.	Med.	High	C&1	Jud.	Total	Law	Med.	High	Ш	Ind.	Total	STW Dischree/Imigation	Total	Low	Med.	High (: %)	Trigit.	Total
1. Manyame River (Upstream) S/B												-							1	
Goromonzi Rutal				,			-	•	3,355	,	•	3,355		•	\cdot	-	38	-	-	38
Hacare Rural	,		•	·		•	•	,	15	•		15	•	•	,	•	1-4	-		
Manuame Rural				,				•	308	! 	_	Š		-	•		8	-		ጸ
Total	[.	[,		ļ.		•	3,675	-	-	3,675		-	٠	•	¥.	-	-	Š.
C Prove River S/R									-			-								
Harar Oiv			13,464	,	80,420	93,884	١.		•	-	 .		Donnybrook (WSP)	162	į	•		-	-	
Ruws Local Board	1,333	1,125	L	410	11,858		ا،	,		-			Ruwa (WSP)	246	·		-	┪	-	ï
Erworth Local Board	,	,		L		921'9	•	-	,	•	•		Haram Fast (BNR)	8,9%1	,	-	•	٠,	-	•
Gommonzi Rural					•	•		,	966	•		796	•		1	•	Ž	,	-	ž
Harare Rura	,	,		٠		•		•	526	_	•	529	•	•	·		4	-	٠,	63
Total	1,133	1,125	25,337	603	92.278	120.476	٠	·	1.325	•		1.325		9,368	·		ğ	-	,	Š
3. Seke & Harava Dams S/B									-	-							1		1	
Harare City	396	•	3,854	•	•	4,250		,	,	-			To Harare South		-	-	1	-	1	·
Epworth Local Board	•		643	21	'	299	1	•	•	•	,	1	To Harare East	·	·	•	<u> </u>	- 	+	1
Goromonzi Rural	,		,		4	•	•	•	15	•	•	15	•	,	·	•	-	-	-	-
Harare Rural		١.	٠		•	•	-	·	20.	•	•	162	ŧ	1	·	,	£3	-	•	ឧ
Manyame Rural	,			,		•		•	126		-	126	-		•	•	01	·	•	5
Total	960	٠	4,496	21		4,913		•	433	-	-	433			j	-	33	-	-	×.
4. Nvatsime River S/B																		7	1	Ī
Chitungwaza Municipality	2.57	3,494	40,885	2,534	29,963	77,133	٠	•		•	•	•	Zengeza (BNR)	1,987	•	 	-	-	-	·
Manyane Rural		-	•			٠		1	1.323		•	1,323			,	-	ğ	-	1	š
Marondera Rura	٠	•	•	,	•	•	•	•	026		•	020	1.	•	٠		×	•	-	×
Total	257	3.494	40,885	2.534	29,963	77,133	٠	•	2.293	•	•	2.293		1,987		·	183	•	-	183
15. Mukuvisi River S/B																		1	1	****
Harare City	4,441	9,215	59,684	71,162	130,949	275,450	4,936			-	1,020	5,956	Firte (BNR)	2,3%	ŀ		1	•	¥	£
Epworth Local Board		1	2,325	76	,	2,401	,	_	-	•	-	•	To Harare East		·	•	1	1	†	·Ī
Harare Rural	•	•	•	•	٠	•	,	·	239	•	•	239	•	-	·	1	2	-	+	2
Zvimba Rural	,		•		•	•			55	•	-	55	•	•	ì		7	 	•	4
Total	4.447	9.215	600,29	71.238	130,949	1277,851	4.936		294	•	1,020	6.250		24,380	·	·	75	•	<u>29</u>	105
6. Manyame River (D.stream) S/B			-									-4.51							1	
Harare City	,	1,937	40,110	•	123,960	166,008	٠			-		-	Harare South (BNR)	17,026			·	-	<u> </u>	1
Chitungwiza Municipality	٠		6,054	_	5,644	11,698		·		-	•	·	to Zengeza STW		١		-	-	-	Ī
Harare Rural	ا	•	•	·	·	•		_	361	-	-	<u>3</u>		١.	·	·	ຂ	-	1	81
Manyame Rural	•	٠	•			•	٠		180		•	<u>8</u>		,	,	·	2	1	+	<u>\$</u>
Total	,	1.937	46.165	•	129,604	177,706	•		551		-	551		17,026	·	-	\$		•	4

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	23. 25. 1		Low M	Unsow Med. High - 34 - 34 - 34 - 34 - 34 - 36 - 60 - 60	Unsewered Area High C & I 341 - 341 180 - 262 - 264 1,046 - 1,046	2 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	Total	Sawered Area STW Dischree/Irrigation	Total Low Med. 14	Low	Unsev Med. High	Unsewered Area	10d.	
Low Med, High 6,018 10,099 72,949 6,018 10,099 72,949 17,142		Total 142,578 - 142,578 17,142	┟╼┇╼┟═╁═╂═╏═╏═╏═╏═╂═╂═┪	2 1	हुन । । ।		Total	STW Dischrge/Irrigation		├		\vdash	Ind.	
6,018 10,099 72,949 6,018 10,099 72,949 72,949 72,949 72,949 72,949		142,578 - 142,578 17,142 - - 17,142	┟╌┼╌┼╌╢╌┼╌┤╌┤╌┤╌┤╌┤				. 2			_				Total
6,018 10,099 72,949 6,018 10,099 72,949 72,949 72,949 72,949 72,949 72,949		142,578 142,578 17,142	┠╌╂╼╂╼╂╼┦╼┦╼╂╼╂╼╂				. 2	1	-	-				
6,018 10,099 72,949	- - - - - - - - - - 	17,142	╒ ┼ ╸ ╏╸ ╏ ╶┨		 		\$	Crowborough (BNR, TF)	12,079)		-	- 1	[
6,018 10,099 72,949	 	17.142	┠╼╂╼┼═┤═┼═┼═┼		 				-			. 12		13
		17.142	┠╍┞╼┨╼╂╼╂╼╂		├ ─ ┤ ─┤─┤─┤─┤		341		12,079			. L	•	3
17,142		17,142		1								_	-	
13,200		17.142	 		├ ╌ ╿ ┈┦╌╂╌╂		-	Firld STW (Imgation farm)	585	-	•	٠	-	•
17.142		17,142	┝┼┼┼┼				180		•	-		14	•	14
17.142		17.142	┤┤ ┤		26.85		262		•	•		13	•	12
17.142		17,142	$\left - \right - \left - \right $		·		404		-		,	4.8	•	ş
13,200 13,200 		7					1,046		585			*		ž
2,132							-			-			1	
2,132		13,200		_		•	-	•	-	•		•	•	
2,132		,	•	. 1,7	. 7%0	•	1,7%0		•	<u>-</u>	_	142 .	•	142
	· [·	13,200	•	1.7	1,780	•	1,780		•	-		142	-	142
iral			-			_					-		-	
Mazowe Rural	-	2,132	3,378	_	•	-	3,378	Marlborough (WSP)	38		-			
				9,1	. 614	•	1,614	•	•	_	. 11	50	-	129
Zwimba Rural	•			2.5	2,584	•	2,584	-			. 20		•	200
Total 2,132		2,132	3,378	. 4.1	4.198	•	7,576		2.6		33	336	•	336
11. Lake Manyame S/B										-		,]	
Norton Town 2,154 2,327 6,336 541	541 147,1SR	158,515			•	33,539	33,539	Norton (TF)	1,902	•		,	2,683	2,483
-	-	-	-		- XX	•	783			_	,	- 63	•	ફ
Zvimba Rumi	. [.	•	•	. 1,5	1,592	•	1,592		•	_	12	123	•	13
Total 2,154 2,327 6,336 541	541 147.158	158,515		2.3	2,375	33,539	35,914		1.902			190	2,683	2,873
Grand Total 16,531 28,197 288,519 92,727	523.673	979'166	8,314	. 18,310	310 }	34,559	61,183		67,354	-	1,465		2,765	4. 051

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: BNR TF

| STW|: 100% for intigation reuse (STW|: BNR TF WSP COD 90% 85% 85%

High; 8% Low & Medium; 0%

for unsewered area:

88

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

					į	V.T. between	N Tradeur							Concentrated T-N (ke/day)	Z	ke/dav)				
Sub-basio/District			Sewered Area	d Area	3	200	7.00		Unsewered Area	d Arrea			Sewered Arca				Unsewe	Unsewered Area	اً ا	
	Nor	Med.	High	C&1	Ind.	Total	Yow	Med.	High	C&1	Înd.	Total	STW Dischree/Imgation	Total	WO.I	Mec.	High	C&1	Ind.	Total
1. Manyame River (Upotream) S/B								}-	-		\vdash									
Commonzi Rural		-	•			,	•	•	348	-	-	34%	B.			·	ð	٠,	i	ří
Harare Rural	•	,				,		•	Ci	-	•	2	•	-		·	٥	-		٦
Manyame Rural	•								32	<u>_</u>	<u></u>	32	1	,		•	۲	'	ij	۲.
Total	١,					,	,	•	381	•	•	181			٠	-	31	·	•	3
2. Ruwa River S/B												errec)								
Marare City	•	•	1,164	•	•	1,164			,	-	•		Donnybrook (WSP)	47	·	•	-	•	·	٠
Ruwa Local Board	147	10	544	079	057	1,291	-	ļ.,	 '	<u> </u>	-		Ruwa (WSP)	52	,	•	·	·	,	·
Spworth Local Board	,	١	616	18		634	1		,	,	1	,	Harare East (BNR)	061	·	·		-		
Commonzi Rucal	•		-	-	-				83	-	•	83	•		\cdot		7	,		7
Harare Rural		,							\$\$	- 	-	55	•	•		•	4	•		4
Total	147	10	2,423	Sk	450	3,089	١	•	138	-	,	138		288	ا	•	11	,	,	F
3. Seke & Harava Dams S/B								-												
Harare City	53		482	-	,	533	,	•	•	,	,		To Harare South	•	٠	•	·	,	•	
Spworth Local Board		•	67	61	۰	69	i	-	•	-	1	,	To Harace Fast	•	·	·	·	·	١	·
Goromonzi Rural	•		•	•				-	53	-	-	2	•		·	_	c	•	1	٥
Haraie Rural			-		_		ا	·	30	 -	-	30	•	•	·		63			Cè
Manyame Rural	•	•	•	•	•	•	•	•	13	•	1	13	•	•		,	1	•	-	
Total	15		848	2		209			4.5	•	 	45		•	·	·	4	·	$\cdot $	4
4. Nvatnime River S/B											-									
Chitungwiza Municipality	•	181	3,912	203	65	4,356	٠	,	5	•	•	•	Zengeza (BNR)	195	,	•		,	٠	,
Manyame Rural	•			·	·	•		·	137	-		137 }	•			·	7	'		Σ.
Merondera Rural				•	•			•	101	•	•	101	•	•	,	-	×	·	4	×
Total	-	181	3,912	205	\$6	4,356		•	238	•	•	238		195	•		2	·		19
5. Mukuvisi River S/B							-				-					ļ	_			
Harure City	552	1,176	6,862	6,311	1,301	16,202	642	•	•	•	11	653	Firle (BNR)	2,873	1	•	•	,		
Epworth Local Board	,		25	7	'	249	-	·	·	•	•	•	To Harare East	•	ر	٠	·	•	•	
Harare Rural		·		·	·	•	·		દ		4	25	4	•		١	Ć4	•	١	ч
Zvimba Rural	-	•	•	•	•	•		•	•	•			â	-	•	,	,	٠		·
Total	552	1.176	7,103	6,318	1,301	16,450	642	•	25	-	11	677		2,873	٠	·	63	'	-	6
6. Manyame River (D. stream) S/B																				
Harare City	•			·	1,355	1,355	•	•	ม		•	25	Harare South (BNR)	37x		·	7	,		(1)
Chitungwiza Municipality		,	,	•		•	•	•	9	•	•	9	to Zengeza STW	•	٠		٥	,	١	٥
Harare Rural	552	1,176	7,103	•	_	8,832	642	,	31	,	•	672	•		·	١	63	·		£1
Manyame Rural	200		\Box		-		·	·	20	-	'	92		-		<u>.</u>	53	_	·	۲2
Total	552	1.176	7.103		1.355	10,187	642		81	-	-	13		378		_	1			°

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

	•				5	CERCIAICO 1-14	(CENTRAL)							Concentrated 1-in (Kp/dav)	(dx) V-1 D	(400)			
Sub-basin/District	L.,		Sewer	Sewered Area					Unsewered Area	ed Area			Sewered Area	•			Unsewered Area	d Area	
	Low	Mcd.	High	C&I	Ind.	Total	I.ow	Med.	High	C&1	Ind.	Total	STW Dischree/Imgation	Total	Low	Med.	High C	CALL ING	1. Total
7. Marimba River S/B										-									-
Harare City	701	1,138	7,843	1,57X	380	11,648	•	,		•		,	Crowborough (BNR, TF)	2,077	,	-		Ľ L	
Zvimba Rural		•		,		,	, -	•	35	,		35	•	•	٠		۳		-
Total	107	1,138	7.843	1.578	68£	11,648	•	•	35	•	•	35		2.077	٠	1	3	_	
8. Lake Chivero S/B	_									+								_	
Harare City			1,7%2	•	•	1,782	•	•	,	•	•		Firle STW (Imgution farm)	203	-	•			_
Chegutu Rural					•		•	•	19	-	•	101	E.	-	-	-	-		
Manyame Rural		٠	•	•			٠	•	22	•	•	22			,		۲2	 -	 -
Zvimba Rural				-	-	•		٠	63	-	•	છ	•		•	-	٧		_
Total	,	•	1.782	•		1,7%2	ı	•	109	•	-	100		203	-	-	6	_	
9. Muzururu River S/B												- artis		4				_	
Haram City		-	1,650	•	•	059'		•	-	-	•		P				_		
Zvimba Rural		•			•	,	•	•	185	-	,	185	•		-		15	_	_
Total			1,650	•	•	1,650			185	-	•	185			•		15		_
10. Cwebi River S/B																-	_		
Harare City	163	•	•	•	•	163	379	•	٠	•	•	379	Marlborough (WSP)	7	-	_		_	L
Mazowe Rural			•	•	•	•		•	38	•	•	168	•		-	•	13		_
Zvimba Rural	-	•		-	-			-	268	-	-	268			_	<u>.</u>	21	_	
Total	163		•	-	•	163	379	•	436		-	815		1	,	-	35	_	8
11. Lake Manyame S/8	-2100									1	_						┝	-	
Norton Town	84	114	510	35	188	256	•	•	•	٠,	131	131	Norton (TF)	\$25	-		 .		01
Cheguto Roral		•	•	•	•		•	•	81	-	•	81	•	٠		,	7	_ - 	_
Zvimba Rural	,	,		•			•	•	165	•	•	165	•	-	•	-	13	<u> </u>	-
Total	*	114	510	35	188	226	•	٠	247	•	131	378		ZS	•	•	ន	 	10
Grand Total	2.251	3.705	528 CL	- 45 ×	1 742	60 X CO	1 663	-	910	-	442	3-77.		4000	-	-	63	Ļ.	37.

for unsewered area:

for irrigation reuse (STW): 8% TF WSP 30% 50% Population in tural districts is categorised to high-density area.
 Concentration ratios are; for direct discharge (STW): 100%
 Pollution load reduction efficiency at STWs.

BNR 80% Ļ

Š

Low & Medium;

8,83

High;

10-2-26

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

																			ſ
					Cemerated	ted T.N (kg/day)	(/day)					alera e	Concentrated T-N (kg/day)	ž Į	3		l	l	Ĩ
Sub-basin/District			Sewered Area	1 Area				-	Unsewered Area	Area		Sewered Area				Unsewe	Unsewered Area	Ì	Ī
	Low	Med.	High	C&1	Ind.	Total	[wo.]	Med. H	High C.&.I	t I Ind.	Total	1 STW Dischree/Irrigation	Total	Low	Med.	£	C& 1	jud	Total
1. Manyame River (Upstream) S/B									_	_							_		See .
Goromonzi Rural	•	•		1	•	,	•	 ·	419	•	4	419	•	j		25	•	-	Ä
Harare Rural		•	-	•	•	-	•	•	2 -	•		2	,	j	-	٥	•	1	٥
Manyame Rural		•			•	,			38	-		38		1		3	•	•	
Total	[.	-	-		_		-	- -	459		4	459	1	,	•	37	•	·	32
2 Ruwa River S/B								_		_	_			a # .					
Harare City			1,683		08 %	2,563	,	 -	-	_	'	Donnybrook (WSP)	67	٠	- 1		•	•	•
Kuwa Local Board	147	144	743	52	888	1,673	- -		-	-	_	Ruws (WSP)	67		•	•	,	•	
Erworth Local Board	•	•	242	24	-	766	•	-	-	-	•	Hame East (BNR)	406	,	-	-	,	•	·
Coromonzi Rural	ŀ	•			,			 .	. 001	-~	-	- 001	•		•	80	•	•	x
Harare Rural	[.			-	-	,	-	-	. 99				•		-	S	•	•	٧.
Total	147	14.	3,167	9/	3.408	5.002	,	 •	166			166	540	٠	·	13	•	-	ij
3. Soke & Harava Dama S/B									H										
Harare City	15	•	432		•	533	•	•	•	1	-	To Harare South	•	٠		,	-	$\overline{\cdot}$]۔
Egworth Local Board	-	•	80	3	,	જ	•	4	-		-	To Harate East	-			,	,	·	
Coromonzi Rural	,	•	•	•	•	•		•	2	•		£4	•	,	•	С	•	·	0
Harare Rural	•		-	•				•	36 .	-		36)	,	١	_	۴.	i	·	
Manyame Rural		•			•		-	-	16	,		16	-	1	-	1	•	١	-
Total	13	•	295	3	-	616	•	•	\$		_	54	•	ese.		4	,	·	4
4. Nyatsime River S/B								-	_										
Chitungwiza Municipality	33	446	5,111	\$15 E	450	6,357	•	<u> </u>	-		-	Zengeza (BNR)	485			,	-		•
Manyame Rural				٠			·	•	165	•		165	,	٠	•	13	٠		13
Marondera Rural			٠	,	-	,	•		121		1	121	•	•	•	10	•	•	10
Total	33	446	5,111	317	450	6.357	•	•	287	_	-	287	485		-	ន	•	•	ຄ
5. Mukuvisi River S/B							-				_								Ī
Harare City	223	1,176	7,460	8,939	1,432	19.585	30	-	•		11 6	653 Firle (BNR)	3,621			•		-	-
Epworth Local Roard	1	,	201	٥	•	300			-	_		To Harare East			,	-	·	-	·
Harare Rural	•	•	•		1	•		•	- 02		_	30	•	,		H	·	-	(1
Zwmba Rural	,	•	,	,	,	,	•		7 .			7	•	١		-	·	•	Γ.
Total	222	1,176	7.751	8,949	1,432	19.886	\$2	•	37		11	689	3,621		۱	3	·	r	4
6. Manyame River (D. stream) S/B															_				
Harare City	-	247	5,014		1,355	6,616		-	-			Harare South (BNR)	1,430	_	-	i	·	-	
Chitungwiza Municipality			757	·	\$	842		-	-	-		to Zengeza STW	, 	·	_			-	Ī
Harare Rural	·			·			·	-	45	_			-	J	. -	4		·	4
Manyame Rura!	•	•	•	•	,		•	•	24			77	•	· 	<u> </u>	7	•	•	(1)
Total	1	247	5.771	•	1,440	7,458	·	-	69		-	69	1.430		•	9	•	•	9

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

u/District							L.N. Cra/day							(ART/OX) No. 1 CARLINGTON	0/0X				
3			Sewered Area	l Area					Unsewered Area	ed Area			Sewered Area			1	Unsewered Area	rea rea	
	N wo	Med.	High	C&1	ind.	Total	wor	Med.	High C	C&1	Ind.	Total	STW Dischree/Irrigation	Total L	Low Med	ed. High	A CR	I Ind.	Total
_																			
	782	1,2%9	9,119	2.235	380	13,814		-			•	-	Crowborough (BNR, TF)	2.524	•	•	-	•	Ľ
le	<u>. </u>	-		,				 .	43	 		43			· -	_	64	ŀ	
	782	1.289	9,119	2,235	389	13,814	•		43		•	43		2.524	-	L	3 .	 	
8. Lake Chivero S/B	_						<u> </u>	-		_	-	-			-		-		
Harare City		-	2,143	,	•	2,143	•		_	•	•		Firle STW (Imigation farm)	203		Ŀ	-	· -	<u> </u>
Cheguta Rurai		-		•	•	,	-		33	-	•	H	•			<u> </u>	- 2	ŀ	Ç 2
, cam	· •	-		•			-	-	33	-		33	•	•	-		3	•	
			•	•	•		•		9,6		_	76	•		- -	_	- 9	•	4
Total	-		2,143	•	•	2,143	•	-	131		•	131		203	-	1	10	-	10
9. Muzurun River S/B	-	-					-			-	H				$\left \cdot \right $	L	L	-	
Harare City	-		1,650	•	•	1,650	•	 •			-	•	•		-			-	Ľ
Zvimba Rural		-	,	,		,	,	-	222	-	•	222			-		18		×
Total	-		1,650	•	•	1.650	-	-	222			222			-		81	ŀ	18
10. Gwebi River S/B										_				ara k		_	L		<u> </u>
Напате С(ту	112		1	•	•	22	439	•	•		•	439	Marlborough (WSP)	11	-	_	1	•	_
Mazowe Rural	,		,	•	•	•	•	-	202	-	•	202		-	_		16 -		16
Zvimba Rural	<u> </u>		,	1	•		• •		323	~-		323			- 		56		35
	22			-	-	277	439		525		-	964		13		7	75	-	5
11. Lake Manyame S/B						-				-				_		_		-	_
Моноп Тоwn	280	297	702	₹	872	5,309	•	•	-		131	131	Norton (TF)	129	1			01	10
Chegutu Rural	•	-	•	,	•	,		•	36		•	86	•		-		8	-	×
Zvimba Rural		•		'	•	1	•		\$	-	•	38	•	•	_		9.	· 	۲
Total	230	297	792	86	87.	2,309	•	•	297	-	131	428		129	•	_	34	10	3
Grand Total	2,149	3,600	36,065	11,648	6,051	59,512	180		2,289		142	3,512		8.781		13	183	11	

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

for direct discharge (STW): Concentration ratios are; for direct discha
 Pollution load reduction efficiency at STWs:

for imparion reuse (STW): 8% TF WSP 30% 50% 80% 80% Z.

for unsewered area;

High; 8%

%0

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

													~		2 1	V	l			
and a						enerated	Generated T-P (kg/day)	إ					9	Concentrated in (Ky) uay	3					T
Sub-basin/District			Ź	Sewered Area	_				Unsev	Unsewered Area			Sewered Area		ŀ	Į.	۲ŀ	O Arca	ŀ	Ī
	367	Med.	KS.H	130	Ind	Total	l Low	w Mcd.	d. High	L CAR	Ind.	Total	STW Dischrge/Irrigation	Total	Š	Med.	Fligh	C&I	ijġ	Total
1. Magyame River (Uosneam) S/B	Ī	Ī		_	_	_	_	_								-	1		1	Ī
Goromonzi Rural	,			 _	,	_				38	,	38	1	·	-	1	-	1	1	7
Harare Rura!		,	,		, 	<u> </u>		-		- 0		0			·	-	°	-	1	ै
Mapyame Rural	1		<u> </u>		 -	Ĺ	•~	-		3		r.	•	•	•	•	0		•	ै
Total					·	<u> </u>	_	•		42 -	•	42		,	•		c	-	•	6
2 Ruwa River S/B				_	_		_	_							Ì	-	-	-		
Haran Oly		Ī	121	<u> </u>		-	121	_		-	-		Donnybrook (WSP)	7	٠	-	-	1	<u>, </u>	1
Ruwa Local Board	٢	-	٩	_	4 56		147	H	'	ŀ	, 	•	Ruwa (WSP)	8	-	1	-	-	-	1
Foworth Local Board	,	-	29		2		69	-	•	•	•	•	Harare East (BNR)	8	7	-	-	-	-	1
Coromonari Rurat			,	•	-		<u> </u>				•	Ó		,	·	-		-	<u> </u>	1
Harare Rural		,	•	•	•	_			_	. 9		9	•	,		,	٥	-	·	ိ
Total	16	1	264		95 26		344	•	_		•	:5		14		-	-	,	•	7 *
3. Seke & Harava Dams S/B								_									-	1		Ī
Harare City	¢	[•	S	'	-	L	18 5	<u> </u>	•	•	, 	•	To Harare South	·	·	-	-	-	1	·
Epworth Local Board			7		- 0	_	7 (Ŀ	1		To Harare East		·	+	+	7	 	-
Goromonyi Rurat	·		,	,	•	_	-			0		0		'n	•	-	0	+		٦
Harare Roral	,			•	•	_	-	-	_	3 -	•	3		·	·	1	6	-	1	ै
Manyame Rural			•	•	•	_		•		1			•		,	•	0	•	·	0
Total	9		09		- 0		99	-		5 .	•	5		·	·	•	ö	•	-	٥
4. Nvatsime River S/B								-								1	1			T
Chitangwaza Municipality	,	02	123	_	22	, 52	494			-	•	-	Zengeza (BNR)	ă	·	•		-	1	Ī
Manyame Rural	Ŀ		_		Ĺ				 - 	15	-	15		·		<u> </u>	-	1	•	7
Marondera Rural	,	١	•	•	-		-			11] -	•	11	•	·	·	•	-	-	,	-
Total	,	20	433		22 2	25	494		-	. 92	•	38		ĸ	\cdot	1	71	†	•	1
S. Mukawisi River S/B				_					_								1	1		Ī
Harare City	59	127	749	CXX.)	_	404 2,	2,022	69	_	-		3 2	Fire (BNR)	4	·	•	<u>'</u>	+	0	0
Epworth Local Board			56		-		3	-	_				To Harare East			•		•	•	1
Harare Rural			<u>'</u>	<u>'</u>	<u>-</u>	-	+		-	، ج	· -		,	1	·	-	ē	1		
Zvimba Rural	٠		•	-	•	-	-	-		-		•	•	-		•		1		1
Total	65	127	775		688 4C	40 4	2,054	69	_	3		3 75		\$	·	1	1	†	0	٥
6. Manyame River (Distream) S/B												_					1	1		Ī
Harare City			-	•	77	421	421		_	3	-	3	Harare South (BNR)	ដ	,	·	ő	•		0
Chitungwiza Municipality			•	•					-	1	•	-	to Zengeza STW	•	·	•	c	,	,	c
Harare Rural	59	127	775	S .		_	296	69	•	3		72		<u>.</u>	<u>.</u>		0	7		٥
Manyame Rural	,	L	ļ.	<u>'</u>			L	 	<u> </u>	- 7	 	2		<u> </u>	إ		0	-		٥
Total	8		77.5		-	-	1,383	\$	<u> </u> ,	0	ļ.	78		ម			1	-	•	-
		ı	l			l														

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

12. S/B 12. S/B 13. S/B 14. S/B 15. S/B 15. S/B 15. S/B 15. S/B 16. S/B	E	1,347 1,347 1,347 1,94	Low	Unseww Med. High	Unsewered Area High C & 1	1 Jod.	Total	Sewered Area STW Dischree/Imgation	Total Low Med.	mo'		§ ⊢	g	Ì
3 75 123 75 123 123 123 123 123 123 123 123 123 123	r.		┞┈╬┈╂┈╂┈╂┈╂┈╂┈╂┈╂┈╂┈╂ ╌╂╌╂	}	ख ८ इ		Total	STW Dischrec/mgation	Total	-		sewered At	13	
3 75 123 KSK 75 123 856 75 123 856 75 123 856 75 123 856 75 133 856 75 133 856 75 133 133 133 133 133 133 133 133 133 13			╏╸┋╸┩╼╏═╏╺╏═╠═╠═╠	╺╬╼┼═┼═┼═╂			POOT -	SA W DESCRIPCATED AND D	(0.03)	_		•	L	I
75 123 856					+				-		L	ر د ارچ	.pq.	<u> </u>
75 123 856 194 194 								The average of the	100		-	+		
75 123 856 194 1 194 8		<u> </u>		- -	4		4	-				.		.]`
201]. .		-	1.	·	4		8	1	<u> </u> -	,		٥
38		194			L					-	-	,		>
38 189	, , , , ,	194			ŀ	_		Firle STW (Irrigation (arm)	5,	ŀ				
8 194 		194		_	,		7,1		,			5		٠,
B		194			٠,	ļ.	6] _		 	,		1
B 1904		194		_	7		,	,	_		-	Ļ		7
9 180	,		ŀ		12		22		1,1		 -			1
180	,	֓֞֜֜֜֜֜֜֜֝֜֜֜֜֜֓֓֓֜֜֜֜֜֜֓֓֓֓֜֜֜֜֜֜֓֓֓֓֜֡֓֜֡֓֜֡֡֓֡֓֡֓֜֡֓֡֓֡֡		_	-						-	-		1
180		28	-	• 	•		<u> </u>	•	Ţ.		-			
	•				. 20	·	ន			Ţ,	1	,		,
	•	180	•	-	ද		ន			•	<u> </u>	2		,
		1 1	-		_							-		1
Harare City		18	41		-		\$	Marlborough (WSP)	-	<u>† </u>	<u>'</u> 	 -		
Mazowe Rural	-	•		-	- 81	- 1	81			<u> </u>	 -	-		1
Zvimba Rural	•	,	•		20		8			-	 -	-		1
Total 18	,	18	41	7	48		88		-	,	ļ.			,
1. Lake Manyame S/B				1	L						-			
Norton Town 9 12 56 4	4 31	112	•	•		21	12	Norton (TF)	۶	 		-	•	ŀ
Chegutu Rural	•	-	•		•	-	30			-	 	-		Ţ.
Zvimba Rura!	•	•	,		81	•	18				 	,		T
Total (9 12 56 4	4 31	112	,	. 1 .	- 12	21	3		0	<u>†</u> .	-			7
Grand Total 242 411 3,586 892	2 1,058	6,190	179	χ ·	506	8	412		\$5			ļ.	†	Ī



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Low & Medium;

868

High

for unsewered area:

for unigation reuse (STW); 8% TF WSP 30% 30%

BNR 75%

ŗ.

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;



2

High C. & ! Ind. | Total c ō Unsewered Area 0 0 0 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) Med. NO. 263 553 ۶ ድ 2 8 553 263 5 Total STW Discharc/Irrigation Sewered Area Harare South (RNR) Harare East (BNR) Donnybrook (WSP) to Zengeza STW To Harare South Zengeza (BNR) To Harare East To Harare East Ruws (WSP) Firle (BNR) \$ ° × 31 48 20 Total ġ Description of the same of the High C&I × 20 3 E 0 8 ₩, 11 इ Med 69 જ Generated T-P (kg/day) 30 1,111 2,472 2.455 117 733 Š • ž **82**8 <u>\$</u> § á × Ç Total 455 3, 421 27.4 3 445 3 ¥, 184 4 Ę. 974 8 c ٤. 975 High C&! Sewered Area 8 ¥. £ & \$\$ 33 ž 558 ž 5 € ž æ \$ 127 5 2 9 2 53 Low Med. 4 62 છ ٤ 3 • Manyame River (D. stream) S/B Manyame River (Upstream) S/B Chitungwiza Municipulity Chitungwiza Municipality Sub-basin/District Seke & Harava Dams S/B Epworth Local Board Epworth Local Board Epworth Local Board Ruwa Local Board Manyame Rural Total Goromonzi Kural Goromonzi Rural Marondera Rucal Mukuvisi River S/B Manyame Rural Conomonzi Rural Manyame Rural Nyatsime River S/B Manyame Rural Zvimba Rural Harare Rurs! Harare Rural Harare Rural Harare Rural Harane City Harare Rural Ruws River S/R Harare City Harare City Harace City Total iotal Total ू ब Total

10-2-31

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

	_				Sego	Generated T-P (kg/day)	e/dav)					သိ	Concentrated T-P (kg/day)	T-P (kg/c	(Aup)			
Sub-basin/District			Sawered Area	d Area		-		15	Unsewered Area	PES P		Sewered Area			_	Unsewered Area	Area	
	Low	Med.	High	C&1	Ind.	Total	Low	Med. Hi	High C&I	t I Ind.	Total	STW Dischree/Imgation	Total	(wol	Med. H	High C& 1	£. 1 Ind.	1. Total
7. Marimba River S/B				_													-	
Harace City	ž	140	506	243	121	1,583	•		-		-	Crowberough (BNR, TF)	353	•		-		•
Zymba Bura!					,		-	•	. 5	,	5				,	0	_	c
Total	¥	9	566	243	121	1,583	-		- 8	•	5		353		-	0	,	0
8. Lake Chivero S/B										-						-		
Horare City			23.34	- 4	-	234			-		·	Firle STW (Imigation farm)	χ.		_	-	-	-
Cheguta Rural					٠	•			. 2	•	5	ا				-	-	-
Manyame Rural	,		•	•	•		•	-	4		4	•	·	•	-	0	-	C
Zvimba Rural	,	•	•	,	•	,	•		8		8	•	•		•	0	-	0
Total	,	•	274			234	•		14 -	•	14		25	i			•	
9. Muzunru River S/B	ļ					Ţ	_							-		-		
Harare City		•	0%1		•	180				.		1	·	•	+			-
Zvimba Rurat			,						24	•	2,4		٠		-		•	
Total			180	-		180	•		24	•	24			,	-	-	-	_
10. Gwebi River S/B									-									
Harare Cirv	ક્	•		•	•	30	47		•	•	47	Marlborough (WSP)	C	,		-		-
Mazowe Rurai	•	•		•	•	•	•		33	•	22	,	•	,	-	-		
Zvimba Rural		ļ .	•	•	•	-		-	35	•	3.5	-	•		-	63		C3.
Total	8		,		,	8	47	 - •	- 25	•	105		2	-	-			
11. Lake Manyame S/B																		
Norton Town	30	32	Æ	7 }	143	662	•	_		12	13	Norton (TF)	17	_	-	_	-	C 2
Chegutu Rural	•	•	•	•	•	•	-		11	-	11	•			- -	-	-	-
Zvimba Rura!	•	•	,		٠		•		- 22	-	22	•	,		-	-	-	_
Total	30	32	98	7	143	299	•		32	21	53		17	,	-	-7	-	۲1
Grand Total	152	390	3,034	1.269	1,696	7,520	116	,	250	24	390		1,387			ᄗ		14
Note: 1. Residential density category is based on those shown in Section 12.2.3., Chapter 2, Supporting Report	ased on thos	e sbown it	Section 1.	123. Opp	Xer 2, Sup	vorting Repo	Ē											
2. Population in rural districts is categorised to high-density area.	regonised to	high-densi	ry arca.															
3. Concentration ratios are;	for direct (for direct discharge (STW):		100%		for imgation reuse (STW):	reuse (ST)	ξ̈́	80		for unsewered area:	High; 8% Low &	Low & Medium;	0	8			
4. Pollution load reduction efficiency at STWs:	cy at STWs:				BNR	į,	WSP											
	•			5	250	3002	2002											

for irrigation reuse (STW): TF WSP 30% 30%

BNR 75%

ᆣ 100%



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

Î

					ŀ	200						-	8	Concentrated BOD (Felday)	ROD Or	(\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\				Γ
1			Causered Acres	A 400	Cellel	Taled DOUG (Agolday)	V CONTRACT		Unsewered Area	d Area			Sewered Area			S	Unsewered Area	Area		
Suc-Oaking United	100	Med	#ig#	C&1	Ind.	Total	ş	Med.	High	ļ i	Ind.	Total	STW Dischree/Irrigation	Total	Y WOL	Med. H	High C. & I	د ا Ind.	. Total	E
1 Manyame River (Tremeam) S/B										-										T
Gordonzi Rural		,	 	•		•	•	•	1,393	•		1,393		1		-	٤,	╣	-	٤
Harare Rural			 		•			•	9		٠	9	•	,	-		-	4	-	॰
Manual Burs	<u> </u>	<u> </u>	,		ļ .		,	 	138		-	126	•	,	•		<u>.</u>	-	_	ç
Total	•	ļ.	<u> </u>					ļ	1,526		•	1,526			-	_	8	-	_	2
2 Rowa River S/B								-	-		-					-	-	-	-	Ī
Harare City	•	<u> </u>	4,960		,	4,960		-		<u> </u>	,	•	Donnvbrook (WSP)	8	1	+	-	4	4	T
Ruwa Local Board	×	-	æ	c	2,543	2,629	•		٠	•			Ruwa (WSP)	73	1	1	1	-	-	
Soworth Local Board	,		2,463	Ŀ	,	2,537		-	•	•	•		Harare East (BNR)	38			-	-	_	Ţ
Coromonari Rural		,		•			•		331	-		331	•	•			, 2	-	_	2
Harare Rural		·	ļ .						220			220	•	·	-	-	=	1	-	=
Total	8	-	7,502	7.4	2.543	10,126			550	-	•	\$ 055		231	-	-	Ŕ	-	_	ភ
3. Seite & Harava Dams S/B										H	-	sattr.			+	1	\dashv	-	-	Ť
Marare City	દ્ધ	۱,	25.	,	-	311	,) ·	•	•	•	,	To Harare South	_	-	1	-}	-	4	1
Spworth Local Board		•	266	8	•	274				•	•	1	To Harare East	,		-	-	1	-	ŢŢ
Goromonzi Rural		•	•		•	-	1	,	9	-	•	9			<u> </u>	+	•			9
Harare Rural		-	•	•	•	•	•	•	121	•	-	121		,	•	_	c	1	+	1
Manyame Rural		•	·	,	•	•	•	•	52	-		Ş	-	·	- 	+	۳.	1	+	-
Total	82	•	646	8	•	585	٠	-	180	•	-	180		,	-	1	•	1	+	1
4. Nyatsime River S/B				-											-	+	+	$\frac{1}{1}$	4	T
Chitungwiza Municipality	·	1,007	22,232	2,130	1,641	27,010	•	·	•	,	•	•	Zengeza (BNR)	8	1	-	-	-	-	T
Manyame Rural	-	•	•		•	•		-	540	•	•	\$40	1	•	-	_	23	`		£•
Marondera Rura		•	٠		•		,	•	403			403	•	,	•	-	S	1	+	8
Total		1,007	22,232	2,170	1,641	27,010	٠	•	952	,	•	952		934	•		3	-	-	ş
S. Mukuvisi River S/B																	-	-	-	Ī
Harace City	2,122	4,214	29,593	17,825	42,715	96,469	1,817	•	•		366	2183	Firle (BNR)	3,758	-	-	+	7	<u>ج</u>	8:
Epworth Local Hoard		,	965	6;		904	١	•	•				To Harare East	<u> </u>		+	-	+	+	Ī
Harare Rural	'	•			,	·			8		-	8		·	- 	╗	٧,	7	+	۲.
Zvimba Rural		•	•		•			•	ß	-	•	z		·		1	-	1	-	7
Total	2,122	4,214	30,558	17.854	42,715	97,463	1.817	•	122	,	366	2,305		3,758	-	-	٥		ጼ	2
6. Manyame River (D. stream) S/B																+	1	+	4	Ī
Harare City	•	7	367	•	44,516	44,054	1	•	'	•	-	·	Harare South (BNR)	2,263		-	_		- -	$\overline{\cdot}$
Chitungwiza Municipality	•	•	6,231	•		6,231	•	•	•		-	-	to Zengeza STW	,	•	-	-	-	-}	,
Harare Rural		·	١	·					150	-		150	-		1	-	-	}		7
Manyame Rural	1	•	•	•	•		•	•	8	•	-	23	P 43	-		+	4	}	$\frac{1}{1}$	4
Total		71	6.598	-	44,516	581,185	1	•	522	•	-	22.9		2,263	-	-	=	1	-{	=

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

a/District Low 3 2,004	│	Sewered Area High C & 1 24,566 4,45 24,566 4,45		lad.	Total Low	1 1-4	Med.	Unsewered Area	red Area	l ⊦	Sewered Area	Torol Your Med		Σ ·	Ę	Are	Total
Low 2,004	├─╂─├─┼─┼─┼─┼─┼─┼ ─┼ ┈ ┤	<u> </u>	┝╌┸╌╂╌╂╌╂╌╂╌╂╌	10d.	Total	Н	LJ	Г	L	ŀ	_	Total	2-				Total
2,004	<u> </u>	<u> </u>		17 276				1		f. Total		90	ò	300	Fig. C&	& I Ind.	5
2,004	<u> </u>	<u></u>		300 01	3 700	-								┞	-		
2,004		<u> </u>	_	0.00	265,72	-	•	-	_		Crowborough (BNR, TF)	1,574		-	' - 	 -	
2,004	<u> </u>	<u> </u>		·		•	-	142	 - -	<u> </u>	142	_	-	 -	-	ļ.	,
				12,826	47,594	•	<u> </u>	142	 - 	~	142	1,574			7 -	ļ.	_
		- - - - - - - - - - 			-	-			_	_			<u> </u>	-	-	-	
			-	•			-	_		,	Firle STW (Imigation farm)	170	,	-	<u>'</u> .		<u> </u>
Manyame Rural		 		•	•	-		7.5		•					4	-	4
		- - -	•	•	-	-	 	100		_	- 601	_		-	5	Ļ	<u></u>
Zvimba Rura!		 	-	•	-	<u> </u>		251	-	e i	251	,	<u> </u>	- ,	5.	ļ.	2
- Total			-	•			L - 	47.			434	170		-	; ;	-	E
9. Muzururu River S/B		_				-	L	L						-	-	_	
Harare City	,	,	•	•	,	-	,			<u> </u>	,	•	-	,	<u> </u>	٠,	,
Zvimba Rural	,	1	-	,	1	-	-	739			- 082	•	•	 -	37	ļ.	37
Total	•	•	•	•	•			7.19		7	962	'	<u>.</u>	<u> </u>	37	ļ. 	37
10. Gwebi River S/B		_	-				-			_			-	-	-	_	
Harane City 653	_	•	•	,	653	4,554	•	_		4,554	Martborough (WSP)	<u>٠</u>	۱	ļ-	-	ŀ	
Mazowe Rura;	-	,	٠,	•	-			670		9	- 029	•	<u> </u>	 	¥.	 -	4
-		•	•	•		•		1,073	 	1,073	t.		 	-	2	١	\$
Total 653	-	-		-	623	4,554		1,743		6,297	2	5	٠,		- 28		E
11. Lake Manyame S/B			-	-	-				_	_			-	-	-	_	
Norton Town 74 1	103	1,042	7.7	5,891	7,132	-			8',	7,850 7,850	O Norton (TP)	48		-	-	829	87.9
Cheguty Rural		-	+	-	'	-	-	325			325	•	•		91		3
Zvimba Rural		•	-		•		-	(461		¥5			- .	 	8	ļ.	R
Tota! 74 1	103	1,042	ដ	5,891	7,132	•	-	986	7,8	7,850 8,836	91	2.5		 	\$	879	677
Grand Total 4,890 9,1;	9,138 9	93,046	24,542 110,132	20,132	341,748	6,371	- 1	7,603	. 8,2	8,216 22,190	D	9,013	ا- ،	֓֞֝֟֝֟֝֟֝֟ <u>֚</u>	380	657	1.037

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

for imigation reuse (STW): 8% for direct discharge (STW): 2. Population in rural districts is categorised to high-density area.

3. Concentration ratios are: for direct discharge (STW): 4. Pollution load reduction efficiency at STWs:

F % 8N8 82% 8

દુ Low & Medium; High: 8%

for unsewered area:



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

												-	Č	Constituted BOD Contract	2000	(400)				_
					3	Generated BOD (xg/day)	(Vaay)		Unecourant Area	Ams		+	Sewered Area				Unsewered Area	d Area		Ī
Suo-oasin/Aserci	30,	Med	High	oh C&1	196	100E	No.	Med	High C	ı	Ind	Total	STW Dischree/Impation	Total	low 1	Med.	ligh C	High C&I Ind.	Н	Total
S. Constant Direct Division No.								.	冖	L.	-	<u> </u>		<u> </u>			-			
1. Mallyanie Kivel Open Carry Carry		T.			·	ļ.	ļ.	-	1,678	<u> </u> -	-	879	-	;	-		3	-	_	ķ
Hame Burst		,		١.		Ī,		 	×			х	•	-		7	-	╣		ী
Manuatre Rittal						,	٠	•	152	_	•	152	•	,	-		∞		-	∞
Total		١.						,	1,837	-		1,837		,			8			ध
2. Ruwa River S/B							ì		H			_			1		1	+		T
Harace City	,	٠	6,421	, 	25,877	32,298				_		,	Domybrook (WSP)	5		-	7	-	-	<u>.</u>
Ruwa Local Board	20	æ	£	O	3,322	3,426		-	-				Ruwa (WSP)	5	7	+	╗	+	-	<u> </u>
Epworth Local Board			2,96A	ક		3,063	•	,	•	-	•	-	Harare East (BNR)	1,524		7	1	+	-	
Goromonzi Rural		·	•			,			398	_	•	398	•		1	╗	ន	<u>'</u>	+	٤
Harace Rural					,	'	٠	-	264		•	264		·	-	-	53	}	+	5
Total	20	30	9,476	25	29,199	38,787	•	•	299	-	-	39		1,602	-		ង	}	4	ĸ
3. Seke & Harava Darrs S/B								H							_	1	1	-	4	T
Harare City	88		398			403	•	•		-	-	-	To Harare South		1	-	,	-		7
Epworth Local Board		,	121	01		100		٠.		_	•	-	To Harate East		-	7	+	}	-	<u>.</u>
Goromonzi Rural		,	•			•	•	-	80	-	-	œ		١	†	,	0	1	+	٥[
Harare Rural	,	,	Ŀ		•	•	1	•	146	•	•	146	•		~†	-	7	-	1	7
Manyame Rural			•			•	•		63		-	63	•	ì	·		~	-	-	
Total	38	•	989	10	•	734	٠	•	216		•	216		·	-	•	=		+	=
4. Neatrime River S/B												-			1	1	1	-	-	T
Chitunowiza Municipality	193	2,627	30,745	1,727	12,585	878,74	,	 -	-	_	-	,	Zengezu (BNR)	1,663		7	-		-	
Manyame Rural				<u> </u>				•	199			199				-	E	-}	-	£
Maronders Rural			١.		•			•	4.85	-	•	4.85	-		-	1	침	1		8
Total	193	2797	30,745	1,727	12,585	47,878	•	٠	1.146		-	1.146		1,663	-	•	5	1	-	57
5. Mukuvisi River S/B											-					1	1	+	-	Ī
Harare City	2,685	5,091	38 705	31,561	47,026	125,067	2,353		·	-	366	2.719	Firle (BNR)	5,285	•		-	+	۶۱	?:
Epworth Local Board	,		1,163	38	ا	1,200		<u>.</u>	-	-	1		To Harare East	,	·	1	1	}	+	
Harare Rural	٠		·		 - 				52	+	-	8			·	1	ح ا	-	+	٦
Zvimha Rural	,	,	,	1	_			_	12	-	-	23		١	·	-	=	-	-	
Total	2,685	5,093	39,867	31,599	47,026	126,267	2,353	•	147		8	2,866		S285		-	7	-	۶.	-
6. Manyame River (D.stream) S/B																1	1	1	+	Ī
Harare City		36	537	,	44.516	45,079	٠	·	1	•	·	•	Harace South (BNR)	2,274	•	-	-	1	-	7
Chitungwiza Municipality	,	,	8,974	•	2,371	11,345		•	•	-	•	-	to Zengeza STW		-			-		٦
Harare Rural		·		<u>. </u>	<u>. </u>				38	-	-	38	1			•	٥	1		٥
Manyame Rural	-300-	•	•	•	•	•		·	8	-	-	25				·	ζ,	+	-	~
Total		ጽ	9,510	•	46,887	56,423	·	•	378		-	276		2,274			ž	-	-	7
			ı						ĺ											

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

Discouncined Area Caccurenced Area Severeed Area Caccurenced A						Cenerated	rated POD (kg/day)	(g/day)						j	Concentrated BOD (kg/day)	BOD (kg/	day)			
1,000 Model High Colin Total Total	Sub-basin/District			Sewe	red Area					Uosewer	ed Area				e-r-ae		;	cwered	Arca	
3. 3. 4. 4. 4. 5. 3. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5. 5.		MαI	Med.	High	C.& 1	Ind.	Total	Tow	Med.		C & 1	lnd.	Total	STW Dischree/Irrigation			1	S C &	ŀI	Total
2.376 4,824 32.00 7.80 1.2.5 6.0 Convolverage (BNR, TP) 2.234 7	Marimba River S/B																			
1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1,	Harare City	2,376		32,012	7,890	12,826			-	•	•	•	•	Crowborough (BNR, TF)	2,249	-	-	•		-
7.376 4422 7.800 12,204 9.032 171 171 171 6110 STAV (Imgation fam) 155 1.0 9 1.0 <td< td=""><td>Zvimba Rural</td><td></td><td></td><td></td><td>,</td><td>,</td><td></td><td>•</td><td></td><td>171</td><td>-</td><td></td><td>171</td><td>•</td><td></td><td>-</td><td></td><td></td><td></td><td>٥</td></td<>	Zvimba Rural				,	,		•		171	-		171	•		-				٥
1	Total	2.376	L	32,012		12,826			 -	171	 -	-	171		2,249	-		6	<u>.</u>	^
No. No.	ake Chivero S/B											-						 		
No. No.	Harare City					•		-	-	•		•	•	Firle STW (Imgation farm)	155			•	,	,
B. 131	Cheguta Rural		•	,	•	•	,	•	<u> </u>	8	-	-	06	-	•	_	_	4		77
B C	Manyane Rural		•		•	•	٠	-	-	131	•	•	131		•	-	-	- 4		4
B C	Zvimba Rura!		•	٠		,	•			305		•	302	•	•				•	15
B. A. Color In C	Total		-	-	-	-	1	•	•	523	-	٠,	523		155	-			٠	ន
The color of the	uzaruru River S/B										\parallel					_	_			
National Color Nati	Harare City					•	,	,		•	-	-	•	•	,			- 1		,
National Post National Pos	Zvimba Rural		•	•	•	•		•		800	•	•	890	,	•	_			-	4
R46 8.46 5,895 8.77 8.77	Total	-	•	•	•	•	•	•	•	890	,	•	890		•			- #1		4
R46 8.46 5,895 NOT 8.77 Martborough (WSP) 7 40	Auchi River S/B																-			
846 1,124 16 35,349 3,875 2,099 7,850 7,8	Harare City	¥.		-	-	'	846	5,895		·	-		5,895	Marlborough (WSP)	7				•	_
846 - - - 1,292 - 1,292 - 1,294 -	Mazowe Rural			•	•	•	•	•		807	-	•	807	-	•	-		01		0.0
846 -	Zvimba Rurai		•	•	•	•	•	-		1,292	-		1,292	•	•	<u> </u>		- 55		\$4
172 18h 1,124 16 35,349 36,847	Total	846		•	•	•	846	5,895	•	2,099	-	-	7,994		7		-		,	105
nt Rural 172 186 1,124 16 35,249 36,847 20 7,850 7,850 Norton (TF) 205 20	ake Manyame S/B														-		_			
nru Rural 172 186 1.124 16 35.349 36.847 1.187 7.850 9,037 7.850 9,037 20	Norton Town	172		1,124	16	35,349	36,847	•	•	٠	•	7,850	7,850	Norton (TF)	362	-	-	•	42x	ð
va Rural 172 186 1.124 16 35.349 36.847 2.187 7.850 9,037 25.919 295 40 6.216 35.349 36.710 8,248 9,155 8,216 25,619 13,530 458 458 657	Chegutu Rural		j	,	٠	,	•	1	~~·	391	-		391	•	•			ο.	•	20
172 186 1.124 16 35.349 36.847 . 1.187 . 7.850 9,037 29.6 . 59 . 628 628 6316 12,761 12,3421 41,340 183.872 367,710 8,248 . 9,155 8,216 25,619 183.872 367,710 8,248 . 9,155 . 8,216 25,619	Zvimba Rural	•		•	•	·	·	-	-	8	-	•	35	•	•		-	9		40
6.316 12.76; 123.421 41.340 183.872 367,710 8.248 - 9,155 8.216 25,619 13.520 - 65.85 6.316 12.76; 123.421 41.340 183.872	Total	17.			16	35,349	36,847	•	•	1.187	•	7.850	9,037		295				628	683
	Grand Total	916.9	12,76:	123,421		183,872	367,710	8,248	-	9,155	H		25,619		13,530		-	· ×s	\$	1.115

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.

8

High; 8% for unsewered area: for irrigation reuse (STW): 8%
WSP
90% 100% 000 3. Concentration ratios are; for direct discharge (STW): 4. Pollution load reduction efficiency at STWs:

Š

Low & Medium;

£ % 888 888 888

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

I

Sub-basin/District Low Med. High C Geromentz/Rural 1.0w Med. High C Geromentz/Rural - - - - Harare Rural - - - - - Ruwa River S/P - <td< th=""><th>1 1 2 4 4 7 4 7 5 1</th><th>nd. Total Low 9,920 9,077 9,250 5,074 5,074 5,077 24,244</th><th></th><th></th><th>Unsewered Area High C & I 2,787 13 252 3,052 4,052 4,100 1,100</th><th> </th><th>Ind.</th><th>Total 13 252 252 252 253 3,052 1,100 1,1100</th><th>STW Dischrge/Imigation Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)</th><th>Total Low Mcd. It</th><th>low Med.</th><th>Cd. High</th><th>Unsewered Area High C & 1</th><th>Ind.</th><th>Total</th></td<>	1 1 2 4 4 7 4 7 5 1	nd. Total Low 9,920 9,077 9,250 5,074 5,074 5,077 24,244			Unsewered Area High C & I 2,787 13 252 3,052 4,052 4,100 1,100		Ind.	Total 13 252 252 252 253 3,052 1,100 1,1100	STW Dischrge/Imigation Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)	Total Low Mcd. It	low Med.	Cd. High	Unsewered Area High C & 1	Ind.	Total
Sub-basin/District Low Med. High Concerned Advantage Genomonzi, Rural Harare Rural 100	1		 -1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1	┞┈┩┈┩┈┩┈╡ ╼ ┆╌╂┈╏┈╂┈╏┈╏┈┠┈╊╍┡ ╾╂ ╍╏ ╸	High C 2,787 C 13 13 252 C 252			2,787 1,382 2,582 3,082 2,582	STW Dischrege/Irrigation Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)	╇	┠╌┇╼╂╌╏╼╂╼┾╌	┝╼╂╼╂╼╂╌╂	3 C 0	Jud.	Total
Manyame River (Upstream) S/B Centumonia: Rural Harare Rural			▐ ▃┦╌ ╿ ═┞═╏╌╏═┦ ╒ ╀╒╣╌ ╿ ═┦═╬═┦═╂═╂	┨╌┧╌╏╌╂╌┞╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌╂╌			╂┼┼┼┼┼┼┼┼┼┼┼┼┼	2787 2 282 3 3.052 5 6.61 1,100 6	Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)		┇╼╏ ╌╏╾ ┞ ╌	╋╼╂╼╂╌╂╸	5	.	
Manyame River (Upstream) MB Genomonz, Rural		<u> </u>			2,745 13 252 252 7. 7. 651 651 639		╂╫╫╫╫	252 252 3.082 661 6439 1,100	Donoybrook (WSP) Ruwa (WSP) Harare East (BNR)		╂╌╂╌╂╌	╂╼╂╌╂	0		
Harare Rural		<u> </u>		╂╫╫	13 13 252 252 3,052 		╎╎╏╏╏	252 252 3.082 661 1,100	Donovbrook (WSP) Ruwa (WSP) Harare East (BNR)	911 182	╂┼╂╌	╂╌╂			139
Harare Rural Manyame Rural Total Ruwa River S/B Harare City Ruwa Jocal Board Goromont's Rural Harare Rural Seke & Harava Dams S/B Harare City Speck & Harava Dams S/B Harare Rural Manyame Rural Continuoviza Municipality Manyame Rural Total Total Total Total Advada Harrange Rural Harrange Rural Advada <t< td=""><td></td><td></td><td></td><td>┼╣╂╢╫┼┼┼┼┼┼</td><td>252 3,052 661 1,100</td><td></td><td>╫╫╫</td><td>252 2005 2005 2005 2005 2005 2005 2005</td><td>Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)</td><td> 6311</td><td></td><td> -</td><td>_</td><td>-</td><td></td></t<>				┼╣╂╢╫┼┼┼┼┼┼	252 3,052 661 1,100		╫╫╫	252 2005 2005 2005 2005 2005 2005 2005	Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)	6311		-	_	-	
Manyame Rural Total Ruwa River S/B Harare City 15 Ruwa Jocal Board Eyworth Local Board Goromont; Rural Harare Rural Seke & Harava Dams S/B Harare City Epworth Local Board Goromont; Rural Harare Rural Manyame Rural Chitmopariza Municipality Manyame Rural Manyame Rural Manyame Rural Manyame Rural Manyame Rural Manyame Rural Total Total Total Total Total Total Total <		<u> </u>		╣╂╏╏╏	3,052 3,052 661 661 661 671 661 671 671 671 671 671	 	╫╫	252 3,055 6,61 1,100	Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)		<u> </u> -	-	- :	L	٤
Total					3,052	,	╂╫╂╂╂╂╂	3,0052 6,61 1,1000	Domovbrook (WSP) Ruwa (WSP) Harare East (BNR)	7111 761	•	1	1]
Ruwa River S/B 9,920 Harare City 15 1 156 Erworth Local Board 2,927 2,927 Goromont's Rural 3 4,927 Goromont's Rural 15 1 15.003 Seke & Harava Dams S/B 38 564 Harare City 58 533 Goromont's Rural 58 1,097 Manyame Rural 58 1,097 Nyatstime River S/B 2,013 44,464 Manyame Rural 58 1,097 Manyame Rural 58 1,097 Manyame Rural 58 1,097 Manyame Rural 58 44,464 Manyame Rural 58 1,097 Manyame Rural 5013 44,464 Total 2,013 44,464				- 	661			430	Donovbrook (WSP) Ruwa (WSP) Harare East (BNR)	911 1167	ł	153			CCI
Harare City 9,920 Ruwa Local Board 15 1 156 Epworth Local Board - 4,927 Goromont's Rural - - - Harare Rural 15 1 15,003 Seke & Harava Dams S/B 58 - - Harare City 58 - - Epworth Local Board - - - Goromourl Rural - - - Harare Rural - - - Total - - - Manyame Rural - - - Chitungwiza Municipality - - - Manyame Rural - - - To								13,000	Donnybrook (WSP) Ruwa (WSP) Harare East (BNR)	11.0		$\frac{1}{1}$	-		
Ruwa Jocal Board 15 1 156 Erworth Local Board - - - - Coromovat's Rural - - - - - - Total Total 15 1 15.003 -		<u> </u>			439				Ruwa (WSP) Harare East (BNR)	11 25 98	-				١
Erworth Local Board - 4,927 Goromouzi Rural - - Total 15 1 15.003 Seke & Harava Dams S/B 58 5.64 Harare Civ 58 564 Epworth Local Board - 533 Goromouzi Rural - - Harare Rural - - Manyame Rural 58 1,097 Nyatsime River S/B - - Chitungwiza Municipality - - Manname Rural - - Manname Rural - - Manname Rural - - Total - - Total - - Total - - Total - -					439			663	Harare East (BNR)	25 98	 	-	<u> </u>		·
Natare Rural 15 15,003 Soke & Harava Dams S/B 15,003 Soke & Harava Dams S/B 15,003 Harave Civ 58 564 Epovorit Local Board 58 564 Coromonal Rural 58 1,097 Manyame Rural 58 1,097 Nyatsime River S/B 58 1,097 Manyame Rural 58 1,097 Total 50 1,097 Total					439			439	To Harare South	8	-	-	<u> </u>	- -	
Harane Runei 15 15,003 Soke & Harava Dams S/B 15,003 Soke & Harava Dams S/B 15,003 Harane Civ 58 564 Epovorin Local Board 58 573 Goromouri Runai 58 1,097 Manyame Runai 58 1,097 Nyataime River S/B 1,097 Manyame Runai 58 1,097 Total 50 1,007 Total 50					1,100			1,100	To Harare South	. 166	-		33		8
15,003 15 15 15,003	<u> </u>	<u> </u>			1,100			1,100	To Harare South	166	•	C2	:		Fi
Soke & Harava Dams S/B		<u> </u>		┝┼┼┼					To Harare South		•	۸.	. 55	ا-	55
Harare City 58 564 Epworth Local Board 583 583 Goromouri Rural 583 1,097 Manyame Rural 58 1,097 Nyatsime River S/B 5,013 44,464 Manyame Rural 5,013 44,464 Manyame Rural 5,013 44,464 Total 5,013 44,464 Total 5,013 5,014 Total 5,015 5,015 Total 5,015 5,016 Total 5,017 5,017 Total 5,017 5,017 Total 5,017 5,017 Total 5,017 5,007 Total 5,007	34	\$49	, ,		•		-		To Harare South				-	_	
Epworth Local Board	31	\$49	,	-						•	-	-	_[- 	•
Harace Rural		 -	,	-	•	_	-		To Harare East	•			-	-	·
Harver Rural				•	13	ļ.,	-	13	• ;	•	-	_	- 1		
Manyame Rura! 58 . 1,097 Total 58 . 1,097 Nyatsime River S/B Chiungwiza Municipality . 2,013 44,464 Manyame Rural	· -			 	242	 -		2,52	•	•	-	-	. 21		22
Total 1,097 1,09		ļ ,			33		-	105	•	•			5		5
Nyatsime River S/B Chiungwiza Municipality . 7,013 44,464 Manyame Rural	91	1.171		-	359	<u> </u>	-	359			•	- 1	- 81	•	18
Manyame Rural Manyame Rural Manonderta Rural Total						-	 	-			-	_			
Manyame Rural Manonderia Rural Total	1 300	\$4 P.E.		ļ	 - 	 	ļ-	<u> </u>	Zengeza (BNR)	3,770	,	` - 	-		•
Maronderia Rural - 2,013 44,464	L	L		 	1.098	 	<u> </u>	1.098		,			55		88
Total 44,464	. .			 	SQ2	- .	 -	Š	•				- 04	-	£
60	4,260 3.9	3.909 54,646	·		1,8		,	1,904		3,770	_		. 58	-	\$
Windows Xive V		_								-			-	_	
Harare City 4,245 8,423 59,185	35,650 118,956	56 226,464	3,635	-	•		1,020	4.655	Firle (BNR)	17,645		-	-	æ	č
cal Board - 1,931		_		-	-	-	-		To Harare East	-			<u> </u>	· -	1
Harare Rural		,			199		,	661	•		-		5	·	2
Zvimba Rumi		•		•	45			45	•	<u> </u>	-	-	7	-	
4,245 8,428 61,116	35,707 118,956	56 228,452	3,635		344	-	1,020	4.899		17,645	-	-	-	윮	3
6. Manyame River (D. stream) S/B			80			_						-	+	_	
Harare City - 143 733 -	123,960	960 124,836		•	•	-	•	,	Harare South (BNR)	12,546	-	1	-	-	1
Municipality - 12	•		,	•	1:	•	•	,	to Zeogeza STW		-		-	•	
Harare Rural	-	-	1	•	300		•	33	•	- - -	-	+	1,	•	15
Manyame Rural	-	-	•	•	158			158	-		-	+	<u>'</u>	-	8
Total 13,195	123,960	360 137,298	-	•	458		•	458		12,546	-		73	-	ន ~

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

	,m				Cenerated (OD (kg/day)					-		Concentrated COD (kg/day)	O Page	D (ke/da	\$			Ī
Sub-basin/District			Sewe	Sewered Area					Unsewered Arca	1 Arca			Sewered Area				Unsewe	Unsewered Area		
	γως	M.cd.	High	C&1	Ind.	Total	Low	Mcd.	High	C&1	Ind.	Total	STW Dischree/Irrigation	Total	.ow	Med.	High (C & 1	Ind.	Total
7. Marimba River S/B	-							- -	-		_	-		-14						
Harare City	4,007	7,4%4	49 132	K,912	35,721	105,257	,	•	•	•	•	•	Crowborough (BNR, TF)	6,792	•	,	•			
Zvimba Rural	-	•	٠	•	•	•	•	•	283		-	2363	1		-	-	14	•		4
Total	4,007	7,4%4	49.132	8,912	35,721	105.257		•	283		-	283		6.702	•	•	14	<u> </u>		7
K. Lake Chivero S/B															1			_	_	Γ
Harare City				•	,	-		ļ-,	-	-	-	 .	First STW (Imigation farm)	600	,	•	-	 -	 - 	Γ,
Cheguta Rural		•	,	1				-	149	_		149	J	'	-	•	7	<u>-</u>	_	7
Manyame Rural			•		•	•	•	•	218	,	•	218	•		-		11	•		11
Zvimba Rural	•	•	٠	•	•	•			205			205	•	•		•	ĸ		_	35
Total	•	•	•		•	•	•	•	869	-	•	698		009	•	-	43	•		£3
9. Muzurun River S/B										_								<u></u>	-	1.2
Harare City		-		,		-	•	 -	-		-	-	•	•		•	-	 .	L.	,
Zvimba Rura!	•	•	_		,	•	-	,	1,478	•	•	1,478	•	l	1	-	74	,		7
Total		•	•		•	•	,	,	1,478		•	1.478		٠		•	74	L		7
10. Gwebi River S/B											-					-		<u> </u>	-	
Harare City	1,307	-	٠		٠	1,307	9,108	•	-	-		9,108	Martborough (WSP)	16	-	- - -	,	 	<u> </u>	,
Mazowe Rural		•	•			-	-	-	1.44	•	•	1,341	•	•	•	•	47			67
Zwmba Rumi	•	•		-			•	•	2,146	_	-	2,146	•	,	-	-	107		-	101
Total	1,307	•	•	•	•	1,307	9,108	,	3,486		- 1	12,594		16	•	•	174	_ - 	<u> </u>	7.7
11. Lake Manyame S/B										_						-	-		-	<u> </u>
Norton Town	677	504	2,0%4	43	23,940	26,422		- 		3	33,539	33,539	Norton (TF)	317	,	۱		2,	2,683	2,683
Chegutu Rurai		·	,				٠	,	920		•	650	ŀ	•	•	•	33	-		33
Zvimba Rural		·	ʻ	i		٠	•	,	1,322	,	-	1,322	_			•	\$		_	\$
Total	149	206	2,084	43	23,940	26.422	•	•	1,972	. 3	33,539 3	35,511		317	•	•	66	- 2	2,683	2,782
Grand Total	9,781	18,276	186,091	49,085	315,563	578,796	12,743	•	15,206	- 3	34,559 6	62.507		*****	•	•	09/	,	2,765	3,525
																			Į	

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.

for impation reuse (STW): 8% WSP 85% TF 85% # 8 20 100% 8 3. Concentration ratios are; for direct discharge (STW):
4. Pollution load reduction efficiency at STWs:

8

Low & Medium:

High: 8%

for unsewered area;

0



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

\$

					Generated		COD (kg/day)					-		Concentrated COD (kg/dav)	ted COL) (ke/day	3			
Sub-basin/District			Sewe	Sewered Area					Unsewered Area	ed Arca			Sewered Area				Unsewered Area	ed Area		
	Low	Med.	High	C&1	lad.	Total	low	Med.	High (C&1	Ind.	Total	STW Dischree/Irrigation	Total	3	Mcd	High	C & 1	PG -	Total
1. Manyame River (Upstream) S/B																				٦
Goromonzi Rumi	•		-	1	٠	•	•		3,355	-	-	3,355	4			<u> </u>	<u>%</u>			ž
Harare Rura	,	,	-	•	•	•	•		15	-		15	•		•	ı.				-
Manyame Rural	•	•	-		•	•	•	•	304	-		304		-	•	•	1.5			15
Total	,	•	•	٠	•		7	•	3,675	•	•	3.675		•	•	,	1%1	-		387
2. Ruwa River S/B																				,
Harare City			12,841	-	80,420	93,261	-	•			1	-	Donnybrook (WSP)	154	٠	•	•	•		,
Ruwa Local Board	15	15	32.	٥			•	<u> </u>		_	ļ	:	Ruwa (WSP)	145	•	-	•	-		-
Epworth Local Board	[5,933	193		L					-		Harane East (BNR)	8,961		- 1	•	,		
Goromonzi Rural		•	•		•	•		-	796	-		1964	•	•	·	•	3		-	ş
Harare Rural			•	,	٠			•	625	<u> </u>		529	•	•	•		26	•	1	8
Total	15	\$1	18,952	193	87.2.78	111,454	•	1	1,325	•	•	1,325		9,260	,	•	8	•	,	\$6
3. Seke & Harava Dams S/B												-							-	
Harare City	75	_	731		•	806	•		•		•	ga-	To Harare South					-	-	i
Epworth Local Roard			641	21		662		-	'	_		-	To Harare East					-		1
Goromonzi Rural	•			٠				_	15	•	-	15		•						-
Harare Rural	•		•	•			-	- -	\$62	•	-	291	•	•	ı	•	15	•		15
Manyame Rural	,	•	•		•			•	126	•	,	126	•	-	-	-	. 9	•	•	9
Total	7.5	•	1,372	21		1,468	•	•	433	•	•	433		•	•	•	Ħ	•	,	ध
4. Nyatsime River S/B																				
Chitungwiza Municipality	386	5,255	61,489	3,455	29,943	100,548	•			H	-		Zengeza (BNR)	6.973	1	•	•	•	-	·
Manyame Rural	•	,	•	•	•		•	•	1,323	-	•	1,323	q	•		·	£	-	_	3
Marondera Rural		·	_	٠	•			<u> </u>	970	-	-	026	•	•			6\$		-	ş
Total	386	5,255	61,439	3,455	29,963	100.548	•	•	2,293	•	-	2,293		6,973	·	•	115	•	,	115
5. Mukuvisi River S/B															. meta sec					ĺ
Harare City	5,369	10,181	77,409	63,122	130,949	2×7,031	4,705		•	-	020	5.725	Firle (BNR)	24,250	•	•	,	•	父	82
Epworth Local Board	•	٠	2,325	76		2,401	,	•	•	•	•	•	To Harare East	•	,		,	•		
Harate Rural		_	-		_			•	239	•		239	•	•		<u> </u>	ij	•	•	Ç
Zvimba Rural	,	•	•	,	· 	•	•	·	5.5		 •	55	-			-	3	•	•	۳,
Total	5.369	10.181	79,734	63.198	130,949	289,432	4,705	•	294	•	1,020	6.019		24,260			15	-	끊	8
6. Manyame River (D. stream) S/B.										 !										
Hanne City	•	52	1,073		123,960	125,085	i		•	•	•	,	Harare South (BNR)	12,589	,	٠	•			,
Chitungwiza Municipality		,	17,94K	•	5,644	23.592	ا	·		•	•	1	to Zengeza STW	,	,	•	,	•	•	,
Marare Rural	•				·			·	361		•	361	•	•	·		×	•	-	×
Manyame Rural		إ		•	<u>.</u>	<u>. </u>	ŀ	·	180		•	190		•		-	10	-	٠,	12
Total		8	19,021		129,604	148.677	<u> </u>		551	-		551		12,589			ភ		-	ភ

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	Total Low	The A land and the state of the								
B 1,692 15,781 15,781 17,782 17,781 17,782 1	Total Low	Onsewere	d Area		Sewered Area			Chrewe	Unsewered Area	
8 4.752 9,648 64,024 15,781 35,721 17 1 4,752 9,648 64,024 15,781 35,721 17 1		Med. High C	CALT Ind.	Total	STW Dischree/Imgarion	Total	Low Med.	High	C&I Ind.	Total
8. 1,692 9,648 64,024 15,781 35,721 17 4,752 9,648 64,024 15,781 35,721 17 1 1,692			,						-	
B 1,692				-	Crowtonough (BMR, TF)	265'6	· ,		-	ŀ
B 1,692		341	•	145			· - .	2		1.
B 1,692	L	. 341		341		4507	 - ,	17	<u>'</u>	17
B 1,692		.—					 		-	_
B 1,692	,	,	.:	•	Firle STW (Imigation farm)	533	· 			•
B 1,692		180		180	•	'		6		0
34 372 2240 32 147.158 1:	•	- 262	-	242			•	5		15
1,692		+604	-	604	٠		<u>'</u>	ş		8
1,692		1,046		1,046		533	· ·	S	-	54
1,692						_	L	_	-	
1,692	-	· .	-	•		,	'			.
1,692		1,780	• -	1,780			· -	S.		8
1,692	,	08/21 -		1,780		•	-	8		0%
1,692							_			-
1,692	1,692 11,790) - <u> </u>	-	11,790	Warlborough (WSP)	20	· .			•
1,692 372 2240 32 147158 15	•	1,614	1	1,614			· -	ž	· 	3
344 372 2249 32 147158 15		2,584	-	2,584	3	,	-	8.		5
344 372 2.249 32 147.158 15	1.692 11,790	4,198	-	15,988		8	·	210	<u>'</u> .	210
344 372 2249 32 147.15N			_	_			_		-	
1	. 158 150,155	•	- 33,539	655°EE 6	Norton (TF)	1,802	· - .	•	***	1897
Chegun Rural		783	•	783		-	<u>'</u> .	۶	-	L
Zvimba Rura!		7,592	-	265'1		1		8	<u>'</u>	€
Total 344 372 2,249 32 147,15K 150,155	1	- 2,375	- 33,539			1.802		611	#	#### 2,802
Grand Total 12,633 25,522 246,841 82,680 565,673 933,349	933,3	18,310	- 34,559	59869 6		65.034	Ŀ	916	#####	1

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

for irrigation reuse (STW): 8% 3. Concentration ratios are; for direct discharge (STW): 4. Pollution load reduction efficiency at STWs:

WSP 85% £5% BNR 80%

8

%

Low & Medium;

High; 8%

for unsewered area;

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

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No. Possion (No. Possion) Seconded Area Control of Area No. Possion (No. Possion) No. Possion (No. Possion																1 2	V. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1.				
This Mark						Ē	nerated 7		ঞ্জ				1		Oncentra	Z - L	(Ke) Oay)				
Lane Med. High C & E 1 104 Total Mod. Mo	Sub-basin/District			S.	red Area					Cose	vered An	¥.	-	Sewered Area				OBSCWCI	CO ATE	Ì	,
1		Low	Med	High	C&1	Ind.	Total		Med	High	CAL	Ind.	Total	STW Dischree/Impation	Total	١	Med	Kig.	C& 1	ğ	Total
1 1 1 1 1 1 1 1 1 1	1. Manyame River (Unstream) S/B																				
National Parallel 1	Goromonzi Ruzal	,	•		, 			,	•	348		•	348	-			·	5	-	·	듸
Nationary Road Nati	Latinte Diegal		,			٠	Ŀ	•	Ŀ	2		٠	61	•			·	c	,	·	ᅦ
Treat Treat Still Still <th< td=""><td>Manage Pipel</td><td></td><td></td><td></td><td>Ŀ</td><td></td><td>ŀ</td><td>Ŀ</td><td>ļ.</td><td>32</td><td>Ļ.</td><td></td><td>32</td><td></td><td></td><td></td><td>•</td><td>C1</td><td>'</td><td>·</td><td>[</td></th<>	Manage Pipel				Ŀ		ŀ	Ŀ	ļ.	32	Ļ.		32				•	C1	'	·	[
Repair Richard Stript 1, 20<	Total				ŀ	١.	Ŀ	 -	ŀ	381	ŀ	ļ.	381		•		•	19	•	·	ş
Hanter Clay. Ha	0.3 20.10		Ī					_													
Runar Local Board 2 6 7	L. NUMA NIVES AND	[1,240		,	12/2	'	 -	ŀ	ļ.		ļ.	Donnybrook (WSP)	80			•	-	•	·
Particul David D	River [Acal Board	٢٠	٥	8			1_	ļ.	ļ.	<u> </u>	ļ.		,	Ruwa (WSP)	19	mpg.	_	[.]	•	٠	٠
Company Name Comp	Foworth Local Board	,	١.	919		L	L_	·	 			ļ, 	,	Harare East (BNR)	190	-	•	•		,	1
Majorier Remain Majorier R	Goromonyi Rural					ŀ		Ļ	ŀ	83	,	-	K3	•	٠	,	,	**	,	4	4
Sole A Pulsaryon Marionalisti New S/R 2 0 1357 13 450 2.46 118 <	Harace Rura!	ŀ		ŀ	١.		Ŀ	·		55	,		5.5		•		·	٣	,	•	~
Selve & Micros Demis S(3) 8 7 70	Total	63	0	L	L		Ь.			138	L	•	138		951 951		·	7	•	,	7
Manorine Road Road Road Road Road Road Road Road	3. Seke & Harava Dams S/B															-674					١
Episoperiol Local Board 67 2 66 1 2 7 1 7 1 7 1 7 1 7 1 7 1 2 1 2 1 2 2 2 2 2 2 2 3 3 4 2 3 3 4 <td>Harare City</td> <td>ж</td> <td> .</td> <td>71</td> <td></td> <td></td> <td>7.</td> <td>· </td> <td>-</td> <td>•</td> <td>•</td> <td>,</td> <td>•</td> <td>To Harare South</td> <td>ŀ</td> <td></td> <td></td> <td>·</td> <td>·</td> <td></td> <td>1</td>	Harare City	ж	.	71			7.	· 	-	•	•	,	•	To Harare South	ŀ			·	·		1
Convenion Runal 1 2 4 2 4	Epworth Local Board	·		67	L		*		•			_	,	To Harate East		j				,	
Hanner Rural 8 9 <t< td=""><td>Goromonzi Rural</td><td>•</td><td></td><td></td><td></td><td></td><td></td><td>,</td><td>-</td><td>2</td><td>•</td><td>٠</td><td>52</td><td></td><td>-</td><td></td><td>·</td><td>c</td><td>\cdot</td><td>1</td><td>ျ</td></t<>	Goromonzi Rural	•						,	-	2	•	٠	52		-		·	c	\cdot	1	ျ
Manoater Razil 8 137 13 13 45 13 45 13 45 13 45 13 45 13 45 13 45 13 45 13 14	Hamic Rural	ļ	۱,	•	•	٠	,		•	9r.	Ш	•	30		·	·		۲۱	·	·	
Total Noveline River S/B Noveline River S/B Noveline River S/B 45	Manyame Rural	•		•	-			-	•	13		•	13	1	·		,	-	·	•	
Chirungwize Municipality 257 5,558 553 59,6407 238 2	Total	×		137			14.	_	•	45	•	٠	45		·		٠	63	·	٠	Ç1
Chinatogwizes Municipality 1.57 5.558 53.5 5.64 c/7 1.37 1.37 1.37 2.00 columny with the column with the columny with the column with the	4. Nvatsime River S/B	L.P.X.						-	_							_					
Manyame Ruril 137 137 137 <	Chirunewiza Municipality		257	L			<u>. </u>		٠	L		-		Zengeza (BNR)	895			<u>.</u>	·	·	
Marondeel Rural 257 5.558 5.35 5.3 6.407 2.38 101	Manyame Rural		,	L		Ĺ			-	135		•	137	1	•			7	·	-	
Total 552 5.558 553 59 6.4407 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.38 2.30 <th< td=""><td>Marondera Rura!</td><td></td><td><u> </u></td><td>,</td><td>·</td><td><u> </u></td><td>Ŀ</td><td><u> </u></td><td>•</td><td>101</td><td>,</td><td>-</td><td>101</td><td>•</td><td>٠</td><td>ا مدم</td><td>· </td><td></td><td>·</td><td>·</td><td>ς.</td></th<>	Marondera Rura!		<u> </u>	,	·	<u> </u>	Ŀ	<u> </u>	•	101	,	-	101	•	٠	ا مدم	·		·	·	ς.
Mulkukusi River STB SS2 1 076 7,308 4,401 1,301 HHHHHH 475 1 444 State (BARR) 2,309 2,309 2 1 1 Harare City 241 7 243 7 246 7 24 7 1 1 1 4 4 1 1 4 4 4 1 1 4 4 4 4 1 1 4 <td>Total</td> <td></td> <td>257</td> <td></td> <td></td> <td></td> <td></td> <td><u>,</u></td> <td>•</td> <td>238</td> <td></td> <td>·</td> <td>238</td> <td></td> <td>895</td> <td></td> <td></td> <td>ဌ</td> <td>·</td> <td>·</td> <td>ij</td>	Total		257					<u>,</u>	•	238		·	238		895			ဌ	·	·	ij
Harare City 552 1,79A 4,491 473 - 13 4444 473 - 13 4444 Firle (BNR) 2,30A - 1 - 1 Figworth Local Board - 241 7 242 - 25 - 25 - 25 - 1 -	S. Mukuvisi River S/B	50							_		_										
Eyworth Local Board 241 7 249 25 25 70 Harter Bast 7 1	Harae City	282	1,076					l		<u> </u>	· 	=	<u>₹</u>	Firle (BNR)	2,30	إ	<u>. </u>	1	·		
Harare Rural SSZ 1,706 4,49k 1,701 4444444 473 25 25 25 2,209 2,209 2 1 1 1 1 514 4473 31 1,1 514 2,209 2 2 1 1 1 1 514 2 1 1 1 514 2 1 1 1 514 3 1 1 514 3 1 3 4	Epworth Local Board	-	١,	241		ا ا_	ន	<u>.</u>	-	<u>. </u>	· 	-		To Harare East	·	<u>. </u>	·		·		•
Zyvimba Rural 552 1,076 7,640 4,49k 1,735 1,355	Harare Rural	,	•	•	•	_	_		<u>.</u>	N.	<u>.</u>		x	4			-			·	
Yotal 552 1,076 7,640 4,498 1,301 ###### 473 31 11 514 2,309 2,309 2 2 1 Manyame River (D.stream) S/B 1,858 1,465 1,558 <	Zvimba Rural	-	•	•	•	•	٠		•		•		¢	1	-		-	9		·	<u>- ا</u>
Manyame River (D. stream) S/B 1,558 1,558 1,558 200 37 37 37 20 20 20 Harare Rural 1,558 1,558 20 20 20 20 20 1 2 Manyame Rural 18 1,649 1,355 3,023 57 57 37 1 1 1 1 1 1 1 1 1 309 1 3 1 1 1 1 1 1 1 1 3 1 1 1 1 3 1 1 3 1 1 1 1 1 1 3 1<	Total	252								. .		11			2,309	_	.	11			"
18 92 1,558 1,468 20 Arane South (BNR) 309 7 7 1 1,558 1,558 20 20 20 20 20 20 20 1 2 1 </td <td></td> <td></td> <td></td> <td></td> <td>_</td> <td></td> <td>~</td> <td></td> <td></td> <td></td>					_													~			
Skural 1,55k 1,55k 1,55k 1,55k 2 2 2 anne Rural 1 1,55k 3,023 57 57 50 10 10 1 1 1 1 1 1 1 1 309 1 309 1 3 3 1 3 1 3 1 3 1 3 1 3 1 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3 3 1 3 <t< td=""><td>Harare City</td><td></td><td>18</td><td></td><td></td><td>1,355</td><td></td><td></td><td>•</td><td>•</td><td>_</td><td></td><td></td><td>Karare South (BNR)</td><td>33,</td><td><u>.</u></td><td>-</td><td>·</td><td>·</td><td>,</td><td>·</td></t<>	Harare City		18			1,355			•	•	_			Karare South (BNR)	33,	<u>.</u>	-	·	·	,	·
e. Rumal 37 37 37 20 anne Rumal 11.355 3.023 57 57 57	Chitungwiza Municipelity	1		1,558			1,55	8	•	-	-	•	·	to Zengeza STW	<u>.</u>	ا،	<u>.</u>		·	١	
ame Rural	Harace Rural		,	·	,					6		<u>'</u>	37	0	_	-	.	(3	_	·	
18 1.649 . 1.355 3.023 57 57	Manyame Rural	-	•	•	•	-	•	ا'	_	2	_		20		1	4	· -		·		
	Total	•	18		•	1.35		3		V.	7	•	57		XX.	,	-	۳	١	<u>·</u>	

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

	_				ئ	Generated T.	N Geolday	5						Concentrated T.N (kg/day)	Y Lat	(Volday)				Γ
Sub-basin/District			Sewei	Sewered Area					Unsewe	Unsewered Area			Sewered Area				Unsewered Area	d Ama		T
	3	X.	High	C&1	Ind.	Total	٩	Med.	High	7 % 7	Ind.	Total	STW Dischme/Imigation	Total	3	Med	High	1.80		٦ چ
7. Marimha River S/B									f~	 									1	
Harare City	125	955	6,141	1,123	389	9,130	,	·	•	1	,		Crowhorough (BNR, TF)	1,296				,		Ī.
Zwimba Rural				<u> </u>			,	·	35	- -		35	,				2		-	٠,
Total	125	\$56	6,141	1,123	681	9,130	·		35	,	,	35		3.296	,	,	(1		- 	۲۰
R. Lake Chivero S/B																		-		Ī
Hamre City	,		,				-			-			Firle STW (Imigation farm)	×		ŀ		-	 -	Ţ.
Chegura Rural	,	-							19	,		6.	•	٠		·	-	-	 	F
Manyame Rural	٠	•	,	•				- 1	2.2	-		27		-			-	-		-
Zwmba Rural	•	•		-			-		63	,		63	•	٠		,		,	-	87
Total	•	•	٠	•		-	-	- 1	109	•	•	109		183			\$,	-	S
9. Muzurura River S/B								1	•									-	-	T
Harare City	-	•	•	•	•			-	•	-	,	,		,			,	۱.	- .	۱.
Zvimba Rural	,		•		•			,	185	-		185		•	- [٥	 	-	٥
Total	-			•	[•	185	 	,	185		1			٥	 -	 	٥
10. Gwebi River S/B										-								-	-	
Hamre City	170	•	•	•	•	170	1,184	•	•	•	•	1,184	Marlborough (WSP)	7	-		,	١.	ļ ,	
Mazowe Rural		•		•	•	•	•	•	168	1	•	16X	•	-			×	-	-	×
Zvimba Rural	•	-		'	•			•	26K	•	•	268	•		٠	,	13	-	-	
Total	170	•		•	•	170	1,184	•	436	-	•	1.620		2	٠	۰	13	 	-	ĸ
111. Lake Manyame S/B	-									_								-	-	
Norton Town	19	36	260	\$	18%	90S		•	•		131	131	Norton (TF)	82				 -	ļ	2
Chegutu Rutal	·		 		•	·	•		81			131	•	•		Ŀ	4	-	 	4
Zvimba Rural		•		·	,			,	165	•		165	,			•	×	١,	-	×
Total	19	36	280	5	188	200	٠	•	247	,	131	378		28		,	12	,	S.	អ
Grand Total	1.271	2,333	23,261	6,180	3,742	*******	1,657	•	1,901		142	3,699		\$,285			55	<u> </u>	=	š
					ł															Ì

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;

for irrigation reuse (STW): TF WSP 30% 50% 80% 80% Z.

for unsewered area: % %

Low & Medium; High; 8%

8

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

					2	Contract T.N (Valley)	V. Centing	سر ا						Concentrated T.N (coldan)	T-N Cofe	(24)				
Sub-basia/District			Sewer	Sewered Area	}				Unsewered	d Area			Sewered Area				Unsewered Area	Area		
	Not	Med.	High	132	Ind.	Total	Low	Mcd.	High C&1		Ind.	Total	STW Dischree/Irrigation	Tota!	Zow M	Med. H	High C	1 1 V	Ind. To	Total
1. Manyame River (Upstream) S/B	1					jener			-	_				B.E.J24*	-		-			
Coremonzi Rural	,	•	-	-	-			-	419		•	419	4	•		-	21	-		72
Harare Rural		•	•	•	,	,	·		2	-		2	•		-		٥		+	٩
Manyame Rural	•	•			-	•	•		3K	_	-	38	•		-	-	ŧ	_	_	C3
Total			١	,	,		,	-	459	-	 	459		•			ĸ	_	-	23
2. Ruwa River S/B							-	_				-				-	_	_	-	
Harare City	,	,	1,605	•	088	2,485		•	•	ļ.,	•	,	Donnybrook (WSP)	79	•		•			
Ruwa Local Board	C 2	7	E	0	\$88	614	•		,	-	-	•	Ruwa (WSP)	22			•			,
Epworth Local Board			742	24		266		-	-	L		-en	Harare East (BNR)	404		-			_	.
Goromonzi Rural					,	,	,	- -	001	•		100	-	•	-	_	\$		_	\$
Harare Rura		•		,	,	•	•	,	98		-	\$	•				3	_		3
Total	23	C1	57369	77	1,468	3,865	•		366	- •		166		\$ \$65	,		8		_	ж
3. Seke & Harava Dams S/B								H								-				
Harare City	10	•	16		•	101	•	•	•	•	•	,	To Harare South	•			,			,
Epworth Local Roard	•	•	Ş	3	-	æ	-	-	-		-	•	To Harare East	-		•	٠.	-		ŀ
Coromonzi Rural		•					•	-	ęą	•	-	C.3	•				0		_	٥
Harare Rural	•		٠		,	•	•		36	_		36		•	_		۲3	,	-	[1
Manyame Rural		•	,	,	١	•	•	-	16	_	-	16	•	'			1			**
Total	10	•	172	3	•	184	•	•	\$2	-	-	\$		-	•	-	3		,	3
4. Nyattime River S/B							-71								-	-				
Chitungwiza Municipality	05	179	7,686	433	450	062'6	•	•	•	_	-	•	Zengeza (BNR)	1,305						
Manyaine Rural		•	•				•		165			165	•	,		_	×	-		æ
Marondera Rural				,	•	-	•	 ,	121			121	-	•	_		9			6
Total	20	129	7.6%	433	4.50	9.290	•		287		·	287		1,305		-	14			ž
S. Mukunisi River S/B				_																
Harare City	869	1,300	9,676	7,950	1,432	21,056	612	•	,	•	11	623	Firle (RNR)	3,559	•		,		-	_
Epworth Local Board	•	٠	8	0	-	300	,	•	•	•	•	1	To Harare East	•	•			-	-	,
Harace Rural	٠	٠	,	•	•			•	30	 ,	•	30	•	•	•	_		-		-
Zvimba Rurai		,	1	•			•	•	7	•	••	7	-	•	1		C			٩
Total	698	1,300	0,967	7,960	1,432	21,356	612		37	•	11	699		3,559			7	-		٣
6. Manyame River (D.stream) S/B																	-	-		
Hame City	-	7	13	•	1,355	1,496		•	,	 1		ا	Harare South (BNR)	319	-	-		_		·
Chitungwiza Municipality	-	٠	2,243	•	85	2,32X	٠	•	•		'	٠	to Zengeza STW			•		-	-	,
Harare Rural	,	,		,	,		·	•	45	ı.	·	45	•	,	•		~	_	-	C3
Manyame Rural		·	_	•			,	•	24	-	•	2,4	•							
Total		1	2,378		1,450	3,824	· ·		69	-	i	69		319		_	3	-		$^{\circ}$

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

						Generated T	-N (kg/day)	(A)) mea.		Concentrated T-N (kg/dav)	ON-LP	kp/dav)				
Sub-basin/District			Sew	Sewered Area				!	Unsewe	Unsewered Area		- Tan 30-	Sewered Area				Unsewer	Unsewered Area		
	Low	Med.	High	C&1	Ind.	Total	wor	Med.	High	C & 1	Ind.	Total	STW Dischrge/Imigation	Total	Yow	Med.	High	C&1	ja,	Total
 Мапшba River S/B 	e-3. e e-																-		Ì-	
Harace City	8:9	1,232	8,003	1 9XX	389	12,229		·				<u> </u>	Crowborough (BNR, TF)	1,92,1	Ŀ		ļ.	,	Ī	[.
Zymba Rural		•					١.	,	54	<u> </u>		43	-				۲,	,		6.
Total	819	1,232	\$,003	1,988	389	12,229	ļ. _		\$			8		1,923	Ŀ		ri		Ţ.	1
N. Lake Chivero S/B										 -		Tay and							Γ	
Harare Ciry			•	•		٠	,			 	,	,	Firle STW (Imgation farm)	183				<u> </u>		
Chegutu Rural	,	•	•	,			ı		83			22	•		·	,	-			-
Manyame Rural	-	-	•	•	•			,	33	ļ.	١.	33				,	2	-		T
Zvimba Rural	- }	.		•	· • [•	i	2	١.	ļ ,	2,	•	ļ .			7	ļ.	١.	T
Total		-		•		•	-		131	-		131		183	ŀ		7	-		-
9. Muzurun River S/B	-									-										
Harare City	1	Ŀ	,				. 		<u> </u>	-		,		,						T'
Zvimba Rura!		•	•		•				222		,	E	1	•		·	=	,		:
Total		,	•	٠			1	•	ij		•	55			ļ.	,	11			=
10. Gwebi River S/B										-		 					-	T		Ī
Harare City	330	·	•	•		220	1,533	-	•		•	1,533	Marlborough (WSP)	٥				ļ -	Ţ.	
Mazowe Rura!	-	•							202	-	•	202	•	[.	_	·	2	 		Ē
Zvimba Rural		•	,	•		-	•		323	,	ļ -	ដ្ឋ	1	[. _		ŀ	£		ļ .	Š
Total	22	٠	•			220	1,533	-	222	 	·	2,057		٥	ŀ	ŀ	ន			8
11. Lake Manyame S/B																		ľ		Ī
Norton Town	4.5	47	281	4	27%	1,249	•	-	·	,	131	131	Norton (TF)	62	ļ			,	2	ĝ
Cheputa Rural	•	•	ı	•	•	٠	•	•	96	-	,	86	•			,	S	١,		\
Zvimba Rural		•	•	•	•	-	•	•	199	-	٠	199	-			·	2	 	-	Ş
Total	45	47	_	4	872	1.249		4	297	- -	131	428		7	ŀ	ŀ	15	ļ	2	K
Grand Total	1.642	3,25K	30,855	10,411	150,6		2,144	1 - 1	2,280	•	142	4.575		7,863	Ŀ		3	ļ.	F	ž
Note 1 Decidential descript means	the standard and beautiful to			in Company of the same of the																

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

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

3. Cooccentration ratios are; for direct discharge (STW): 100% for imigation reuse (STW): 8% 4. Pollunon load reduction efficiency at STWs: BNR TF WSP T-- WSP T-- NSP 80% 30% 50%

ટું

Low & Medium;

High; 8%

for unsewered area:

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

<u> </u>						,								(veb)oy) G.T. balestown)	V 7. 7.	(ve)/ox)				ĺ
			3	Sewered Area		Cenerated 1-r	I - F (KE/GAV)		Uasewei	Unsewered Area			Sewered Area				Unwwered Area	ed Area		
	*6.	W.cd.	Kigh	1780	Ind.	Total	307	Mec.	High	C& 1	Ind.	Total	STW Dischrge/Imigation	Total	MOJ	Mcd.	High	C&1	Jud.	Total
1. Manyame River (Upstream) S/B																	-	-	+	٦
Goromonzi Rural		-	•		,	•	•	-	38		•	ž		4	·	•	۲۷		+	Ci
Harare Rural	,	•	•	•	•	•	•		0	•	-	0	•		,	•	0	+	1	٥
Manyame Rural			•		•	•			۴,	1	•	۲,	4			'	0			0
Total	·			١	•	 -	,	-	42	-	•	42				·	61	-	,	7
2 River S.R.					_	L		_				-								
Harar Orv	[ļ,	135		ļ,	135	•	Ŀ					Donnybrook (WSP)	*	1	•	-	-	1	-
Ruwa Local Board	ō	С	64	0	ş,	L		,			-	•	Ruwa (WSP)	"	·		-	-	-	1
Soworth Local Board	ŀ		67	63	•	69	-		•	,	•	,	Harare East (BNR)	3,		•	1	-	-	
Commonzi Rural		,	•		Ŀ				6	-	,	6		٠	·	•	0		1	С
Harare Rural	<u> </u>		<u> </u>		ļ.	· -		-	6	•		6		-			0	•		0
Total	ō	0	285	es.	98	5 263			15	•	٠	15		37		<u>'</u>	~	,	-	-
3. Seke & Harava Dams S/B														Ì			-	-	1	
Harare Cirv	F		×		-	6			-	•		'	To Marare South		إ	- - !	-		1	·
Enworth Local Board	·	[,	,	٥	,	,		_	-	•	,	1	To Harare East	_	'		1	+	7	
Goromonzo Runa	,		ŀ	Ľ	 -	٠	1	-	0	\cdot	•	0		1		•	¢	-	-	٥
Harace Rural	-	,			•	1	•	•	3	·	t	۴.				•	o	•	•	0
Manyame Rural		•			•				1	•		-			١		c	-	-	С
Total	7	-	15	٥		91		•	\$	•	•	S			٠	•	٥	-	•	٥
4. Nyatsime River S/B				<u> </u>			res#e											1	1	Ť
Chitungweza Municipality	,	23	8	ž	25	5 717		ŀ		•	-	•	Zengeza (BNR)	ŭ	·	•	 	-	1	Ī
Manyame Rural	-	1						,	15	•	•	15	•		<u>.</u>		-		-	
Marondera Rural	•	-	•	•	•		,	٠	11	,	•	11	•	,		•	-	+	•	7
Total		233	909	58		717 25		•	38	·		3,6		125	1	:	-	-		7
5. Mukuvisi River S/B								_	_								1	+	1	Ī
Harare City	80	117	807	480	404	4 1,876	51	· -	- 		3	×	Firle (BNR)	ž	,		1	-	o	0
Epworth Local Board	•		γ,			£ 2	-	<u>. </u>			-	·	To Harare East		<u>.</u>		1	1	1	·
Harare Rural	•	•		'	_	_		<u>.</u>	۳,			~			·	•	=	1	1	٦
Zwmba Rural			·		,	-	'				_		•	•		<u> </u>		+	1	°
Total	65	117	1 833	489	9 404	1,903		51	3	•	3	57		365	·	-	0	,	٥	٥
h. Manvame River (D. stream) S/B						_											1	-		
Harare City		C 3	0.	, 	421	11 433	۲	•	•	•	,	1	Harare South (BNR)	110			'	-	-	·
Chitungwiza Municipality			170	<u> </u>	<u> </u>	170	ç			•		·	to Zengeza STW	<u>'</u>		•	·	-	·	·
Harare Rural			،		ļ .		-		4		•	4			-	-	c	-	-	C
Manyame Rural		,	Ŀ	٠	, 	-	•		۲٦	i	,	¢,		1	_		٥	1	-	٥
Total		71	180	•	421	:1 603	3	-	9	•	-	9		91	_		0	,	'	٥

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-basid/Darity State State Darity State								*	1						Contraction	1 T.D.	(Vah)av				
Control Cont							Cenerate	X X	(dey)							3	1	:			
1504 Model High Colit I and Trona Low Model High Colit I and Trona Colimporatingation Trona Colimporating and Archive High Colit I and Trona Colimporating and Archive High Colit I and Trona Colimporating Archive High Colin I and Trona Colimporating Archive High Colin I and Trona Colimporation Archive High Colin I and Trona Colimporation Archive High Colin I and Trona Colimporation Archive High Colin I and Trona Colin I and	Sub-basin/District			Sew	ared Arca	e		_		Unsew	erod Are	ez.		Sewered Area			Ì	Casew	ered Are	- 1	
5.6 104 670 122 121 1,1073		wol	Med.	┝┈┤	-1	ĻĮ	Total	-	Med.	High	C.&. 1]	Total	STW Dischree/Imgation	Total	γo	Med.	Hich	C& 1	P	Total
56 104 670 122 121 1,073 1.0	7. Manmba River S/78																1				
See 1344 Correct C	Hacare City	8.		L.	L	_		٠	,		لـــٰ		•	Crowborough (BNR, TF)	<u>\$</u>	•	•	•		•	
See 104 6779 122 121 1,0773	Zwimba Rumi		L	L.	L		<u>L</u> .			4			4		ļ	١		c	_	,	٩
R. S.	Total	35	L	L	_	L	_	' -		4	_	-	4		184		•	0	٠	,	٥
Residue Control (Control (Cont	S. Lake Chivero S/B		L.	<u> </u>	L		_														
RA COLLINIO	Harare City		,	ŀ	٠	•		,	•	•		-		Firle STW (Imigation farm)	ដ	·	•	٠	•	,	٠
R	Chesutu Rurai		Ŀ		ŀ	Ļ	•	<u>'</u>	 -	64		•	C3	,	,			0	ا	•	٥
R R R R R R R R R R R R R R R R R R R	Kanyame Sura	·	.	ļ.	ļ,	 -	<u>'</u>	<u>'</u>	ŀ		Ļ.	•	•	_	•	·	·	٥	,	,	٥
n 13 12 </td <td>Zomba Rural</td> <td><u> </u></td> <td>۱</td> <td>ļ. Ļ.</td> <td>,</td> <td><u>'</u></td> <td> -</td> <td><u> </u></td> <td> </td> <td>_</td> <td></td> <td></td> <td>7</td> <td></td> <td>•</td> <td>-</td> <td>•</td> <td>O</td> <td>•</td> <td>•</td> <td>0</td>	Zomba Rural	<u> </u>	۱	ļ. Ļ.	,	<u>'</u>	 -	<u> </u>	 	_			7		•	-	•	O	•	•	0
Note	Total		ŀ	-	ļ.	<u>'</u>	-	ļ.		ם	L	 -	2		អ		-	1			1
1. 1. 1. 1. 1. 1. 1. 1.	19. Muzururu River S/B				_	<u> </u>	_				_										
1. 1. 1. 1. 1. 1. 1. 1.	Harare City	·					•				·	•	•	•	•	·		4	·		•
18	Zynmba Rural	_	Ŀ	•	Ŀ	•				20		•	20		·	•	•	-	·	,	_
18	Total		Ŀ		Ŀ	· 	-	'		ຄ	Щ	•	92		•	٠	,	-	·	•	
18	10 Gurchi River S/B	<u> </u>	L	_	_	_	_		-	_						-					
18 2 18 29 29 29 29 29 29 29 29 29 29 29 29 29 29 29 20 29 20 </td <td>Home Day</td> <td>Į.</td> <td>١.</td> <td>ļ.</td> <td>ļ.</td> <td> </td> <td> [~]</td> <td><u> </u></td> <td>L</td> <td> </td> <td>ļ.</td> <td> .</td> <td>128</td> <td></td> <td>1</td> <td>-</td> <td>•</td> <td>٠</td> <td></td> <td>•</td> <td>٠</td>	Home Day	Į.	١.	ļ.	ļ.		[~]	<u> </u>	L		ļ.	.	128		1	-	•	٠		•	٠
18 2 29 20 </td <td>Mazowe Rural</td> <td></td> <td>١.</td> <td>ŀ</td> <td><u> </u></td> <td><u>'</u></td> <td> </td> <td>Ĺ</td> <td>L</td> <td>1,8</td> <td></td> <td> •</td> <td>18</td> <td></td> <td>•</td> <td>٠</td> <td>·</td> <td>-</td> <td>·</td> <td>•</td> <td></td>	Mazowe Rural		١.	ŀ	<u> </u>	<u>'</u>	 	Ĺ	L	1,8		•	18		•	٠	·	-	·	•	
18 . . . 48 . . 175 . <td>Zvimba Rural</td> <td><u> </u></td> <td>١.</td> <td></td> <td><u> </u></td> <td> </td> <td>، ا</td> <td>ļ.,</td> <td>·</td> <td>8</td> <td></td> <td>•</td> <td>83</td> <td></td> <td></td> <td></td> <td>,</td> <td>٦</td> <td>•</td> <td></td> <td></td>	Zvimba Rural	<u> </u>	١.		<u> </u>	 	، ا	ļ.,	·	8		•	83				,	٦	•		
2 3 23 1 31 65 - 2 1 31 65 - 3 1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Total	18	ŀ	,	٠ _	Ŀ	17	_	_	48		•	175		-1		·	(3	·	•	£ \$
2 3 23 11 65 - - 9 - 9 - 9 - 0 - 0 - 13 - 13 - 13 - 13 - 13 - 14 - 14 - 1 1 - 1 1 - 1 - 1 - 1 - 1 - 1 - <th< td=""><td>11. Lake Manyame S/B</td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td>-</td><td></td><td>_</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></th<>	11. Lake Manyame S/B	_							-		_										
Int Rural 9 9 0	Norton Town	.,		L			_	- 2	•			12		Norton (TF)	4	۰	·	•	·	-	-
As Rural 2 3 28 1 31 65 27 27 24 48 4 4 - 1 1 - 1 - 1 - 1 - 1 - 1 - 1 - - 1 - 1 - 1 -	Cheguta Rural			ļ.,				 	, 	5		j	6				\cdot	c			
Crand Total 137 253 2538 675 1,058 4,658 178 - 207 - 24 410	Zvimba Rural			, 	· 	•			•	18		•	18			·	·				
Grand Total 137 253 2538 673 1,058 4,658 178 - 207 - 24 410	Total			L.	_			- 2		33	<u> </u>	13			4		•	_	•	1	63
		137	1_	2.538		1			· ×	203	<u>.</u>	5.	_		849	٠	,	10		1	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:

BNR 75% F.

% % for irrigation reuse (STW): TF WSP 30% 30%

Š

Low & Medium;

% %

High:

for unsewered area: