ECONOMIC ANALYSIS FOR SOFTWARE PROJECTS WITHOUT ENVIRONMENTAL EDUCATION AND MANAGEMENT COST

Table III:1-A(a)
On-Farm Conservation Project
(Without Conversion)

Productivity and Farm-Gate Price		Increment in Benefits	5%
Productivity of Traditional Variety of Maize	1.4	Discount Rate	7%
Productivity of Improved Variety of Maize M	1.9	Operation Cost	5%
Average Farm-Gate Price (in Rs.) of Maize	8.62	Increment Operation Cost	2%
		Benefit from Other Crops	50%
Benefit Components (in Thousand Rs/hectare)		SCF	1
Revenue per ha of Traditional Variety of Mai	12		
Revenue per ha of Improved Variety of Maiz	16		
Incremental Benefit per hectare	4		
Cost Components (in Thousand Rs.)		**Converted**	
Farm Conservation(in 20 ha)	800	800	

		Costs (in '000 Rs.)			**Benefits (in 000 Rs.)**					
S.N	Year	Capital Cost	O&M Cost	Total Cost	Farm Conservation (in 20 ha)	Benefit from Other Crops	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	320		320			0	(320)	299	0
2	2004	320		320			0	(320)	280	0
3	2005	160		160			0	(160)	131	0
4	2006		40	40	81	40	121	81	31	93
5	2007		41	41	85	43	128	87	29	91
6	2008		42	42	89	45	134	92	28	89
7	2009		42	42	94	47	141	98	26	88
8	2010		43	43	98	49	148	104	25	86
9	2011		44	44	103	52	155	111	24	84
10	2012		45	45	109	54	163	118	23	83
11	2013		46	46	114	57	171	125	22	81
12	2014		47	47	120	60	179	133	21	80
13	2015		48	48	126	63	188	141	20	78
14	2016		49	49	132	66	198	149	19	77
15	2017		50	50	139	69	208	158	18	75
16	2018		51	51	145	73	218	167	17	74
17	2019		52	52	153	76	229	177	16	73
18	2020		53	53	160	80	241	188	16	71
19	2021		54	54	168	84	253	199	15	70
20	2022		55	55	177	88	265	210	14	69
21	2023		56	56	186	93	278	222	14	67
22	2024		57	57	195	97	292	235	13	66
23	2025		58	58	205	102	307	249	12	65
24	2026		59	59	215	107	322	263	12	64
25	2027		61	61	226	113	338	278	11	62
26	2028		62	62	237	118	355	294	11	61
27	2029		63	63	249	124	373	310	10	60
28	2030		64	64	261	131	392	327	10	59
	Total	800	1,281				5,798		1,165	1,865
		Internal Rate of Return					13.12%			
		B/C Ratio					1.60			
		NPV					700			

Note

The capital costs column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the Sub-Total of cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 2% per annum

Economic benefits of farm conservation for 2006 is calculated by multiplying incremental benefit per hectare by the area (20 ha)

Economic benefits of farm conservation from 2007-2030 has been increased by the growth of 5% per year

Table III:1-A(b)
On-Farm Conservation Project
(With Conversion)

Productivity and Farm-Gate Price		Increment in Benefits	5%
Productivity of Traditional Variety of Maize	1.4	Discount Rate	7%
Productivity of Improved Variety of Maize M	1.9	Operation Cost	5%
Average Farm-Gate Price (in Rs.) of Maize	8.62	Increment Operation Cost	2%
		Benefit from Other Crops	50%
Benefit Components (in Thousand Rs/hectare)		SCF	0.95
Revenue per ha of Traditional Variety of Mai	12		
Revenue per ha of Improved Variety of Maiz	16		
Incremental Benefit per hectare	4		
Cost Components (in Thousand Rs.)		**Converted**	
Farm Conservation(in 20 ha)	800	760	

		Costs (in '000 Rs.)			**Benefits (in 000 Rs.)**					
S.N	Year	Capital Cost	O&M Cost	Total Cost	Farm Conservation (in 20 ha)	Benefit from Other Crops	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	304		304			0	(304)	284	0
2	2004	304		304			0	(304)	266	0
3	2005	152		152			0	(152)	124	0
4	2006		38	38	77	38	115	77	29	88
5	2007		39	39	81	40	121	82	28	86
6	2008		40	40	85	42	127	88	26	85
7	2009		40	40	89	45	134	93	25	83
8	2010		41	41	94	47	140	99	24	82
9	2011		42	42	98	49	147	105	23	80
10	2012		43	43	103	52	155	112	22	79
11	2013		44	44	108	54	162	119	21	77
12	2014		45	45	114	57	171	126	20	76
13	2015		45	45	119	60	179	134	19	74
14	2016		46	46	125	63	188	142	18	73
15	2017		47	47	132	66	197	150	17	72
16	2018		48	48	138	69	207	159	16	70
17	2019		49	49	145	73	218	168	16	69
18	2020		50	50	152	76	229	178	15	68
19	2021		51	51	160	80	240	189	14	66
20	2022		52	52	168	84	252	200	13	65
21	2023		53	53	176	88	265	211	13	64
22	2024		54	54	185	93	278	223	12	63
23	2025		55	55	194	97	292	236	12	62
24	2026		56	56	204	102	306	250	11	60
25	2027		58	58	214	107	322	264	11	59
26	2028		59	59	225	113	338	279	10	58
27	2029		60	60	236	118	354	295	10	57
28	2030		61	61	248	124	372	311	9	56
	Total	760	1,217				5,508		1,107	1,771
		Internal Rate of Return					13.12%			
		B/C Ratio					1.60			
		NPV					665			

Note

The capital costs column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the Sub-Total of cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 2% per annum

Economic benefits of farm conservation for 2006 is calculated by multiplying incremental benefit per hectare by the area (20 ha)

Economic benefits of farm conservation from 2007-2030 has been increased by the growth of 5% per year

Table III:2-A(a)
Goat Raising Project
Without Conversion

No.of households engaged in goat raising	720	Increment in Benefits	5%
Number of goats per household	2	Discount Rate	7%
Total goat-lets purchased	1440	Operation Cost	5%
Purchase price of goat-let (in '000 Rs.)	1.0		
Number of goats sold/annum/hh	1	Increment in feeding Cost	2%
Total goat sold/annum	720	Percentage of goat sold	50%
Sales price of adult goat for meat (in '000 Rs.)	2.0		
No.of mother goats repl. at interval of 6 yrs	1008	Benefit from sales of manure	5%
Salvage price of mother goat	500	SCF	1
Benefit from the sales of goats (in '000 Rs.)	1	**Number of goats**	

			2003	2004	2005	Total
Expense for addnl feeding/hh/goat/day (Rs.)	3.0		40%	40%	20%	100%
Total expenses for addnl feeding/hh/ann(Rs.)	2,190	Purchase	576	576	288	1440
Feeding expenses/goat/annum (Rs.)	1095	Sold	288	288	144	720
Cost Components (in Thousand Rs.)		Converte	288	288	144	720
Initial cost	1,440	1440				

	Costs (in '000 Rs.)			Benefits (in 000 Rs.)						
S.N.	Year	Capital Cost	Feeding Expenses	Total Cost	Benefit from sales of adult goat	Benefit from manure	Income from sales of mother goats	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	576	631	1,207				0	(1,207)	1,128	0
2	2004	576	631	1,207	576	29		605	(602)	1,054	528
3	2005	288	315	603	1,152	58		1,210	606	493	987
4	2006		1,577	1,577	1,440	72		1,512	(65)	1,203	1,153
5	2007		1,608	1,608	1,512	76		1,588	(21)	1,147	1,132
6	2008		1,641	1,641	1,588	79		1,667	26	1,093	1,111
7	2009		1,673	1,673	1,667	83	504	2,254	581	1,042	1,404
8	2010		1,707	1,707	1,750	88		1,838	131	993	1,070
9	2011		1,741	1,741	1,838	92		1,930	189	947	1,050
10	2012		1,776	1,776	1,930	96		2,026	250	903	1,030
11	2013		1,811	1,811	2,026	101		2,128	316	861	1,011
12	2014		1,847	1,847	2,128	106		2,234	386	820	992
13	2015		1,884	1,884	2,234	112	504	2,850	965	782	1,182
14	2016		1,922	1,922	2,346	117		2,463	541	745	955
15	2017		1,961	1,961	2,463	123		2,586	625	711	937
16	2018		2,000	2,000	2,586	129		2,715	716	677	920
17	2019		2,040	2,040	2,715	136		2,851	811	646	903
18	2020		2,081	2,081	2,851	143		2,994	913	616	886
19	2021		2,122	2,122	2,994	150	504	3,647	1,525	587	1,009
20	2022		2,165	2,165	3,143	157		3,301	1,136	559	853
21	2023		2,208	2,208	3,301	165		3,466	1,258	533	837
22	2024		2,252	2,252	3,466	173		3,639	1,387	508	821
23	2025		2,297	2,297	3,639	182		3,821	1,524	485	806
24	2026		2,343	2,343	3,821	191		4,012	1,669	462	791
25	2027		2,390	2,390	4,012	201	504	4,716	2,326	440	869
26	2028		2,438	2,438	4,212	211		4,423	1,985	420	762
27	2029		2,486	2,486	4,423	221		4,644	2,158	400	747
28	2030		2,536	2,536	4,644	232		4,876	2,340	381	733
	Total	1,440	52,082					75,994		20,636	25,479

Internal Rate of Return	18.12%
B/C Ratio	1.23
NPV	4,843

Note

The capital cost column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the Sub-Total of cost for 2006

From 2007 to 2030, the feeding cost has been increased by the growth of 2% per annum

Table III:2-A(b)
Goat Raising Project
With Conversion

No.of households engaged in goat raising	720		Increment in Benefits				5%
Number of goats per household	2		Discount Rate				7%
Total goat-lets purchased	1440		Operation Cost				5%
Purchase price of goat-let (in '000 Rs.)	1.0						
Number of goats sold/annum/hh	1		Increment in feeding Cost				2%
Total goat sold/annum	720		Percentage of goat sold				50%
Sales price of adult goat for meat (in '000 Rs.)	2.0						
No.of mother goats repl. at interval of 6 yrs	1008		Benefit from sales of manure				5%
Salvage price of mother goat	500		SCF				0.95
Benefit from the sales of goats (in '000 Rs.)	1		**Number of goats**				
			2003	2004	2005	Total	
Expense for addnl feeding/hh/goat/day (Rs.)	3.0		40%	40%	20%	100%	
Total expenses for addnl feeding/hh/ann(Rs.)	2,190	Purchase	576	576	288	1440	
Feeding expenses/goat/annum (Rs.)	1095	Sold	288	288	144	720	
Cost Components (in Thousand Rs.)		Converte	273.6	273.6	136.8	684	
Initial cost	1,440	1368					

		Costs (in '000 Rs.)			**Benefits (in 000 Rs.)**						
S.N.	Year	Capital Cost	Feeding Expenses	Total Cost	Benefit from sales of adult goat	Benefit from manure	Income from sales of mother goats	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	547	631	1,178				0	(1,178)	1,101	0
2	2004	547	631	1,178	547	27		575	(603)	1,029	502
3	2005	274	315	589	1,094	55		1,149	560	481	938
4	2006		1,577	1,577	1,368	68		1,436	(140)	1,203	1,096
5	2007		1,608	1,608	1,436	72		1,508	(100)	1,147	1,075
6	2008		1,641	1,641	1,508	75		1,584	(57)	1,093	1,055
7	2009		1,673	1,673	1,584	79	504	2,167	493	1,042	1,349
8	2010		1,707	1,707	1,663	83		1,746	39	993	1,016
9	2011		1,741	1,741	1,746	87		1,833	92	947	997
10	2012		1,776	1,776	1,833	92		1,925	149	903	979
11	2013		1,811	1,811	1,925	96		2,021	210	861	960
12	2014		1,847	1,847	2,021	101		2,122	275	820	942
13	2015		1,884	1,884	2,122	106	504	2,732	848	782	1,134
14	2016		1,922	1,922	2,228	111		2,340	418	745	907
15	2017		1,961	1,961	2,340	117		2,457	496	711	890
16	2018		2,000	2,000	2,457	123		2,580	580	677	874
17	2019		2,040	2,040	2,580	129		2,709	669	646	857
18	2020		2,081	2,081	2,709	135		2,844	763	616	841
19	2021		2,122	2,122	2,844	142	504	3,490	1,368	587	965
20	2022		2,165	2,165	2,986	149		3,135	971	559	810
21	2023		2,208	2,208	3,135	157		3,292	1,084	533	795
22	2024		2,252	2,252	3,292	165		3,457	1,205	508	780
23	2025		2,297	2,297	3,457	173		3,630	1,333	485	766
24	2026		2,343	2,343	3,630	181		3,811	1,468	462	751
25	2027		2,390	2,390	3,811	191	504	4,506	2,116	440	830
26	2028		2,438	2,438	4,002	200		4,202	1,764	420	724
27	2029		2,486	2,486	4,202	210		4,412	1,925	400	710
28	2030		2,536	2,536	4,412	221		4,633	2,096	381	697
	Total	1,368	52,082					72,295		20,572	24,243
				Internal Rate of Return				15.60%			
				B/C Ratio				1.18			
Note				NPV				3,671			

The capital cost column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the Sub-Total of cost for 2006

From 2007 to 2030, the feeding cost has been increased by the growth of 2% per annum

Table III:3-A(a)
Washing and Laundry Place

Without Conversion

Construction of Laundry Place	10		Increment in Benefit		5%
Constrution cost per unit (in '000 Rs.)	150		Discount Rate		7%
Number of participatants	40		O&M Cost		15%
Participants per unit of laundry place	4		Increment Operation		5%
			Other benefits		5%
Per capita/day income from wash	100		SCF		1
Washing days per week	2		**Cost components**		
Per annum washing days	104		2003	2004	2005
Per annum income of the group	416		30%	30%	40%
			450	450	600
Cost Components (in Thousand Rs.)		Converted			
Cost for washing and laundry place	1,500	1500	450	450	600

		Costs (in '000 Rs.)				Benefits (in 000 Rs.)				
S.N.	Year	Capital Cost	O&M Cost	Total Cost	Per annum Income	Other Benefit	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	450		450			0	(450)	421	0
2	2004	450		450	125		125	(325)	393	109
3	2005	600		600	250		250	(350)	490	204
4	2006		225	225	416	21	437	212	172	333
5	2007		236	236	437	22	459	222	168	327
6	2008		248	248	459	23	482	234	165	321
7	2009		260	260	482	24	506	245	162	315
8	2010		273	273	506	25	531	257	159	309
9	2011		287	287	531	27	557	270	156	303
10	2012		302	302	557	28	585	284	153	298
11	2013		317	317	585	29	615	298	150	292
12	2014		332	332	615	31	645	313	148	287
13	2015		349	349	645	32	678	329	145	281
14	2016		367	367	678	34	712	345	142	276
15	2017		385	385	712	36	747	362	139	271
16	2018		404	404	747	37	784	380	137	266
17	2019		424	424	784	39	824	399	134	261
18	2020		445	445	824	41	865	419	132	256
19	2021		468	468	865	43	908	440	129	251
20	2022		491	491	908	45	953	462	127	246
21	2023		516	516	953	48	1,001	485	125	242
22	2024		541	541	1,001	50	1,051	510	122	237
23	2025		569	569	1,051	53	1,104	535	120	233
24	2026		597	597	1,104	55	1,159	562	118	228
25	2027		627	627	1,159	58	1,217	590	115	224
26	2028		658	658	1,217	61	1,278	620	113	220
27	2029		691	691	1,278	64	1,342	651	111	216
28	2030		726	726	1,342	67	1,409	683	109	212
	Total	1,500	10,739				21,222		4,757	7,017
		Internal Rate of Return					19.72%			
		B/C Ratio					1.48			
		NPV					2,260			

Note

The capital cost column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the capital cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 5% per annum

Per annum income for 2004 is taken as 30% of the per annum income of the group

Per annum income for 2005 is taken as 40% of the per annum income of the group

Table III:3-A(b)
Washing and Laundry Place

With Conversion

Construction of Laundry Place	10		Increment in Benefit		5%
Construtión cost per unit (in '000 Rs.)	150		Discount Rate		7%
Number of participatants	40		O&M Cost		15%
Participants per unit of laundry place	4		Increment Operation		5%
			Other benefits		5%
Per capita/day income from wash	100		SCF		0.95
Washing days per week	2		**Cost components**		
Per annum washing days	104		2003	2004	2005
Per annum income of the group	416		30%	30%	40%
			450	450	600
Cost Components (in Thousand Rs.)		Converted			
Cost for washing and laundry place	1,500	1425	427.5	427.5	570

		Costs (in '000 Rs.)				**Benefits (in 000 Rs.)**				
S.N.	Year	Capital Cost	O&M Cost	Total Cost	Per annum Income	Other Benefit	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	428		428			0	(428)	400	0
2	2004	428		428	125		125	(303)	373	109
3	2005	570		570	250		250	(320)	465	204
4	2006		214	214	395	20	415	201	163	317
5	2007		224	224	415	21	436	211	160	311
6	2008		236	236	436	22	457	222	157	305
7	2009		247	247	457	23	480	233	154	299
8	2010		260	260	480	24	504	245	151	294
9	2011		273	273	504	25	530	257	148	288
10	2012		286	286	530	26	556	270	146	283
11	2013		301	301	556	28	584	283	143	277
12	2014		316	316	584	29	613	297	140	272
13	2015		332	332	613	31	644	312	138	267
14	2016		348	348	644	32	676	328	135	262
15	2017		366	366	676	34	710	344	133	257
16	2018		384	384	710	35	745	361	130	252
17	2019		403	403	745	37	782	379	128	248
18	2020		423	423	782	39	822	398	125	243
19	2021		444	444	822	41	863	418	123	239
20	2022		467	467	863	43	906	439	121	234
21	2023		490	490	906	45	951	461	118	230
22	2024		514	514	951	48	999	484	116	225
23	2025		540	540	999	50	1,049	508	114	221
24	2026		567	567	1,049	52	1,101	534	112	217
25	2027		595	595	1,101	55	1,156	561	110	213
26	2028		625	625	1,156	58	1,214	589	108	209
27	2029		657	657	1,214	61	1,275	618	106	205
28	2030		689	689	1,275	64	1,338	649	104	201
	Total	1,425	10,202				20,179		4,519	6,682
		Internal Rate of Return					19.94%			
		B/C Ratio					1.48			
		NPV					2,163			

Note

The capital cost column derived from the cost components has been divided for 2003, 2004, and 2006 as 40%, 40%, and 20% respectively

O&M cost for 2006 has been taken as 5% of the capital cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 5% per annum

Per annum income for 2004 is taken as 30% of the per annum income of the group

Per annum income for 2005 is taken as 40% of the per annum income of the group

Table III:4-A(a)
Integrated Analysis of the Software Components
Without Conversion Factor

Discount Rate 7%

S.N.	Year	Total Cost (in 000 Rs.)	Total Benefit (in '000 Rs.)	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	1,977	0	(1,977)	1,847	0
2	2004	1,977	730	(1,247)	1,727	637
3	2005	1,363	1,459	96	1,113	1,191
4	2006	1,842	2,070	228	1,405	1,579
5	2007	1,885	2,174	288	1,344	1,550
6	2008	1,930	2,282	352	1,286	1,521
7	2009	1,976	2,901	924	1,231	1,806
8	2010	2,024	2,516	493	1,178	1,465
9	2011	2,072	2,642	570	1,127	1,437
10	2012	2,122	2,774	652	1,079	1,410
11	2013	2,174	2,913	739	1,033	1,384
12	2014	2,227	3,059	832	989	1,358
13	2015	2,281	3,716	1,434	947	1,542
14	2016	2,337	3,372	1,035	906	1,308
15	2017	2,395	3,541	1,146	868	1,283
16	2018	2,455	3,718	1,263	831	1,259
17	2019	2,516	3,904	1,388	796	1,236
18	2020	2,579	4,099	1,520	763	1,213
19	2021	2,644	4,808	2,164	731	1,329
20	2022	2,711	4,519	1,809	700	1,168
21	2023	2,780	4,745	1,966	671	1,146
22	2024	2,851	4,982	2,132	643	1,125
23	2025	2,924	5,232	2,308	617	1,104
24	2026	2,999	5,493	2,494	591	1,083
25	2027	3,077	6,272	3,194	567	1,156
26	2028	3,158	6,056	2,898	544	1,043
27	2029	3,241	6,359	3,118	522	1,023
28	2030	3,326	6,677	3,351	500	1,004
Total		67,842	103,014		26,557	34,361
		Internal Rate of Return		17.66%		
		B/C Ratio		1.29		
		NPV		7,803		

Table III:4-A(b)
Integrated Analysis of the Software Components
With Conversion Factor

Discount Rate 7%

S.N.	Year	Total Cost (in 000 Rs.)	Total Benefit (in '000 Rs.)	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	1,909	0	(1,909)	1,785	0
2	2004	1,909	699	(1,210)	1,668	611
3	2005	1,311	1,399	88	1,070	1,142
4	2006	1,829	1,967	138	1,395	1,500
5	2007	1,872	2,065	194	1,334	1,472
6	2008	1,916	2,168	253	1,277	1,445
7	2009	1,961	2,781	820	1,221	1,732
8	2010	2,008	2,391	383	1,169	1,391
9	2011	2,056	2,510	454	1,118	1,365
10	2012	2,105	2,636	531	1,070	1,340
11	2013	2,156	2,767	612	1,024	1,315
12	2014	2,208	2,906	698	980	1,290
13	2015	2,261	3,555	1,294	938	1,475
14	2016	2,317	3,204	887	898	1,242
15	2017	2,373	3,364	990	860	1,219
16	2018	2,432	3,532	1,100	824	1,196
17	2019	2,492	3,709	1,217	789	1,174
18	2020	2,554	3,894	1,340	756	1,152
19	2021	2,618	4,593	1,975	724	1,270
20	2022	2,683	4,293	1,610	693	1,109
21	2023	2,751	4,508	1,757	664	1,089
22	2024	2,821	4,733	1,913	637	1,068
23	2025	2,893	4,970	2,077	610	1,048
24	2026	2,967	5,218	2,252	585	1,029
25	2027	3,043	5,983	2,940	561	1,102
26	2028	3,122	5,753	2,632	538	991
27	2029	3,203	6,041	2,838	515	972
28	2030	3,287	6,343	3,056	494	954
Total		67,054	97,982		26,197	32,696

Internal Rate of Return	16.27%
B/C Ratio	1.25
NPV	6,499

Table III:1(a)

Economic Analysis of Environment Education for Soil Conservation Program

(Software Component)

Without Conversion Factor

Productivity and Farm-Gate Price

Productivity of Traditional Variety of Maize MT/ha:	1.4
Productivity of Improved Variety of Maize MT/ha	1.9
Average Farm-Gate Price (in Rs.) of Maize per Kg	8.62

Increment in Benefits	2%
Discount Rate	7%
O&M Cost	10%
Increment O&M Cost	5%

Benefit Components (in Thousand Rs per hectare)

SCF 1

Revenue per ha of Traditional Variety of Maize	12	
Revenue per ha of Improved Variety of Maize	16	
Incremental Benefit per hectare	4	**Converted**
Plantation of 600 trees in agro-forestry/ha	10	10
Grassland improvement	2	2
Silvi Pasture Benefit	2	2
Conservation Plantation Benefit	5	5

Cost Components (in Thousand Rs.)

Farm Conservation(in 20 ha)	800	
Agro-forestry (in 3 ha)	15	
Grassland (in 40 ha)	160	
Silvi Pasture (in 180 ha)	900	
Conservation Plantation (in 39 ha)	390	**Converted**
Sub Total of Cost Components	2,265	2265

		Costs (in '000 Rs.)			**Economic Benefits(in '000 Rs)**								
S.N	Year	Sub Total of Cost	O&M Cost	Grand Total of Cost	Farm Conservation (in 20 ha)	Agro-forestry (in 3 ha)	Grass land (in 40 ha)	Silvi Pasture (in 180 ha)	Conservation Plantation (in 39 ha)	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2002									0	0		
2	2003	453		453						0	(453)	396	0
3	2004	906		906						0	(906)	740	0
4	2005	906		906						0	(906)	691	0
5	2006		227	227	81	30	80	360	195	746	519	161	532
6	2007		238	238	83	31	82	367	199	761	523	158	507
7	2008		250	250	84	31	83	375	203	776	526	156	483
8	2009		262	262	86	32	85	382	207	792	529	153	461
9	2010		275	275	88	32	87	390	211	807	532	150	439
10	2011		289	289	89	33	88	397	215	824	535	147	419
11	2012		304	304	91	34	90	405	220	840	537	144	399
12	2013		319	319	93	34	92	414	224	857	538	142	380
13	2014		335	335	95	35	94	422	228	874	539	139	363
14	2015		351	351	97	36	96	430	233	892	540	136	346
15	2016		369	369	99	37	98	439	238	909	540	134	330
16	2017		387	387	101	37	99	448	242	928	540	131	314
17	2018		407	407	103	38	101	457	247	946	539	129	300
18	2019		427	427	105	39	103	466	252	965	538	126	286
19	2020		448	448	107	40	106	475	257	984	536	124	272
20	2021		471	471	109	40	108	485	262	1,004	533	122	259
21	2022		494	494	111	41	110	494	268	1,024	530	119	247

Table III:1(a)

Economic Analysis of Environment Education for Soil Conservation Program

(Software Component)

Without Conversion Factor

S.N	Year	Sub Total of Cost	O&M Cost	Grand Total of Cost	Farm Conservation (in 20 ha)	Agro-forestry (in 3 ha)	Grass land (in 40 ha)	Silvi Pasture (in 180 ha)	Conservation Plantation (in 39 ha)	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
22	2023		519	519	113	42	112	504	273	1,045	525	117	236
23	2024		545	545	116	43	114	514	279	1,065	520	115	225
24	2025		572	572	118	44	117	524	284	1,087	514	113	214
25	2026		601	601	120	45	119	535	290	1,109	508	111	204
26	2027		631	631	123	45	121	546	296	1,131	500	109	195
27	2028		663	663	125	46	124	557	301	1,153	491	107	186
28	2029		696	696	128	47	126	568	307	1,176	481	105	177
29	2030		730	730	130	48	129	579	314	1,200	469	103	169
											Total	5,076	7,942
							Internal Rate of Return		19.80%				
							B/C Ratio		1.56				
							NPV		3,067				

Note

The Sub-Total of Costs column derived from the cost components has been divided for 2003, 2004, and 2005 as 20%, 40%, and 40% respectively

O&M cost for 2006 has been taken as 10% of the Sub-Total of cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 5% per annum

Economic benefits of farm conservation for 2006 is calculated by multiplying revenue per ha of traditional variety of Maize by 20 ha

Economic benefits of farm conservation for 2007 is calculated by multiplying revenue per ha of improved variety of Maize by 20 ha

Economic benefits of farm conservation from 2008-2030 has been increased by the growth of 2% per annun

Economic benefits from agro-forestry for 2006 is calculated by multiplying Plantation of 600 trees in agro-forestry/ha by 3 hectre

Economic benefits from agro-forestry from 2007 has been increased by the growth of 2% per annum

Economic benefits from the grassland for 2006 is calculated by multiplying Grassland improvement/ha by 40

Economic benefits from grassland from 2007 has been increased by the growth of 2% per annum

Economic benefit of Silvi Pasture for 2006 is calculated by multiplying Silvi Pasture Benefit/ha by 180 ha

Economic benefits from silvi pasture from 2007 has been increased by the growth of 2% per annum

Economic benefit of Conservation Plantation for 2006 is calculated by multiplying Conservation Plantation Benefit/ha by 39 ha

Economic benefits from Conservation Plantation from 2007 has been increased by the growth of 2% per annum

Table III:1(b)

Economic Analysis of Environment Education for Soil Conservation Program

(Software Component)

With Conversion Factor

Productivity and Farm-Gate Price

Productivity of Traditional Variety of Maize MT/ha:	1.4
Productivity of Improved Variety of Maize MT/ha	1.9
Average Farm-Gate Price (in Rs.) of Maize per Kg	8.62

Increment in Benefits	2%
Discount Rate	7%
O&M Cost	10%
Increment O&M Cost	5%

SCF 0.95

Benefit Components (in Thousand Rs per hectare)

Revenue per ha of Traditional Variety of Maize	12	
Revenue per ha of Improved Variety of Maize	16	
Incremental Benefit per hectare	4	**Converted**
Plantation of 600 trees in agro-forestry/ha	10	9.5
Grassland improvement	2	1.9
Silvi Pasture Benefit	2	1.9
Conservation Plantation Benefit	5	4.75

Cost Components (in Thousand Rs.)

Farm Conservation(in 20 ha)	800	
Agro-forestry (in 3 ha)	15	
Grassland (in 40 ha)	160	
Silvi Pasture (in 180 ha)	900	
Conservation Plantation (in 39 ha)	390	**Converted**
Sub Total of Cost Components	2,265	2151.8

		Costs (in '000 Rs.)			Economic Benefits(in '000 Rs)								
S.N	Year	Sub Total of Cost	O&M Cost	Grand Total of Cost	Farm Conservation (in 20 ha)	Agro-forestry (in 3 ha)	Grass land (in 40 ha)	Silvi Pasture (in 180 ha)	Conservation Plantation (in 39 ha)	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2002									0	0		
2	2003	430		430						0	(430)	376	0
3	2004	861		861						0	(861)	703	0
4	2005	861		861						0	(861)	657	0
5	2006		227	227	77	29	76	342	185	709	482	161	505
6	2007		238	238	78	29	78	349	189	723	485	158	482
7	2008		250	250	80	30	79	356	193	737	488	156	459
8	2009		262	262	82	30	81	363	197	752	490	153	438
9	2010		275	275	83	31	82	370	201	767	492	150	417
10	2011		289	289	85	31	84	378	205	782	493	147	398
11	2012		304	304	87	32	86	385	209	798	495	144	379
12	2013		319	319	88	33	87	393	213	814	495	142	361
13	2014		335	335	90	33	89	401	217	830	496	139	345
14	2015		351	351	92	34	91	409	221	847	496	136	328
15	2016		369	369	94	35	93	417	226	864	495	134	313
16	2017		387	387	96	35	94	425	230	881	494	131	298
17	2018		407	407	98	36	96	434	235	899	492	129	285
18	2019		427	427	100	37	98	442	240	917	490	126	271
19	2020		448	448	102	38	100	451	244	935	487	124	259
20	2021		471	471	104	38	102	460	249	954	483	122	246
21	2022		494	494	106	39	104	469	254	973	478	119	235

Table III:1(b)

Economic Analysis of Environment Education for Soil Conservation Program

(Software Component)

With Conversion Factor

S.N	Year	Sub Total of Cost	O&M Cost	Grand Total of Cost	Farm Conservation (in 20 ha)	Agro-forestry (in 3 ha)	Grass land (in 40 ha)	Silvi Pasture (in 180 ha)	Conservation Plantation (in 39 ha)	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
22	2023		519	519	108	40	106	479	259	992	473	117	224
23	2024		545	545	110	41	109	488	265	1,012	467	115	214
24	2025		572	572	112	42	111	498	270	1,032	460	113	204
25	2026		601	601	114	42	113	508	275	1,053	452	111	194
26	2027		631	631	117	43	115	518	281	1,074	443	109	185
27	2028		663	663	119	44	117	529	286	1,096	433	107	176
28	2029		696	696	121	45	120	539	292	1,118	422	105	168
29	2030		730	730	124	46	122	550	298	1,140	409	103	160
											Total	4,984	7,545

Internal Rate of Return	19.27%
B/C Ratio	1.51
NPV	2,740

Note

The Sub-Total of Costs column derived from the cost components has been divided for 2003, 2004, and 2005 as 20%, 40%, and 40% respectively

O&M cost for 2006 has been taken as 10% of the Sub-Total of cost for 2006

From 2007 to 2030, the O&M cost has been increased by the growth of 5% per annum

Economic benefits of farm conservation for 2006 is calculated by multiplying revenue per ha of traditional variety of Maize by 20 ha

Economic benefits of farm conservation for 2007 is calculated by multiplying revenue per ha of improved variety of Maize by 20 ha

Economic benefits of farm conservation from 2008-2030 has been increased by the growth of 2% per annun

Economic benefits from agro-forestry for 2006 is calculated by multiplying Plantation of 600 trees in agro-forestry/ha by 3 hectre

Economic benefits from agro-forestry from 2007 has been increased by the growth of 2% per annum

Economic benefits from the grassland for 2006 is calculated by multiplying Grassland improvement/ha by 40

Economic benefits from grassland from 2007 has been increased by the growth of 2% per annum

Economic benefit of Silvi Pasture for 2006 is calculated by multiplying Silvi Pasture Benefit/ha by 180 ha

Economic benefits from silvi pasture from 2007 has been increased by the growth of 2% per annum

Economic benefit of Conservation Plantation for 2006 is calculated by multiplying Conservation Plantation Benefit/ha by 39 ha

Economic benefits from Conservation Plantation from 2007 has been increased by the growth of 2% per annum

Table III:2(a)

Economic Analysis of Community Empowerment and Inome Generating Activities

(Without Conversion Factor)

Percentage Increase in Revenue from Wood			**Percentage Increase in Livestock Operation Cost**		
2006-2015	10%		2006-2015	0.5%	
2016-2030	20%		2016-2030	1%	
Percentage Increase in Livestock Income	5%				
					Converted
Fund for Environment Education & Income Generation (in '000 Rs.)				58,535	58,535
Discount Rate	7%	SCF	1.00		

		Costs in '000 Rs.)				**Benefits (in '000 Rs.)**						
S.N.	Year	Overall Capital Cost	Livestock Capital Cost	Livestock Op. Cost	Total Cost	Income from Wood	Livestock Income	Farm Income	Total Revenue	Net Cash Flow	Discounted Cost	Discounted Benefit
1	2003	11,707	1,020	923	13,650		1,258		1,258	(12,392)	12,757	1,175
2	2004	23,414	2,040	1,845	27,299		3,773		3,773	(23,527)	23,844	3,295
3	2005	23,414	2,040	1,845	27,299		7,546		7,546	(19,754)	22,284	6,159
4	2006	58,535		4,613	4,613	600	12,576	77	13,253	8,640	3,520	10,111
5	2007			4,636	4,636	660	13,205	78	13,943	9,307	3,306	9,941
6	2008			4,660	4,660	726	13,865	80	14,671	10,011	3,105	9,776
7	2009			4,683	4,683	799	14,558	82	15,439	10,756	2,916	9,614
8	2010			4,706	4,706	878	15,286	83	16,248	11,542	2,739	9,456
9	2011			4,730	4,730	966	16,051	85	17,102	12,372	2,573	9,302
10	2012			4,754	4,754	1,063	16,853	87	18,003	13,249	2,416	9,152
11	2013			4,777	4,777	1,169	17,696	88	18,953	14,176	2,270	9,005
12	2014			4,801	4,801	1,286	18,580	90	19,957	15,156	2,132	8,861
13	2015			4,825	4,825	1,415	19,510	92	21,016	16,191	2,002	8,721
14	2016			4,873	4,873	1,698	20,485	94	22,276	17,403	1,890	8,639
15	2017			4,922	4,922	2,037	21,509	96	23,642	18,720	1,784	8,569
16	2018			4,971	4,971	2,445	22,585	98	25,127	20,156	1,684	8,511
17	2019			5,021	5,021	2,934	23,714	100	26,747	21,726	1,590	8,467
18	2020			5,071	5,071	3,520	24,900	102	28,522	23,450	1,500	8,438
19	2021			5,122	5,122	4,224	26,145	104	30,473	25,351	1,416	8,426
20	2022			5,173	5,173	5,069	27,452	106	32,627	27,454	1,337	8,431
21	2023			5,225	5,225	6,083	28,824	108	35,015	29,790	1,262	8,457
22	2024			5,277	5,277	7,300	30,266	110	37,675	32,398	1,191	8,504
23	2025			5,330	5,330	8,760	31,779	112	40,651	35,321	1,124	8,575
24	2026			5,383	5,383	10,512	33,368	114	43,994	38,611	1,061	8,673
25	2027			5,437	5,437	12,614	35,036	117	47,767	42,330	1,002	8,801
26	2028			5,492	5,492	15,137	36,788	119	52,044	46,553	946	8,962
27	2029			5,546	5,546	18,164	38,627	121	56,913	51,367	893	9,159
28	2030			5,602	5,602	21,797	40,559	124	62,480	56,878	843	9,397
										Total	105,386	234,580

Internal Rate of Return	19.33%
B/C Ratio	2.23
NPV	104,356

Note

Overall Capital Cost is divided into 20%,40%, and 40% of Fund for Environment Education & Income Generation for 2003, 2004, and 2005 respectively

Livestock Capital Cost is divided into 20%,40%, and 40% of the livestock cost for 2003, 2004, and 2005 respectively. Re. Table AN 7 for livestock capital costs

Livestock Operation Cost is divided into 20%,40%, and 40% of the livestock operation cost for 2003, 2004, and 2005 respectively. Re Table AN 7 for livestock operation costs

The value of wood for 2006 is taken from the estimation done in Table AN 7

The value of wood from 2007 to 2015 is forcasted at the growth of 10% per annum, while from 2016 to 2030, it is forcasted at the growth of 20% per annum

Livestock income for the year 2003, 2004, and 2005 has been divided into 10%, 30%, and 60% respectively

Table III:2(b)

Economic Analysis of Community Empowerment and Inome Generating Activities

(With Conversion Factor)

Percentage Increase in Revenue from Wood			Percentage Increase in Livestock Operation Cost	
2006-2015	10%		2006-2015	0.5%
2016-2030	20%		2016-2030	1%
Percentage Increase in Livestock income	5%			

			Converted
Fund for Environment Education & Income Generation (in '000 Rs.)		58,535	55,608
Discount Rate	7%	SCF	0.95

		Costs in '000 Rs.)				Benefits (in '000 Rs.)						
S.N.	Year	Overall Capital Cost	Livestock Capital Cost	Livestock Op. Cost	Total Cost	Income from Wood	Livestock Income	Farm Income	Total Revenue	Net Cash Flow	Discounted Cost	Discounted Benefit
1	2003	11,122	969	877	12,967		1,195		1,195	(11,772)	12,119	1,117
2	2004	22,243	1,938	1,753	25,934		3,584		3,584	(22,350)	22,652	3,131
3	2005	22,243	1,938	1,753	25,934		7,168		7,168	(18,766)	21,170	5,851
4	2006	55,608		4,383	4,383	570	11,947	77	12,594	8,211	3,344	9,608
5	2007			4,405	4,405	627	12,545	78	13,250	8,845	3,140	9,447
6	2008			4,427	4,427	690	13,172	80	13,942	9,515	2,950	9,290
7	2009			4,449	4,449	759	13,830	82	14,671	10,222	2,770	9,136
8	2010			4,471	4,471	835	14,522	83	15,440	10,969	2,602	8,986
9	2011			4,493	4,493	918	15,248	85	16,251	11,758	2,444	8,839
10	2012			4,516	4,516	1,010	16,010	87	17,107	12,591	2,296	8,696
11	2013			4,538	4,538	1,111	16,811	88	18,010	13,472	2,156	8,556
12	2014			4,561	4,561	1,222	17,651	90	18,963	14,402	2,025	8,420
13	2015			4,584	4,584	1,344	18,534	92	19,970	15,386	1,902	8,287
14	2016			4,630	4,630	1,613	19,461	94	21,167	16,538	1,796	8,209
15	2017			4,676	4,676	1,935	20,434	96	22,465	17,789	1,695	8,142
16	2018			4,723	4,723	2,322	21,455	98	23,876	19,153	1,600	8,087
17	2019			4,770	4,770	2,787	22,528	100	25,415	20,645	1,510	8,046
18	2020			4,818	4,818	3,344	23,655	102	27,101	22,283	1,425	8,018
19	2021			4,866	4,866	4,013	24,837	104	28,954	24,088	1,345	8,006
20	2022			4,915	4,915	4,816	26,079	106	31,001	26,086	1,270	8,011
21	2023			4,964	4,964	5,779	27,383	108	33,270	28,306	1,199	8,035
22	2024			5,013	5,013	6,935	28,752	110	35,797	30,784	1,132	8,080
23	2025			5,064	5,064	8,322	30,190	112	38,624	33,560	1,068	8,148
24	2026			5,114	5,114	9,986	31,699	114	41,800	36,686	1,008	8,241
25	2027			5,165	5,165	11,984	33,284	117	45,385	40,219	952	8,362
26	2028			5,217	5,217	14,380	34,949	119	49,448	44,231	898	8,515
27	2029			5,269	5,269	17,256	36,696	121	54,074	48,805	848	8,702
28	2030			5,322	5,322	20,708	38,531	124	59,362	54,040	800	8,928
										Total	100,117	222,895

Internal Rate of Return	19.34%
B/C Ratio	2.23
NPV	99,180

Note

Overall Capital Cost is divided into 20%,40%, and 40% of Fund for Environment Education & Income Generation for 2003, 2004, and 2005 respectively

Livestock Capital Cost is divided into 20%,40%, and 40% of the livestock cost for 2003, 2004, and 2005 respectively. Re. Table AN 7 for livestock capital costs

Livestock Operation Cost is divided into 20%,40%, and 40% of the livestock operation cost for 2003, 2004, and 2005 respectively. Re Table AN 7 for livestock operation costs

The value of wood for 2006 is taken from the estimation done in Table AN 7

The value of wood from 2007 to 2015 is forcasted at the growth of 10% per annum, while from 2016 to 2030, it is forcasted at the growth of 20% per annum

Livestock income for the year 2003, 2004, and 2005 has been divided into 10%, 30%, and 60% respectively

Table III:3(a)

Economic Analysis of the Software Component

(Integrating Environment Education and Community Empowerment)
Without Conversion Factor

Discount Rate 7%

S.N.	Year	Total Cost	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	14,103	1,258	(12,845)	13,180	1,175
2	2004	28,205	3,773	(24,433)	24,636	3,295
3	2005	28,205	7,546	(20,660)	23,024	6,159
4	2006	4,840	14,003	9,163	3,692	10,683
5	2007	4,874	14,708	9,834	3,475	10,487
6	2008	4,909	15,451	10,542	3,271	10,296
7	2009	4,945	16,234	11,289	3,080	10,110
8	2010	4,982	17,060	12,078	2,899	9,929
9	2011	5,019	17,930	12,911	2,730	9,753
10	2012	5,057	18,847	13,790	2,571	9,581
11	2013	5,096	19,815	14,719	2,421	9,414
12	2014	5,136	20,836	15,700	2,280	9,251
13	2015	5,177	21,913	16,736	2,148	9,093
14	2016	5,242	23,191	17,948	2,033	8,994
15	2017	5,310	24,575	19,265	1,924	8,907
16	2018	5,378	26,078	20,700	1,822	8,834
17	2019	5,448	27,717	22,269	1,725	8,775
18	2020	5,520	29,511	23,991	1,633	8,731
19	2021	5,593	31,482	25,889	1,546	8,705
20	2022	5,668	33,656	27,989	1,465	8,697
21	2023	5,744	36,066	30,321	1,387	8,710
22	2024	5,822	38,747	32,924	1,314	8,746
23	2025	5,902	41,744	35,841	1,245	8,806
24	2026	5,984	45,109	39,124	1,180	8,893
25	2027	6,068	48,904	42,836	1,118	9,011
26	2028	6,154	53,204	47,050	1,060	9,161
27	2029	6,242	58,096	51,854	1,005	9,349
28	2030	6,332	63,686	57,354	952	9,579
				Total	110,817	243,124

Internal Rate of Return	19.78%
B/C Ratio	2.19
NPV	132,307

Table III:3(b)
Economic Analysis of the Software Component

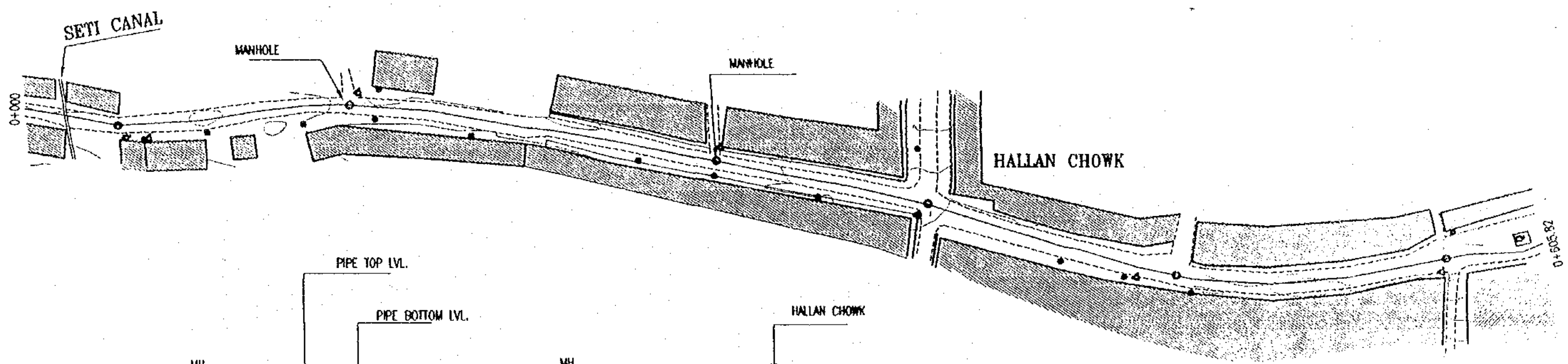
(Integrating Environment Education and Community Empowerment)
With Conversion Factor

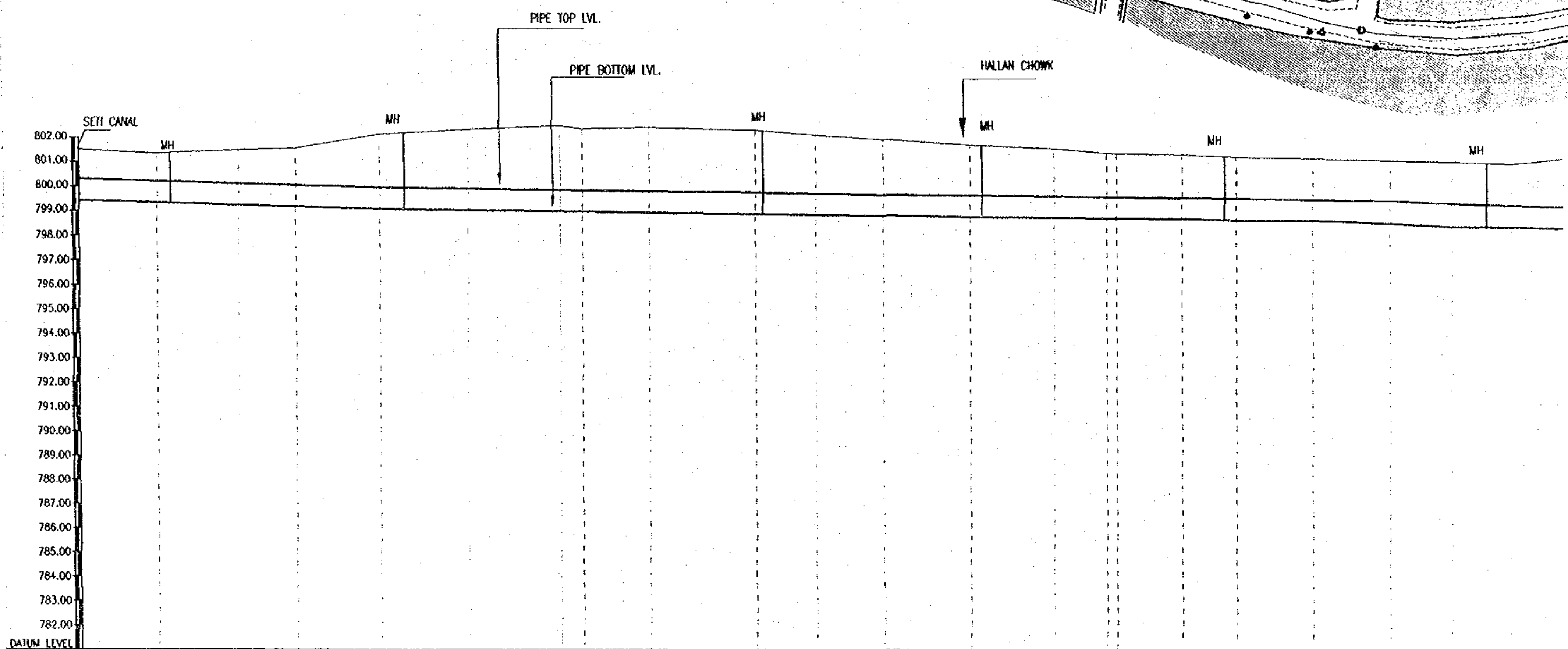
Discount Rate 7%

S.N.	Year	Total Cost	Total Benefit	Cash Flow	Discounted Cost	Discounted Benefit
1	2003	13,398	1,195	(12,203)	12,521	1,117
2	2004	26,795	3,584	(23,211)	23,404	3,131
3	2005	26,795	7,168	(19,627)	21,873	5,851
4	2006	4,609	13,303	8,694	3,516	10,149
5	2007	4,642	13,973	9,330	3,310	9,962
6	2008	4,676	14,679	10,002	3,116	9,781
7	2009	4,711	15,423	10,712	2,934	9,605
8	2010	4,746	16,207	11,460	2,762	9,433
9	2011	4,782	17,033	12,251	2,601	9,265
10	2012	4,819	17,905	13,086	2,450	9,102
11	2013	4,857	18,824	13,967	2,308	8,943
12	2014	4,896	19,794	14,898	2,174	8,789
13	2015	4,935	20,817	15,882	2,048	8,638
14	2016	4,999	22,031	17,033	1,939	8,544
15	2017	5,063	23,346	18,283	1,835	8,462
16	2018	5,130	24,774	19,645	1,738	8,392
17	2019	5,197	26,332	21,134	1,645	8,336
18	2020	5,266	28,036	22,769	1,558	8,295
19	2021	5,337	29,908	24,571	1,476	8,270
20	2022	5,409	31,974	26,565	1,398	8,263
21	2023	5,483	34,262	28,779	1,324	8,275
22	2024	5,558	36,809	31,251	1,255	8,308
23	2025	5,636	39,656	34,020	1,189	8,365
24	2026	5,715	42,853	37,138	1,127	8,448
25	2027	5,796	46,459	40,662	1,068	8,560
26	2028	5,880	50,543	44,664	1,012	8,703
27	2029	5,965	55,191	49,226	960	8,882
28	2030	6,052	60,502	54,450	910	9,100
				Total	105,450	230,968

Internal Rate of Return	19.76%
B/C Ratio	2.19
NPV	125,517

ANNEX –4
Design and Drawing of Proposed Sewerage System





DISTANCE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL	GRADIENT AND DISCHARGE
0+000	800.29	799.42	801.49	
0+032.09	800.20	799.33	801.32	
0+037.70		799.33	801.38	
0+065.87			801.47	
0+089.33	800.03	799.16	801.55	
0+123.21	799.94	799.07	802.10	
0+133.42		799.06	802.16	
0+159.23	799.89	799.02	802.31	
0+197.61	799.83	798.96	802.46	
0+206.94	799.82	798.95	802.33	
0+233.85	799.78	798.91	802.38	
0+276.54	799.72	798.85	802.50	
0+279.69		798.85	802.22	
0+301.41	799.68	798.81	802.05	
0+329.22	799.64	798.77	801.87	
0+354.31	799.59	798.72	801.65	
0+359.69		798.71	801.62	
0+399.88	799.54	798.67	801.48	
0+421.71	799.51	798.64	801.32	
0+425.84	799.51	798.64	801.29	
0+452.55	799.47	798.60	801.24	
0+469.69	799.44	798.58	801.15	
0+474.31		798.57	801.13	
0+505.35	799.39	798.52	801.08	
0+536.16	799.35	798.48	801.00	
0+561.17	799.27	798.40	800.97	
0+574.69	799.20	198.28	800.93	
0+584.46		798.33	800.90	
0+605.82	799.14	798.27	801.10	

Table 8-4-1: Longitudinal Slope (V:H)

S.N	Chainage	Longitudinal Slope (V:H)	Internal Diameter (m)	Remark
1	0+000 to 0+160	1:350	0.60	Sewer
2	0+162 to 1+336	1:700	0.60	Sewer
3	1+336 to 1+727	1:900	0.70	Sewer
4	1+727 to 3+075	1:900	1.20	Tunnel
5	3+075 to 4+146	1:500	0.70-1.00	Sewer
6	4+146 to 5+088	1:300	1.00	Sewer

TOTAL MAINHOLES=58nos.

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL

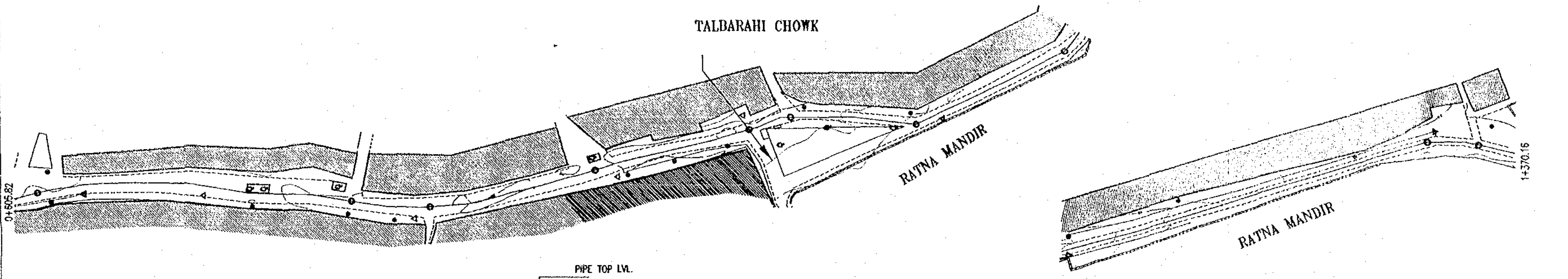
DRAWING TITLE:
LONGITUDINAL SECTION OF ROAD ALONG PROPOSED TRUNK SEWER ALIGNMENT
Km. 0+000 TO Km. 0+605.82

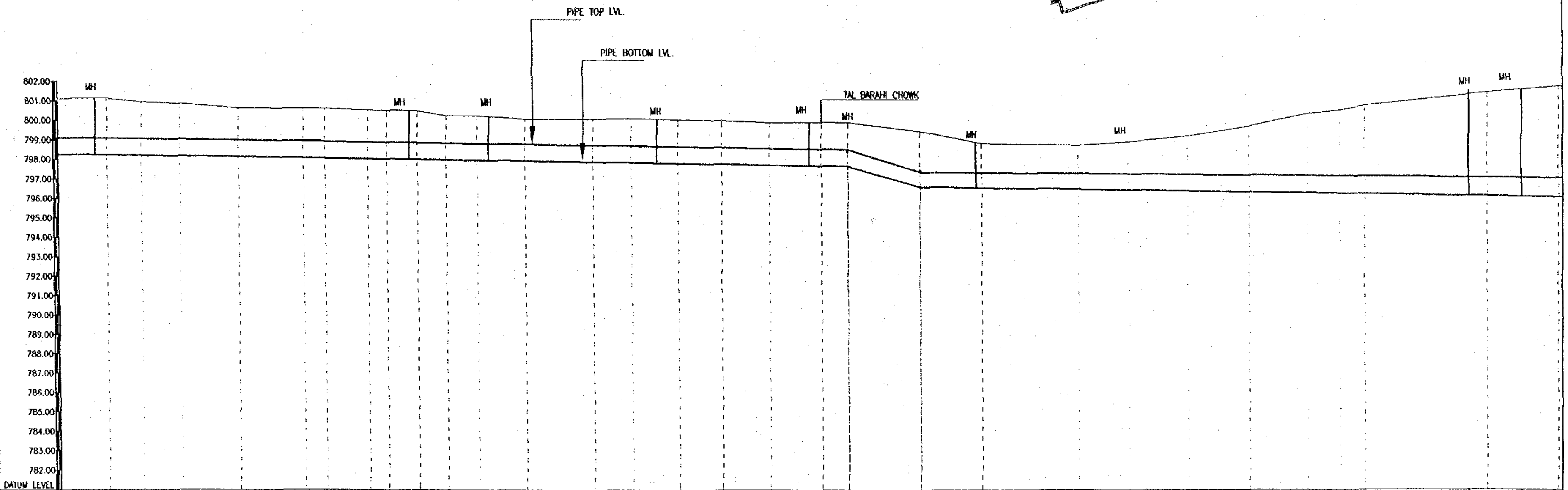
SCALE

SILT Consultants (P) Ltd.
Baneswor, Kathmandu, Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470866 , 487598,495163
E-mail: silt@mos.com.np
Web: www.silt.com.np

DWG. No. A

SHEET No. 1





DISTANCE	GRADIENT AND DISCHARGE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL
0+605.82		799.14	798.27	801.10
0+625.36		799.03	798.24	801.12
0+634.22			798.16	801.90
0+651.61		799.01	798.14	800.92
0+671.33		798.98	798.11	800.82
0+701.71		798.93	798.06	800.59
0+734.96		798.89	798.02	800.57
0+746.21		798.87	798.00	800.57
0+768.17		798.84	797.97	800.50
0+778.04		798.83	797.96	800.47
0+686.61		798.80	797.98	800.47
0+793.48			797.93	800.44
0+808.36		798.78	797.91	800.19
0+824.33		798.76	797.89	800.20
0+827.21			797.92	800.17
0+848.97		798.72	797.85	800.01
0+883.26		798.68	797.81	800.01
0+902.57		798.65	797.78	800.04
0+912.21			797.78	800.03
0+925.96		798.61	797.74	799.99
0+947.77		798.58	797.71	799.96
0+972.62		798.55	797.68	799.87
0+990.21			797.66	799.89
0+999.56		798.51	797.64	799.88
1+013.25		798.49	797.62	799.86
1+015.21			797.49	799.80
1+050.38		797.44	796.57	799.41
1+076.21		797.39	796.53	798.95
1+082.64			796.52	798.78
1+130.76		797.32	796.45	798.68
1+151.81		797.29	796.40	798.86
1+155.28			796.42	798.86
1+185.00		797.24	796.37	799.15
1+216.32		797.20	796.36	799.66
1+245.07		797.16	796.29	800.29
1+261.44		797.14	796.27	800.46
1+273.70		797.12	796.25	800.70
1+322.81			796.12	801.29
1+335.16		797.05	796.08	801.40
1+348.81			796.06	801.48
1+370.16		797.01	796.04	801.70

JAPAN INTERNATIONAL COOPERATION AGENCY
(JICA)

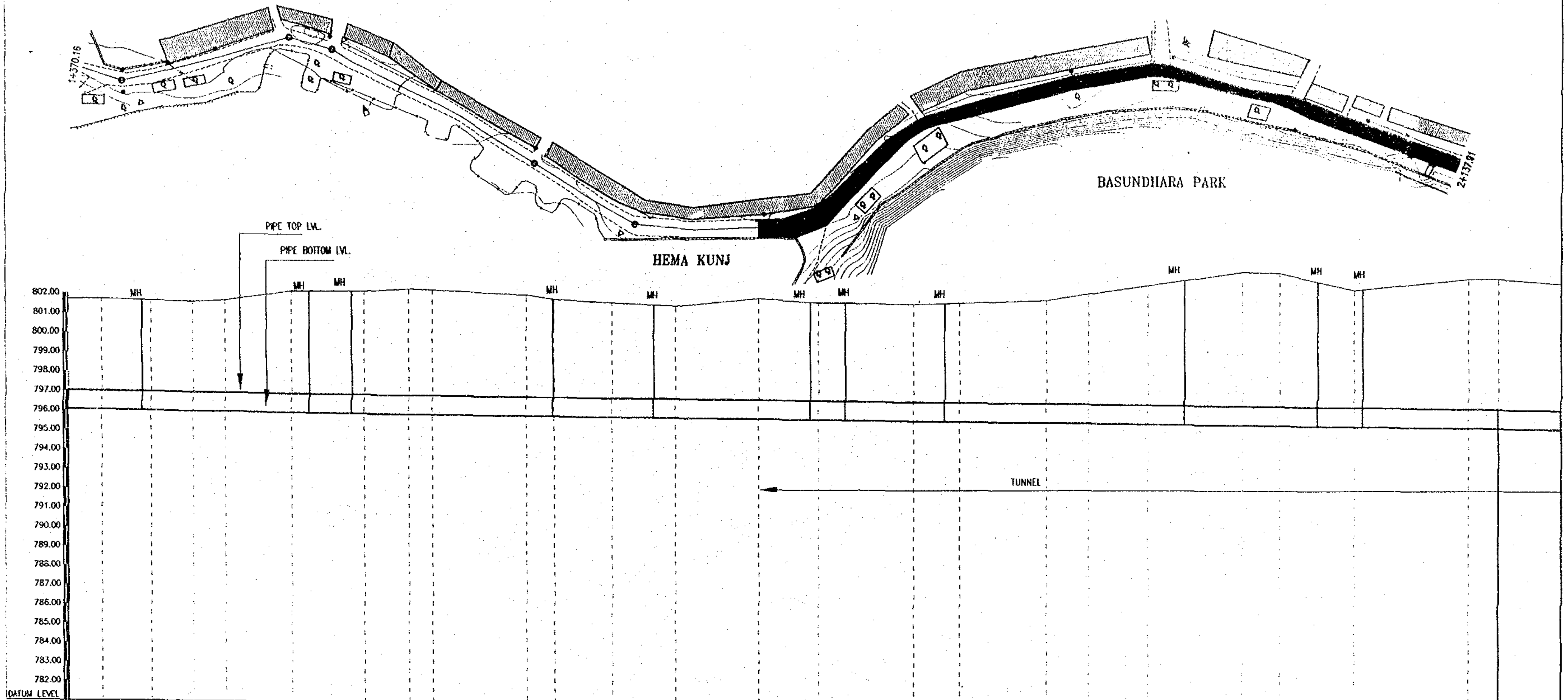
THE DEVELPOMENT STUDY ON THE
ENVIRONMENTAL CONSERVATION OF PHEWA LAKE
POKHARA NEPAL

DRAWING TITLE:
LONGITUDINAL SECTION OF ROAD
ALONG PROPOSED TRUNK SEWER ALIGNMENT
Km. 0+605.82 TO Km. 1+370.16

SCALE

SILT Consultants (P) Ltd.
Baneswor,Kathmandu,Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470866 , 487598,495163
E-mail:s2t@mos.com.np
Web:www.s2t.com.np

DWG. No.
A
SHEET No.
2



GRADIENT AND DISCHARGE

DISTANCE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL
1+370.16	797.01	796.04	801.70
1+389.14	796.99	796.02	801.72
1+407.82		795.99	801.65
1+414.33	796.96	795.99	801.65
1+435.82	796.94	795.97	801.60
1+452.51	796.92	795.95	801.66
1+468.15	796.88	795.91	802.16
1+493.52		795.90	802.15
1+516.09		795.88	802.15
1+524.44	796.84	795.87	802.16
1+547.69	796.81	795.84	802.29
1+560.00	796.80	795.83	802.23
1+608.32	796.75	795.78	801.97
1+620.09		795.76	801.76
1+622.63	796.73	795.76	801.76
1+652.42	796.70	795.73	801.61
1+671.66		795.70	801.47
1+684.71	796.66	795.69	801.42
1+727.59	796.61	795.64	801.81
1+752.66		795.61	801.62
1+758.59	796.58	795.61	801.61
1+770.66		795.59	801.58
1+807.12	796.52	795.55	801.54
1+821.26		795.54	801.57
1+830.89	796.50	795.53	801.59
1+875.55	796.45	795.48	801.75
1+896.73	796.43	795.46	802.09
1+926.76	796.39	795.42	802.67
1+943.44		795.40	802.79
1+974.99	796.34	795.37	803.24
1+993.55	796.32	795.35	803.17
2+010.44		795.33	802.73
2+030.98		795.31	802.32
2+033.39	796.28	795.30	802.35
2+088.54	796.21	795.24	802.90
2+103.76	796.20	795.23	802.91
2+137.91	796.16	795.19	802.82

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL

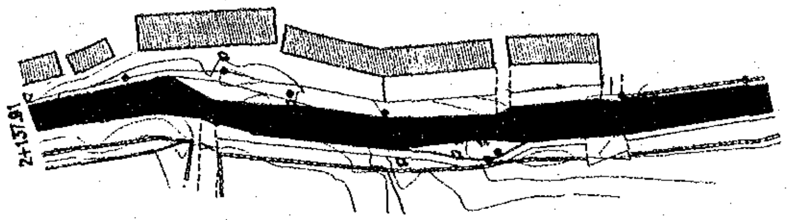
DRAWING TITLE:
LONGITUDINAL SECTION OF ROAD ALONG PROPOSED TRUNK SEWER ALIGNMENT
Km. . 1+370.16 TO Km. 2+137.91

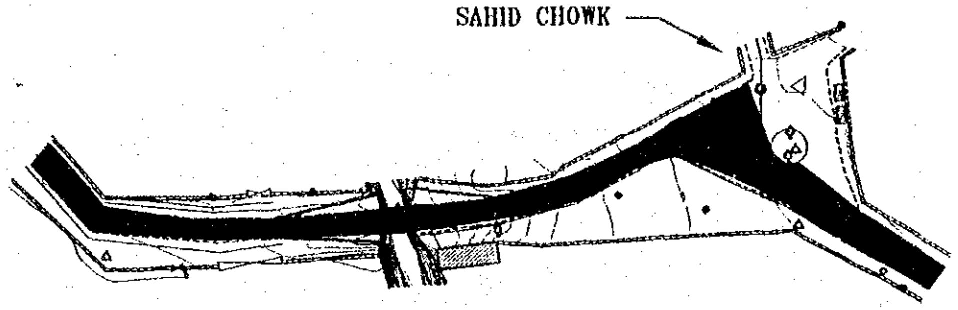
SCALE

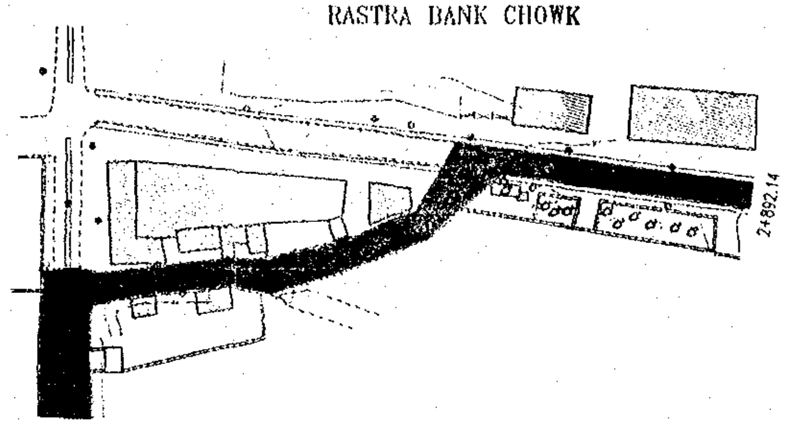
SILT Consultants (P) Ltd.
Baneswor, Kathmandu, Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470866 , 487598,495163
E-mail: silt@mos.com.np
Web: www.silt.com.np

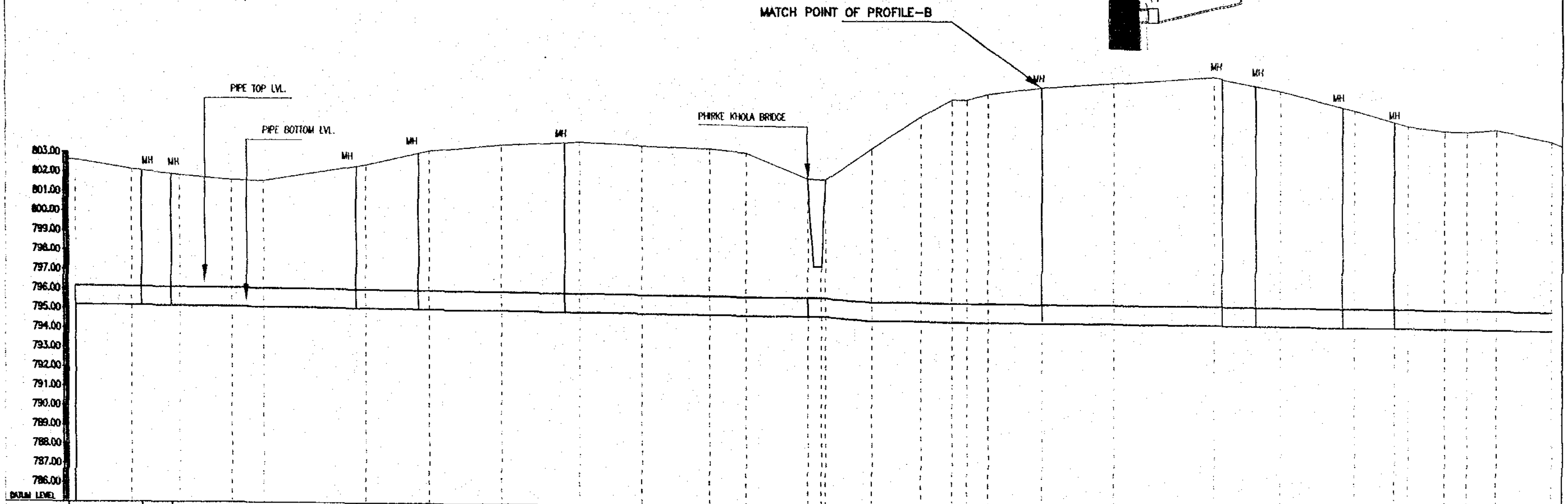
DWG. No. A

SHEET No. 3



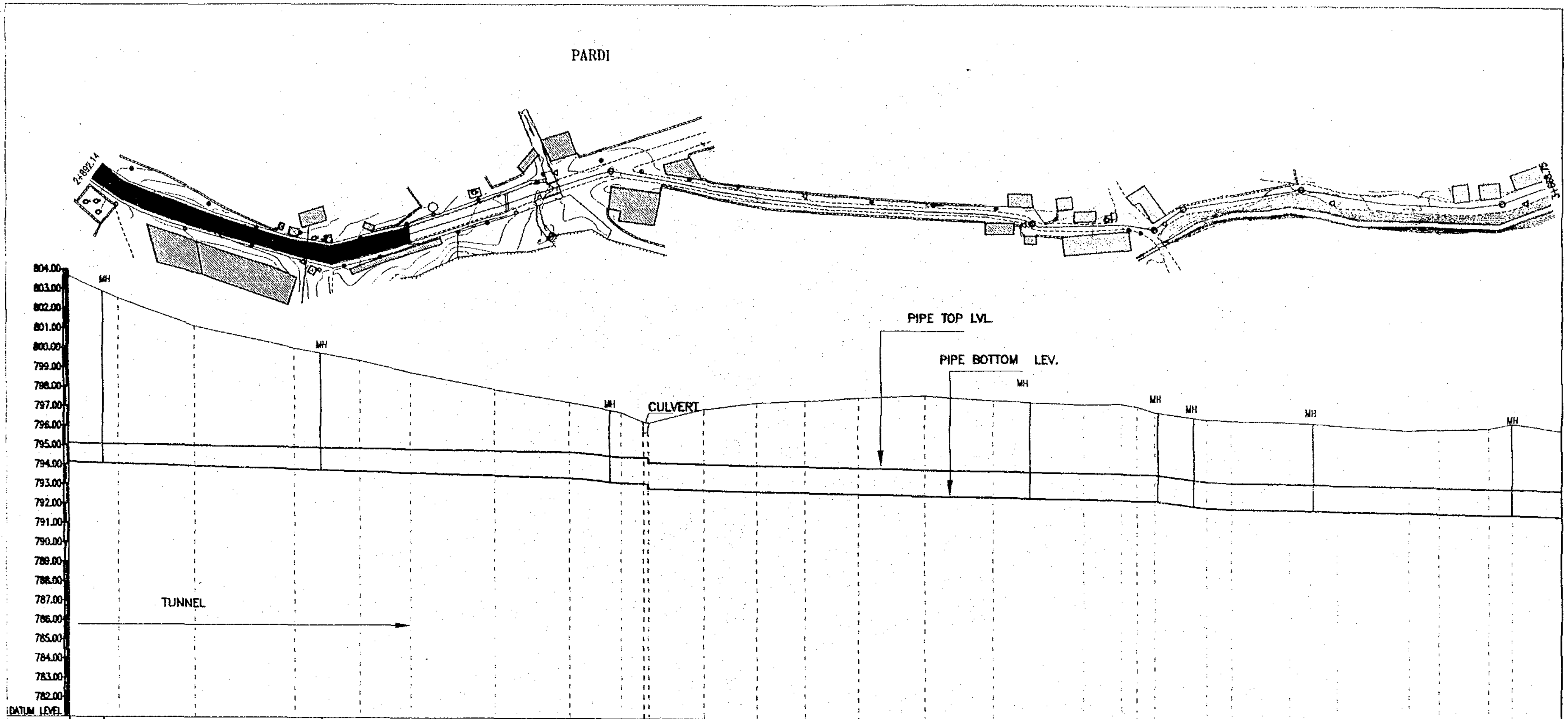






DISTANCE	GRADIENT AND DISCHARGE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL
2+137.91		796.16	795.19	802.62
2+167.20 2+172.53		796.12	795.15 795.15	802.12 802.06
2+187.53 2+191.88		796.10	795.13 795.13	801.89 801.83
2+218.71		796.07	795.10	801.58
2+235.51		796.05	795.08	801.54
2+282.53 2+287.58		795.99	795.03 795.02	802.30 802.38
2+315.03 2+320.36		795.95	794.93 794.98	803.00 803.12
2+358.00		795.91	794.94	803.45
2+390.53 2+397.96		795.87	794.90 794.90	803.58 803.61
2+430.13		795.83	794.86	803.46
2+465.11		795.79	794.82	803.33
2+484.18		795.77	794.80	803.16
2+516.23 2+523.07 2+525.33		795.74 795.73 796.73	794.77 794.76 794.76	801.82 797.32 801.77
2+549.47		795.54	794.57	803.38
2+574.67		795.51	794.54	805.04
2+590.54		795.49	794.52	805.91
2+598.30		795.48	794.51	805.92
2+609.40		795.47	794.50	806.19
2+636.01		795.44	794.48	806.54
2+672.52		795.40	794.43	806.75
2+723.88 2+728.02		795.34	794.37 794.36	807.07 806.99
2+744.70			794.34	806.63
2+756.52		795.31	794.34	806.38
2+787.60 2+793.43		795.23	794.28 794.26	805.55 805.40
2+813.60 2+820.63		795.20	794.25 794.23	804.82 804.61
2+838.39		795.18	794.21	804.38
2+849.91		795.17	794.20	804.34
2+864.49		795.15	794.18	804.45
2+892.14		795.12	794.15	803.87

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: LONGITUDINAL SECTION OF ROAD ALONG PROPOSED TRUNK SEWER ALIGNMENT Km. 2+137.91 TO Km. 2+892.14	SCALE	SILT Consultants (P) Ltd. Baneswor,Kathmandu,Nepal P.O Box: 2724 Fax: 977-1-473573 Phone: 473573 , 470866 , 487598,495163 E-mail:silt@mos.com.np Web:www.silt.com.np	DWG. No. A SHEET No. 4

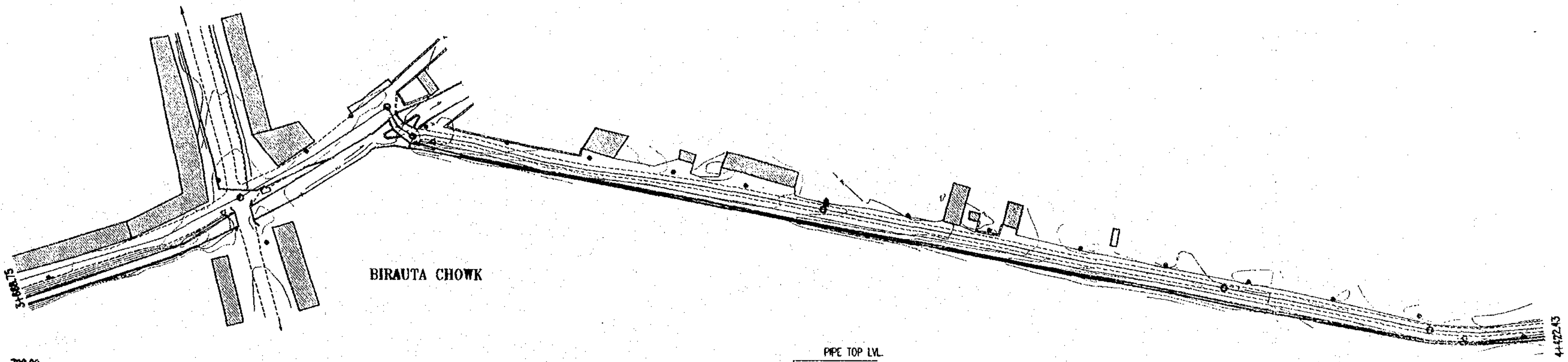


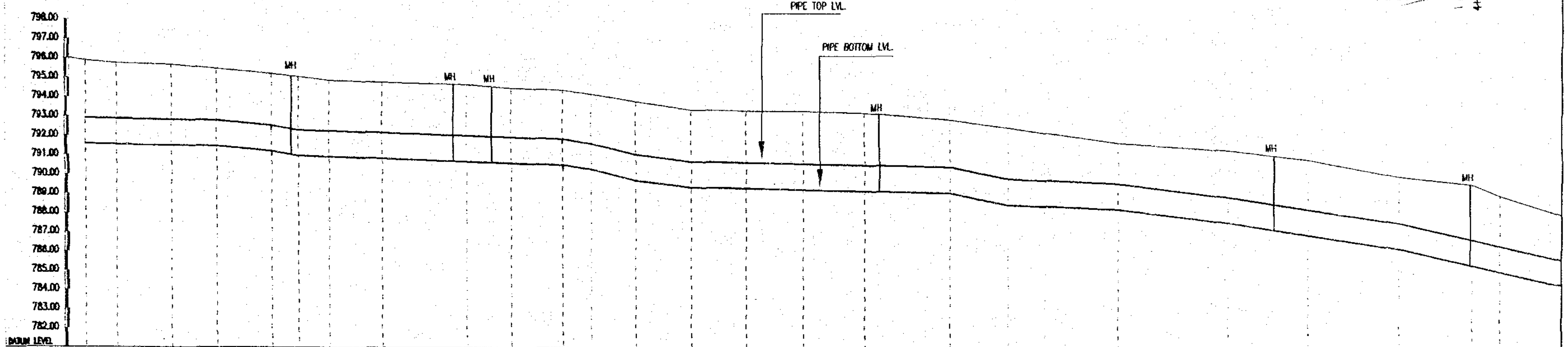
GRADIENT AND DISCHARGE

DISTANCE	EXISTING ROAD CENTER LEVEL	DESIGN BED LEVEL	PIPE TOP LEVEL
2+892.14	803.67	794.15	795.12
2+910.14	802.90	794.09	
2+922.68	802.57	794.09	795.06
2+961.78	801.40	794.04	795.01
3+013.79	800.01	793.98	794.95
3+023.14	799.74	793.75	
3+048.06	799.39	793.95	794.92
3+074.41	798.78	793.93	794.88
3+117.03	797.81	793.45	794.78
3+155.80	797.26	793.37	794.70
3+172.14	795.84	793.17	794.45
3+182.58	796.74	793.12	794.42
3+183.61	796.27	[illegible]	794.42
[illegible]	795.72	[illegible]	794.42
[illegible]	795.72	[illegible]	794.15
3+186.73	796.97	[illegible]	
3+224.52	796.83	792.78	794.09
3+251.92	797.27	792.71	794.04
3+278.77	797.38	792.66	793.99
3+305.19	797.54	792.60	793.93
3+338.92	797.67	792.53	793.88
3+374.44	797.41	792.46	793.79
3+388.14	797.31	792.41	
3+419.83	797.21	792.57	793.70
3+438.94	797.25	792.33	793.66
3+447.00	797.13	792.32	793.65
3+453.14	796.83	792.26	793.62
3+472.71	796.53	792.00	
3+482.23	796.45	791.93	793.26
3+494.51	796.45	791.91	793.24
3+523.38	796.38	791.85	793.18
3+532.71	796.26	791.81	
3+547.66	796.20	791.80	793.13
3+583.58	795.94	791.73	793.06
3+598.21	796.02	791.70	793.03
3+623.36	796.07	791.65	792.98
3+631.97	796.31	791.61	792.96
3+668.75	795.87	791.56	792.89

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: LONGITUDINAL SECTION OF ROAD ALONG PROPOSED TRUNK SEWER ALIGNMENT Km. 2+892.14 TO Km.3+668.75	SCALE	DWG. No. A / SHEET No. 5

SILT Consultants (P) Ltd.
Baneswor, Kathmandu, Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470866 , 487598,495163
E-mail:silt@mos.com.np
Web:www.silt.com.np

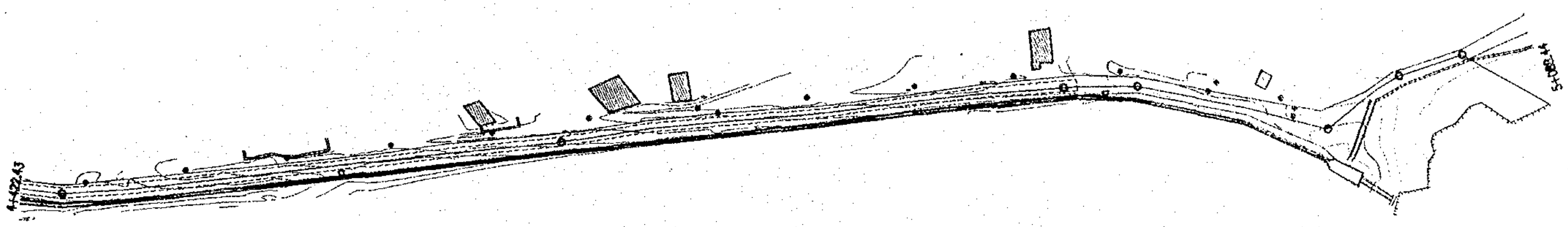


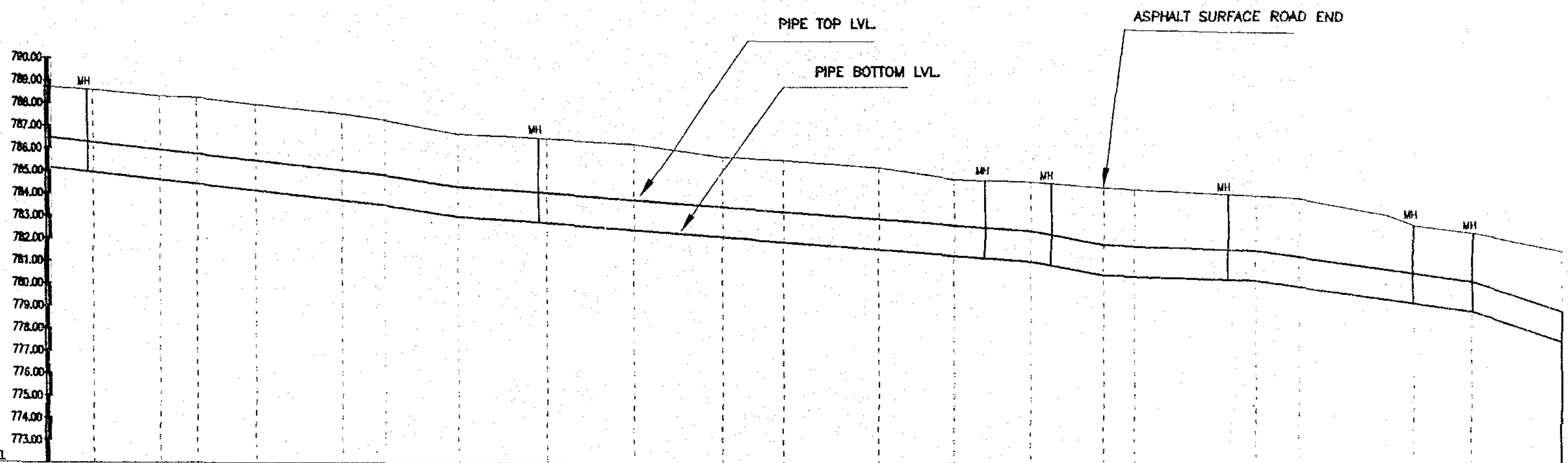


DISTANCE	GRADIENT AND DISCHARGE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL
3+888.73		792.89	791.58	795.87
3+884.73		792.88	791.53	795.72
3+713.04		792.80	791.47	795.65
3+736.58		792.78	791.43	795.43
3+765.32		792.50	791.17	795.17
3+785.00		793.27	791.00	795.60
3+794.55		792.24	790.91	794.83
3+821.54		792.19	790.86	794.72
3+859.32			790.66	794.62
3+868.03		792.10	790.77	794.61
3+879.32			790.59	794.50
3+889.30		791.85	790.52	794.43
3+915.84		791.80	790.47	794.32
3+925.18		791.58	790.25	794.13
3+952.68		791.02	789.69	793.76
3+981.29		790.87	789.54	793.34
4+010.10		790.61	789.28	793.29
4+039.71		790.55	789.22	793.28
4+071.81		790.48	789.15	793.19
4+079.32			789.14	793.13
4+115.90		790.40	789.07	792.85
4+145.96		789.80	788.47	792.45
4+164.23		789.74	788.41	792.17
4+200.97		789.55	788.22	791.67
4+258.93		788.87	787.54	791.29
4+279.32			787.20	791.03
4+295.99		788.24	786.91	790.85
4+341.89		787.58	786.25	790.09
4+377.32		787.48	785.42	789.60
4+392.20		787.41	785.08	789.01
4+422.43				

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: LONGITUDINAL SECTION OF ROAD ALONG PROPOSED TRUNK SEWER ALIGNMENT Km. 3+888.75 TO Km. 4+422.43	SCALE	DWG. No. A SHEET No. 6

SILT Consultants (P) Ltd.
Boneswor,Kathmandu,Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470866 , 487598,495163
E-mail:silt@mos.com.np
Web:www.silt.com.np





DATUM LEVEL

DISTANCE	EXISTING ROAD CENTER LEVEL	DESIGN BED LEVEL	PIPE TOP LEVEL	GRADIENT AND DISCHARGE
4+422.43				
4+438.93	788.60	784.95		
4+440.98	788.71	784.92	786.25	
4+470.94	788.42	784.82	786.15	
4+487.12	788.38	784.77	786.10	
4+513.11	788.05	783.88	785.01	
4+561.74	787.85	783.55	784.88	
4+571.09	787.39	783.49	784.82	
4+603.49	786.78	782.98	784.31	
4+639.93	786.44	782.72		
4+641.91	786.54	782.65	784.18	
4+681.60	786.33	782.72	784.05	
4+720.99	785.79	781.59	782.92	
4+748.00	785.68	781.50	782.83	
4+791.15	785.34	781.35	782.68	
4+824.07	784.85	781.24	782.57	
4+838.93	784.70	781.27		
4+857.71	784.76	781.13	782.45	
4+867.43	784.57	780.96		
4+889.76	784.51	780.53	781.86	
4+903.44	784.45	780.48	781.81	
4+945.93	784.12	780.52		
4+957.09	784.18	780.30	781.63	
4+975.40	784.08	780.24	781.57	
5+013.23	783.36	779.11	780.44	
5+025.49	782.78	779.34	780.41	
5+050.62	782.47	778.99	780.32	
5+088.44	781.75	777.88	778.99	

TOTAL SEWER PIPE LENGTH=4553.26m
TOTAL TUNNEL LENGTH=1348.00m

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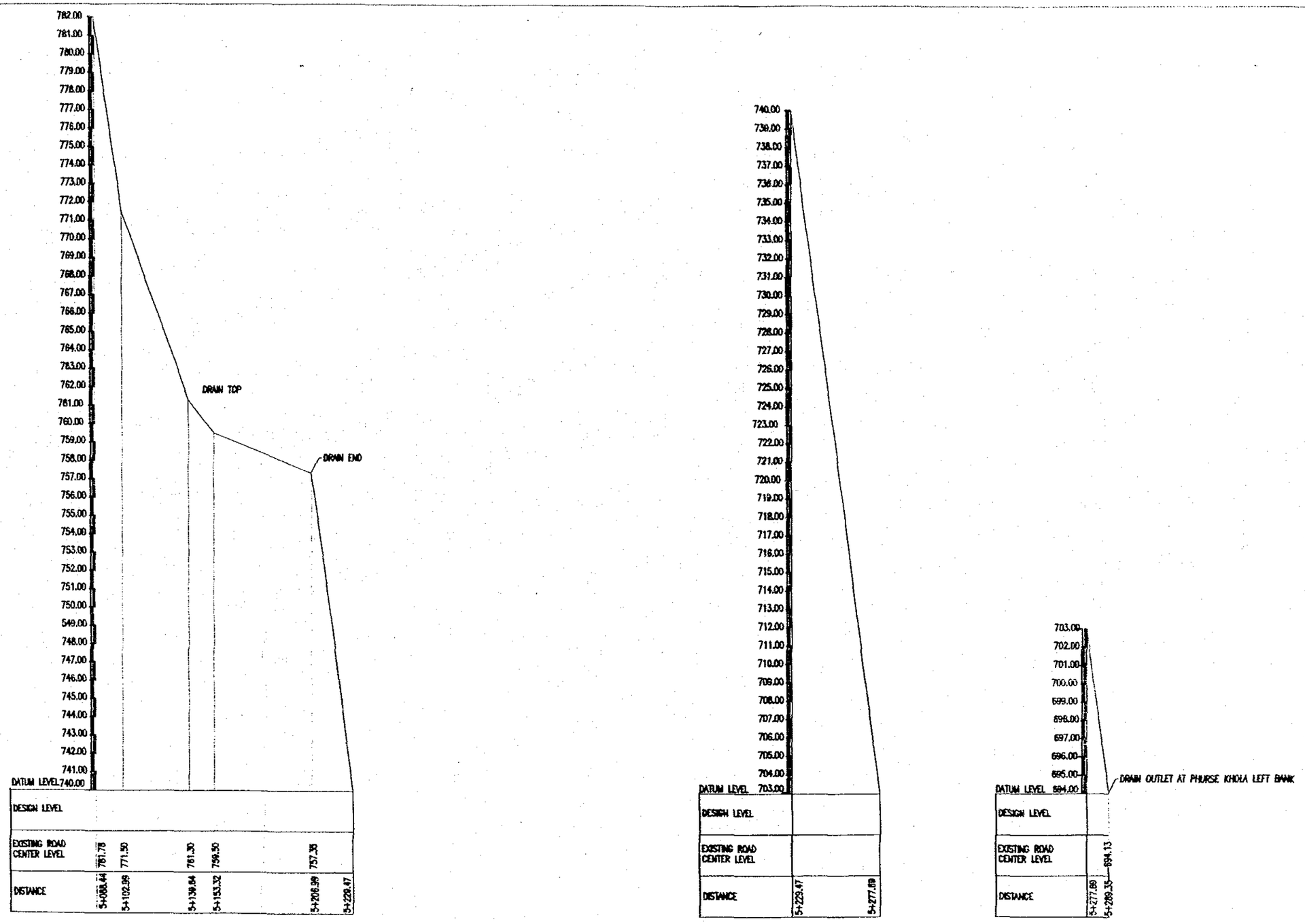
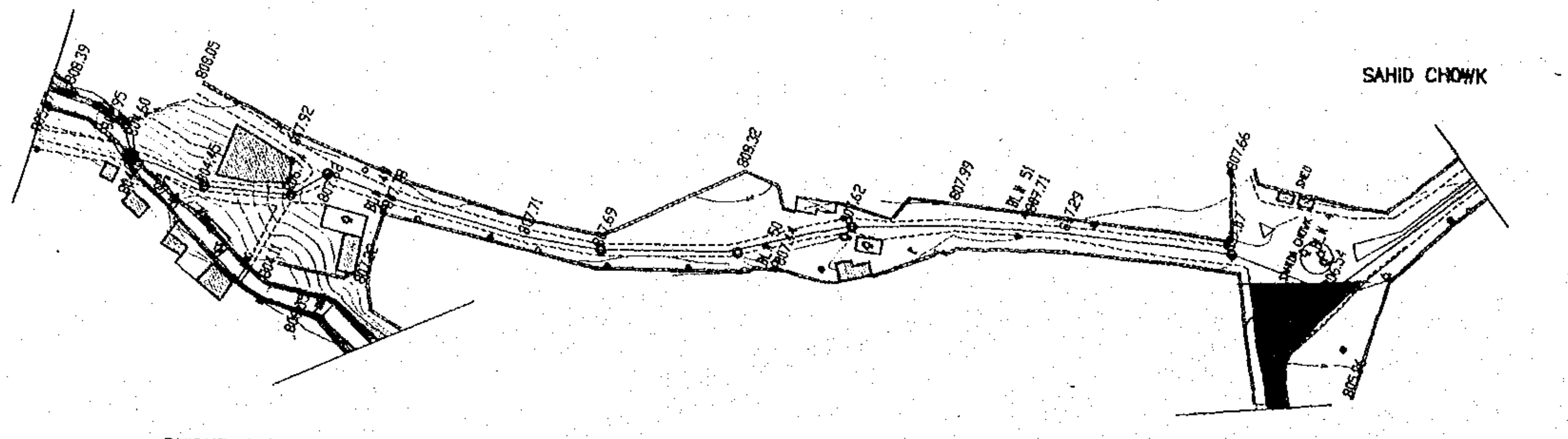
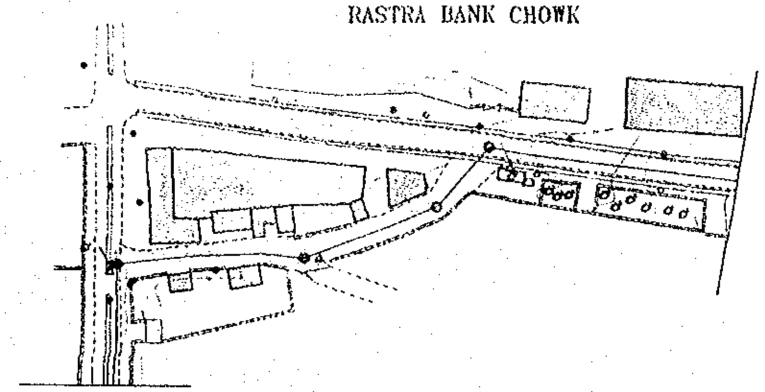
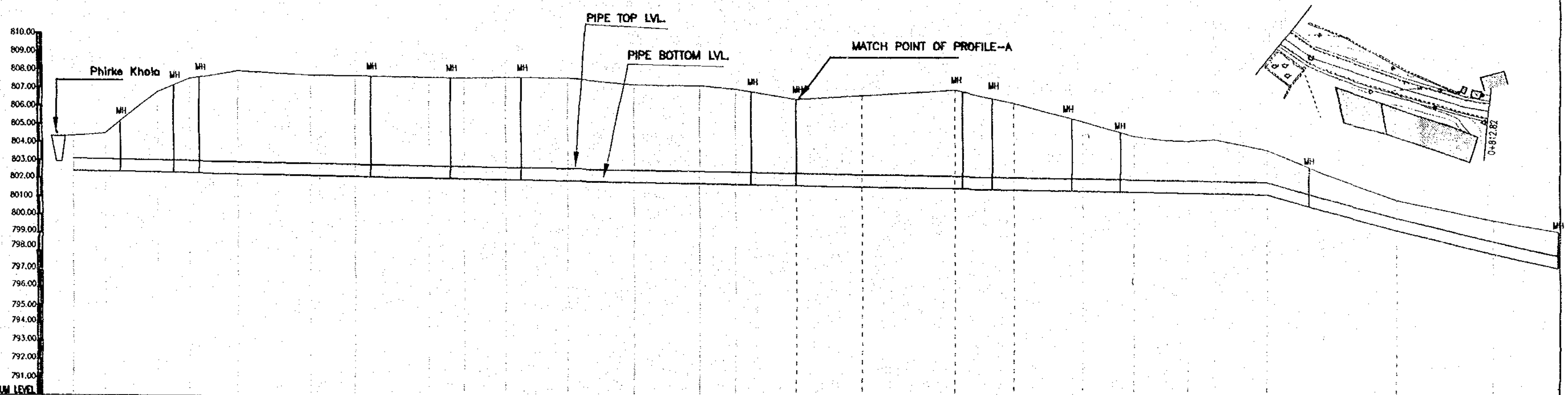


JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: LONGITUDINAL SECTION ALONG PROPOSED SEWER ALIGNMENT AT PROPOSED CASCADE STRUCTURE Km.5+058.44TO Km. 5+289.35				SCALE	SILT Consultants (P) Ltd. Baneswor,Kathmandu,Nepal P.O Box. 2724 Fax: 977-1-473573 Phone: 473573 , 470866 , 487598,495165 E-mail:silt@mos.com.np Web:www.silt.com.np	DWG. No. A SHEET No. 6







DISTANCE	GRADIENT AND DISCHARGE	PIPE TOP LEVEL	DESIGN BED LEVEL	EXISTING ROAD CENTER LEVEL
0+000		803.10	802.43	804.30
0+017.55		803.06	802.39	804.45
0+025.99			802.39	805.16
0+046.60		803.01	802.34	806.74
0+054.99			802.35	807.14
0+063.76		802.98	802.31	807.48
0+068.99			802.33	807.60
0+090.57		802.94	802.27	807.93
0+130.90		802.89	802.22	807.71
0+155.39		802.85	802.18	807.69
0+164.00			802.20	807.20
0+197.20		802.79	802.12	807.62
0+209.00		802.76	802.12	807.66
0+216.42			802.09	807.62
0+239.54		802.73	802.06	807.66
0+248.00			802.06	807.68
0+273.72		802.68	802.01	807.63
0+310.53		802.63	801.96	807.29
0+346.51		802.58	801.91	807.25
0+366.19		802.55	801.88	807.07
0+375.00			801.88	806.97
0+456.00		802.50	801.84	806.57
0+437.28		802.43	801.76	806.75
0+488.64		802.38	801.71	807.07
0+492.56			801.70	807.02
0+509.26			801.68	806.67
0+521.28		802.33	801.66	806.38
0+552.16		802.29	801.62	805.59
0+558.19			801.62	805.40
0+578.16		802.26	801.58	804.85
0+585.39			801.59	804.61
0+603.15		802.25	801.58	804.38
0+614.67		802.23	801.56	804.34
0+629.25		802.19	801.52	804.45
0+656.90		802.14	801.47	803.87
0+679.16		801.26	800.82	802.95
0+687.44			800.59	802.57
0+726.52		800.19	799.52	801.40
0+778.65		798.91	798.24	800.01
0+812.82		798.12	797.45	799.42

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL

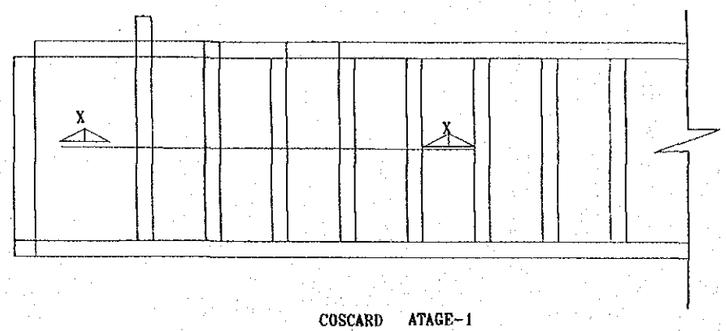
DRAWING TITLE:
LONGITUDINAL SECTION OF ROAD ALONG PROPOSED LATERAL SEWER ALIGNMENT
Km. 0+000 TO Km.0+812.82
(PHIRKE KHOLA-SHAHIDCHOWK)

SCALE

SILT Consultants (P) Ltd.
Baneswor, Kathmandu, Nepal
P.O Box: 2724
Fax: 977-1-473573
Phone: 473573 , 470666 , 487598,495163
E-mail: silt@mos.com.np
Web: www.silt.com.np

DWG. No. B

SHEET No. 1



COSCARD ATAGE-1

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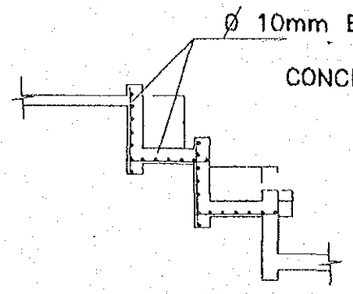

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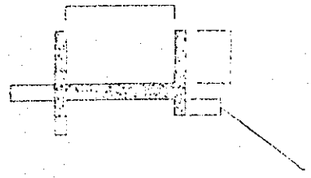

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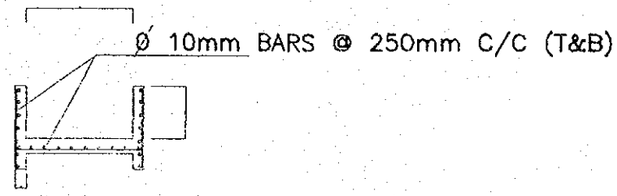
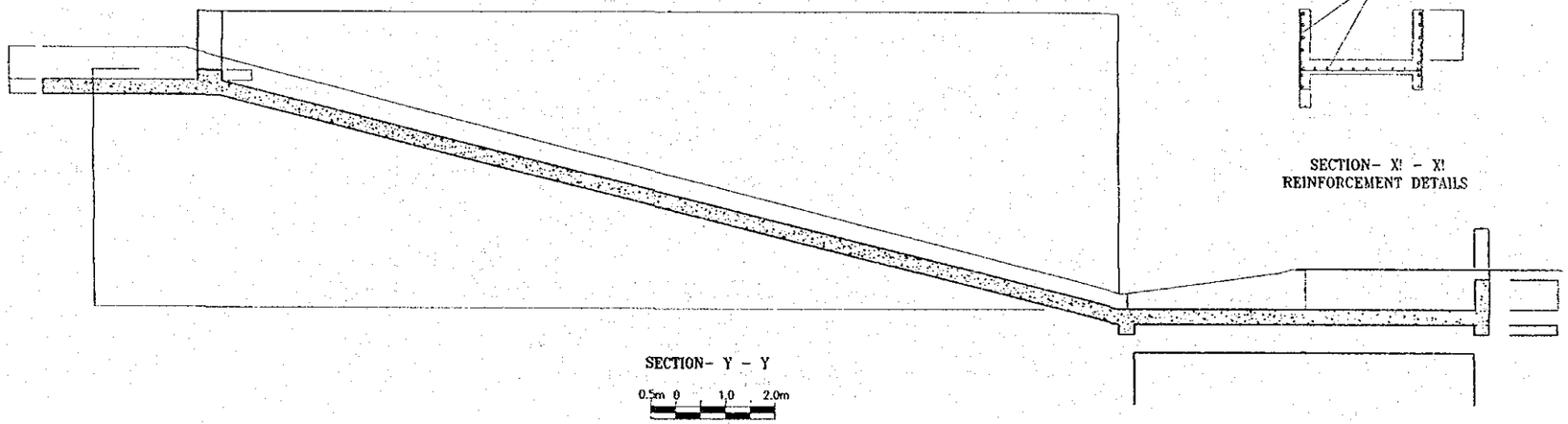


SECTION- X! - X!
REINFORCEMENT DETAILS



SECTION- Y - Y

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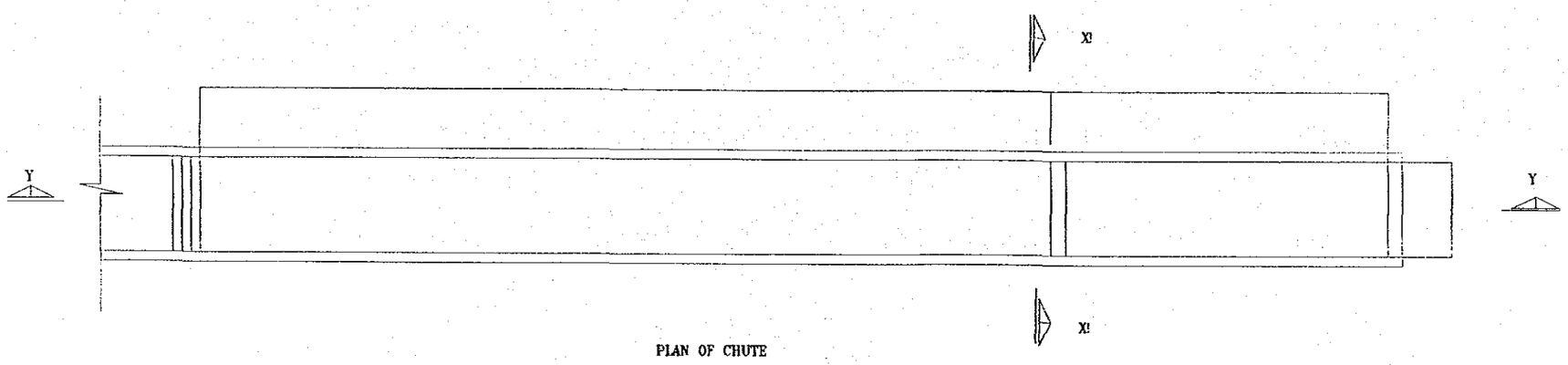
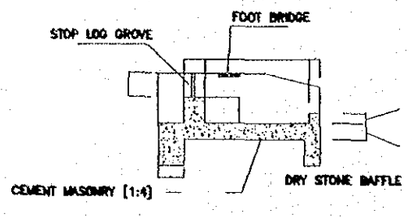


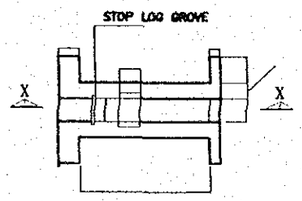
PLAN OF CHUTE

0.5m 0 1.0 2.0m

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: DETAILS OF STRUCTURES		SCALE	SILT Consultants (P.) Ltd. Baneswor,Kathmandu,Nepal P.O Box: 2724 Fax: 977-1-473573 Phone: 473573 , 470866 , 487598,495163 E-mail:silt@mos.com.np Web:www.silt.com.np	Fig. SHEET No. 1



SECTION AT X-X



PLAN OF DROP FALL STRUCTURE

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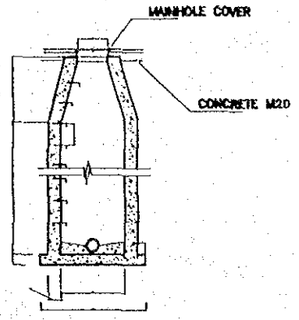
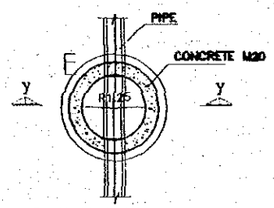


SECTION AT Y-Y



PLAN OF MAINHOLE

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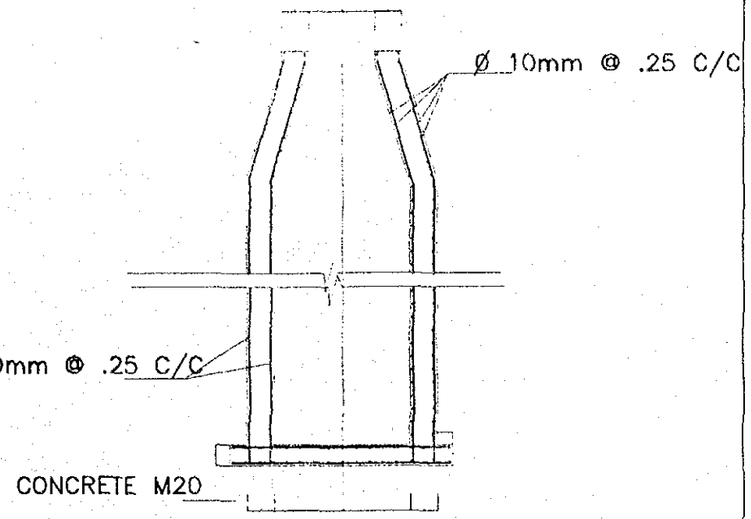

SECTION OF R.C.C. DETAILS

CASCADE

1m 0 1 2 3 4m

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	THE DEVELPOMENT STUDY ON THE ENVIRONMENTAL CONSERVATION OF PHEWA LAKE POKHARA NEPAL	DRAWING TITLE: DETAILS OF STRUCTURES		SCALE 0 125 250 375 500 625m	SILT Consultants (P.) Ltd. Baneswor,Kathmandu,Nepal P.O Box: 2724 Fax: 977-1-473573 Phone: 473573 , 470866 , 487598,495163 E-mail:silt@mos.com.np Web:www.silt.com.np	Fig. SHEET No. 2

ANNEX –5
Field Findings on Socio-economic and Environmental Condition

Total No of HHs and Population in the Rural Watershed Area of Phewa Lake

VDC	Total HH	Population			Average Family Size Person/HH
		Male	Female	Total	
Dhikurpokhari	1702	3745	4352	8097	4.75
Kaskikot	1522	3207	3390	6597	4.33
Sarangkot	1433	3176	3455	6631	4.62
Chapakot	641	1460	1792	3252	5.07
Pumdi-Bhumdi	1590	3771	4130	7901	4.46
Bhadaure-Tamagi	766	1934	2055	3989	5.20
Total	**7654**	**17293**	**19174**	**36467**	**4.73**

CBS: 2001

Total No of HHs and Population in Sampled Area

VDC	Total HH	Sampled HH	Ward No	Cluster	Total Pop.
Dhikurpokhari	1702	330	1,2,3,4,5,6,7	Naudanda, Adhikari Danda, Paundurkot	8097
Kaskikot	1522	308	1,2,4,5,6,9	Kotmuni, Pame, Deurili, Baskot, Karkiko Tahara,Laurik	6597
Sarangkot	1433	327	2,3,4,6,7,8	Sarangkot, Shiyadibager, Gothathi, Bhakunde, Phaure-khapunde, Gairi Chautara	6631
Total	**4,657**	**965**			**21,325**

Educational Status In the Watershed of Phewa Lake

Level	No.of Schools	No. of Students	No. of Teacher
Pokhara Sub-Metropolis, Phewa lake catchment wards 1- 9 and 17			
Primary	16	2,208	64
L.Secondary	6	2,346	48
Higher/Secondary School	21	2,835	105
Dhikurpokhari			
Primary	9	1,242	36
L.Secondary	1	391	8
Higher/Secondary School	2	270	10
Kaskikot			
Primary	8	1,104	32
L. Secondary	1	391	8

Level	No.of Schools	No. of Students	No. of Teacher
Higher/Secondary School	1	135	5
Sarangkot			
Primary	6	828	24
L.Secondary	2	782	16
Higher/Secondary School	1	135	5
Chapakot			
Primary	5	690	20
L. Secondary	1	391	8
Higher/Secondary School	1	135	5
Pumdi Bhumdi			
Primary	14	1932	56
L.Secondary	-	-	-
Higher/Secondary School	1	135	5
Bhadaure Tamagi			
Primary	4	552	16
L. Secondary School	2	782	16
Higher/Secondary School	1	135	5
Total	**7**	**1,469**	**37**

Caste Composition in the Sampled Area (in percentage)

Ethnicity	Name of the VDC		
	Dhikurpokhari	Kaskikot	Sarangkot
Brahmin/Chhetri	68	59	66
Other Ethnic Groups	12	9	22
Oppressed Groups	20	32	12
Total	**100**	**100**	**100**

Source: Field Survey

Land Holding Pattern (HH%)

VDC	land				
	3-0.5 ha	0.5-1ha	1-2ha	2-5ha	Landless
Dhikurpokhari	44	26	24	1	5
Kaskikot	36	35	8	1	20
Sarangkot	73	23	2	1	1

Source: *Field Survey*

Food Availability in Sampled Area (HH%)

VDC	Month				
	0-3	3-6	6-9	9-12	Surplus
Dhikurpokhari	24	33	17	17	9
Kaskikot	31	28	24	11	6
Sarangkot	32	29	15	18	6

Source: Field Survey

Income Distribution in Sampled Area (HH%)

VDCs	Income Status		
	Surplus	Income Status=Exp.	Deficit
Dhikurpokhari	6	18	76
Kaskikot	5	11	84
Sarangkot	8	18	74

Source: Field Survey

Average Land Value

VDCs	Paddy Field	Up Land	For Building
Dhikurpokhari	Rs 71,660	Rs 51,667	Rs 133,334
Kaskikot	Rs 76,667	Rs 50,000	Rs 2,93,343
Sarangkot	Rs 240,000	Rs 130,667	Rs 400,000

Source: Field Survey

Average Labor Cost

VDC S	Male	Female
Dhikurpokhari	Rs 175	Rs 65
Kaskikot	Rs 170	Rs 70
Sarangkot	Rs 185	Rs 85

Source: Field Survey

Participation for Collecting Fodder (%)

VDCs	Male	Female	Male Child	Female Child
Dhikurpokhari	42	48	4	6
Kaskikot	39	53	4	4
Sarangkot	44	46	4	6

Source: Field Survey

House Type in Sampled Area (%)

VDCs	Fully Concrete	Tin Roofed	Fully Thatched	Stone Roofed
Dhikurpokhari	8	54	4	35
Kaskikot	4	62	13	16
Sarangkot	7	79	1	6

Source: Field Survey

No. of Community Forest in Sampled Area

VDCs	No. of Community Forest	Male Participation	Female Participation
Dhikurpokhari	8	71%	29%
Kaskikot	4	93%	7%
Sarangkot	7	92%	5%

Source: Field survey

No. of Other Users Committee in Sampled Area

VDCs	Environ-mental	Conser-vation	Irrigation	Drinking water	Other
Dhikurpokhari	-	-	2	4	2
Kaskikot	-	-	1	6	1
Sarangkot	-	-	2	4	3
Total	**-**	**-**	**5**	**14**	**6**

Source: Field survey

No. of Private Transportation in Sampled Area

VDCs	Bicycle	M. bikes	Jeep/ Car	Tractor/T ruck	Bus	Power Tiller	Others
Dhikurpokhari	8	12	3	2	5	-	1 Taxi
Kaskikot	23	7	1	1	1	2	1 Taxi
Sarangkot	46	29	1	-	-	-	1 Van

Source: Field Survey

Communication and Other Electrical Facilities In Sampled Area

VDCs	Radio	TV	Telephone	Refrigerator
Dhikurpokhari	95%	63%	3%	5%
Kaskikot	90%	38%	2%	8%
Sarangkot	89%	44%	2%	9%

Source: Field Survey

Percentage of Household for Protection and Management of Natural Resources in Sampled Area (HH%)

VDCs	Protection and Management of					
	Agricultural land	Forest Resources	Water Resources	Mineral Resources	Tourism Resources	Herbal Resources
Dhikurpokhari	88	53	27	-	13	2
Kaskikot	86	37	27	-	30	2
Sarangkot	75	38	22	-	30	2

Source: Field Survey

No. of Business Status in Sampled Area

VDCs	Title					
	Tea Shop	Provisional	Hotel/Res.	Cloth Shop	Souvenir Shop	Others
Dhikurpokhari	14	20	7	10	2	8
Kaskikot	30	23	14	4	3	1
Sarangkot	22	16	29	14	30	2

Source: **Field Survey**

Time Utilization by Gender in Sampled Area (In percentage/hour)

Title	Dhikurpokhari			Kaskikot			Sarangkot		
	Male	Female	Child	Male	Female	Child	Male	Female	Child
Fetching Water	32	60	8	31	62	7	42	50	8
Collection of Fuel Wood	26	57	16	47	46	9	40	52	8
Involvement in Env. Preservation Work	38	23	5	37	27	-	34	20	-
Childcare	22	73	5	28	71	1	21	72	7
Agriculture Farming	65	32	3	46	47	7	47	41	12
Marketing of Products	50	32	8	41	54	5	37	51	12
Attending Public Meeting	73	22	5	61	35	4	80	18	2
Access of Credit	15	83	2	14	86	-	10	90	-
Decision Making	50	45	5	52	47	1	61	38	1

Source: Field Survey

VDCs	Title					
	INGO	NGO	CBO	Youth Club	Others	Total
Dhikurpokhari	1	4	5	1	3	13
Kaskikot	1	3	7	5	2	18
Sarangkot	6	5	13	8	8	40

Source: Field Survey

Livestock Feeding Practice in Sampled Area (HH%)

VDCs	Open Grazing	Stall Feeding
Dhikurpokhari	-	100
Kaskikot	16	84
Sarangkot	17	83

Source: Field Survey

Main Source of Fodder in Sampled Area (In percentage)

Title	VDCs		
	Dhikur-pokhari (%)	Kaskikot (%)	Sarangkot (%)
Community Forest			
Within Study Area	38	38	26
Outside Study Area	8	3	5
From Government Forest			
Within Sub Watershed Area	15	10	16
Outside Sub Watershed Area	2	5	8
Other Sources			
Private Forest	6	4	9
Pasture Land	8	6	4
Farm Land	23	34	32
Total %	**100**	**100**	**100**

Source: PRA, Group Discussion

Migration Trend (Average) in Sampled Area

VDCs	Trend %	In migration %	Out Migration	
			National	International
Dhikurpokhari	3%	0.5%	2.1%	0.4%
Kaskikot	10%	6%	3%	1%
Sarangkot	28%	13.5%	14%	0.5%

Source: PRA, Group Discussion

Livestock Population of the VDC

VDCs	Cow/Oxen			Buffalos			Sheep/Goat			Chicken			Pig
	Local	Imp.	Total	local	Imp.	Total	local	Imp	Total	local	Imp.	Total	
Dikurpokhari	2740	211	**2951**	1971	531	**2502**	2908	221	**3119**	3836	1269	**5105**	-
Kaskikot	2327	69	**2396**	2308	138	**2446**	2243	-	**2243**	1448	988	**2436**	23
Sarangkot	1923	103	**2026**	1823	88	**1911**	1877	167	**5163**	1747	1241	**2988**	120

Source: PRA, Group Discussion

ANNEX –6
List of On-Going Community Development Programs in the Study Area

LIST OF ON-GOING COMMUNITY DEVELOPMENT PROGRAMS

IN THE STUDY AREA

SN	Activities	Place	Organizations
1.	Water Supply Project	Kaskikot	Jan Heet Yuwa Club, Sanitation Frontier, France
2.	Park and Stadium Development, 40 Ropani	Dhupi Chaur	Jan Heet Yuwa Club
3.	Hand Spinning Wheel	Maula	Jan Heet Yuwa Club
4.	Medical Services, 2052	Kaskikot	Jan Heet Yuwa Club
5.	Health Campaigns	Kaskikot	Jan Heet Yuwa Club
6.	Awareness Campaign on health and sanitation	Maula, Kaskikot	Pariya Yuwa Samaj
7.	Toilets Construction	Maula, Kaskikot	Pariyar Yuwa Samaj
8.	Saving and Credit Scheme	Kaskikot	Maula Aama Samooha
9.	Fund Raising Concert	Kaskikot, Pame	Jan Heet Yuwa Club, Pariyar Yuwa Samaj Maula Aama Samooha, Pame Aama Samooha
10	Staircase Construction	Kaskikot	Jan Heet Yuwa Club, Pariyar Yuwa Samaj Maula Aama Samooha
11.	Cleaning Campaign	Kaskikot	Jan Heet Yuwa Club, Pariyar Yuwa Samaj Maula Aama Samooha
12.	Saving and Credit Scheme	Dopare Kaskikot	Subha Srijanshil Aama Samooha
13.	Cleaning Campaign	Dopare , Kaskikot - 5	Subha Srijanshil Aama Samooha
14	Toilet Construction	Dopare, Kaskikot - 5	Subha Srijanshil Aama Samooha
15	Campaign Against Gambling and Alcoholism	Dopare, Kaskikot - 5	Subha Srijanshil Aama Samooha
16	Establishment of Library	Deuralee, Kaskikot – 2	Om Shanti Aama Samooha, Eligent Society, Korea
17	Monthly Cleaning Campaign	Deuralee, Kaskikot – 2	Om Shanti Aama Samooha
19	Catering Service	Pame	Pame Aama Samooha
20	Construction of School Road	Pame	Pame Aama Samooha
21	Cleaning Campaign	Pame	Pame Aama Samooha
22	Waste Collection	Pame	Pame Aama Samooha
23	Charity Motel Renovation	Pame	Pame Aama Samooha
24	Construction of Rest Place, Chair and Table	Pame	Pame Aama Samooha
25	Fund Raising	Pame, Kaskikot	Phewa Youth Club
26	Construction of Staircase	Pame, Kaskikot	Phewa Youth Club
27	Drainage Construction for Tap Wastewater	Pame, Kaskikot	Phewa Youth Club

28	Garbage Collection Contalner	Pame, Kaskikot	Phewa Youth Club
29	Street Lamp	Pame, Kaskikot	Phewa Youth Club
30	Control of Plastic Waste	Pame, Kaskikot	Phewa Youth Club
31	Cleaning Campaign	Deuralee	Nava Prabhat Baal Samooha
32	Saving and Credit Scheme	Dhikurpokhari Makaaree Danda	Pragateeshil Reen Tatha Bachat Samooha
33	Training on Child Health	Dhikurpokhari Makaaree Danda	Pragateeshil Reen Tatha Bachat Samooha
34	Toilet Construction	Dhikurpokhari Makaaree Danda	Pragateeshil Reen Tatha Bachat Samooha
35	Promotion of Improvised Slove	Dhikurpokhari Makaaree Danda	Pragateeshil Reen Tatha Bachat Samooha
36	Cleaning Campaign	Sarangkot, Bhakunde	Prasidha Yuwa Club
37	Road Renovation	arangkot Bhakunde – ard No.4 - Bhanjyang – harpaundee – yanchwok and Pandelee	Prasidha Yuwa Club
38	Toilet Construction	Sarangkot Bhakunde	Prasidha Yuwa Club
39	School Construction	Sarangkot Bhakunde	Prasidha Yuwa Club Welfare of Himalayan Children
40	Health Post	Sarangkot Bhakunde	Prasidha Yuwa Club
41	Water Supply	Sarangkot Bhakunde	Prasidha Yuwa Club
42	Training on Off-season Vegetable Production Farming	Sarangkot Bhakunde	Prasidha Yuwa Club
43	Organizing Women Groups	Makuree Danda Nau Danda Dhikurpokari Dopere, Maula Kaskikot	Machhapuchhre Development Organization
44	Saving and Credit Groups	Makuree Danda Nau Danda Dhikurpokhari Dopere, Maula Kaskikot	Machhapuchhre Development Organization
45	Training on Health	Makuree Danda Nau Danda Dhikurpokhari Dopere, Maula Kaskikot	Machhapuchhre Development Organization

46	Construction of Toilet	Makaree Danda Nau Danda	Machhapuchhre Development Organization
47	Improved Stove	Makuree Danda Nau Danda Dhikurpokhari Dopere, Maula Kaskikot	Machhapuchhre Development Organization
48	Vegetable Production through Farmer Groups	Shera Chaur Dhikurpokhari	SEDA
49	Drop Irrigation Project	Shera Chaur Dhikurpokhari	SEDA
50	Formation of Women Groups	Dhikurpokhari	Mahila Bikash Shakha
51	Basic Training on Saving	Bhakaaree Danda Dhikurpokhari	Mahila Bikash Shakha
52	Buffalo Farming	Bhakaaree Danda Dhikurpokhari	Mahila Bikash Shakha
53	Business Entrepreneur	Bhakaaree Danda Dhikurpokhari	Mahila Bikash Shakha
53	Community Development Income Generation	Dhikurpokhari	Dikhur Pokharee Samudaik Sanstha Mahila Bikash Shakha
54	Song contest on Bio-diversity	Dhikurpokhari	Li Bird, Samajik Watabaran Mahila Samooha Pragateeshil Yuwa Club
55	Distribution of Vegetable Seed	Maraiche Dhikurpokhari Ward No. 7	Li Bird
56	Training for Production of Mushroom.	Maraiche Dhikurpokhari Ward No. 7	Li Bird
57	Construction of Water Supply Facilities	Dhikurpokhari	Red Cross Fund Board
58	Training on Health and Sanitation	Dhikurpokhari	Red Cross Rural Water Supply and Sanitation Development Fund Board
59	Awareness Campaign on Health and Sanitation	Dhikurpokhari	Red Cross Rural Water Supply and Sanitation Development Fund Board
60	Awareness Campaign on Keeping Water Source Unpolluted	Dhikurpokhari	Red Cross Rural Water Supply and Sanitation Development Fund Board
61	Water Supply	Dhikurpokhari	Red Cross Rural Water Supply and Sanitation Development Fund Board
62	Irrigation Canal	Dharapani	Watershed Management and

		Dhikurpokhari Ward No.2	Soil Conservation Project, Watershed Management and Soil Conservation Dept./ JICA
63	Awareness Campaign on Watershed Management and Soil Conservation	Dharapani Dhikurpokhari Ward No.2	Watershed Management and Soil Conservation Project Watershed Management and Soil Conservation Dept. / JICA
64	Afforestation Community Forestry	Dharapani Dhikurpokhari Ward No.2	Watershed Management and Soil Conservation Project Watershed Management and Soil Conservation Dept. / JICA
65	Milk Collection, Selling, Animal Feed	Kaskikot, Sarangkot Chapakot	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
	Fund Raising and Investment	Kaskikot, Sarangkot Chapakot	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
66	Veterinary Service through Veterinary Clinic of Pame	Kaskikot, Sarangkot Chapakot, Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
67	Hybrid Seed for Hybrid Animals Farming	Kaskikot, Sarangkot Chapakot, Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
68	Health Referral Service	Kaskikot, Sarangkot Chapakot Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
69	Loan Assistance for Purchase of Cows and Buffaloes	Kaskikot, Sarangkot Chapakot Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree, Agriculture Development Bank and Commercial Bank
70	Animal Feed and Medicine	Kaskikot, Sarangkot Chapakot Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree,
71	Healthy Animal Grazing and Pasture Land Development	Kaskikot, Sarangkot Chapakot Bhadaure Tamagee	Shree Guptkaalika Dugdha, Utpadak Bahooudeshya Sahakaree
72	Bee Farming Honey-Comb Natural Feeding to Bees Flower Plants Plantation Bee Protection Production of Wax	Sedi Sarangkot – 7 Ward no. 1 and 2, Bhadaure Tamangi Chapakot. Dhikur Pokhari	Amrit Mauri-Palan Samooha, Pokhara Chamber of Commerce and Industry, Department of Agriculture
73	Animal Husbandry	Kaskikot, Sarangkot Chapakot	DDC, Commercial Banks, Veterinary Office Animal Health Office
74	Fisheries	PSM, Kaskikot Sarangkot, Chapakot	Fisheries Research Center
75	Rope, Animal Tying Rope, Back-pack Holding Belt	Kaskikot, Sarangkot Chapakot	Household Practice

76	Bamboo Products	Kaskikot, Sarangkot Chapakot	Private
77	Poultry Farming Hatchery and Feed	Scattered	Mahila Bikash Sakha Agriculture Development Bank.
78	Handicrafts	Scattered	Private Practice
79	Mushroom Farming	Kudmi Danda Bhadaure Tamagi Dhikurpokhari, Sarangkot	Li-Bird Agriculture Department Office
80	Sewing and Knitting	Scattered	Private
81	Coffee Farming	Bamdi, Chapakot Kaskikot	Agriculture Services Sub-Center
82	Ginger, Turmeric, Cinnamon	Dhikur Pokhari Thado Khola, Dharapani, Dhikurpokhari	Private
83	Amriso Farming	Dhikur Pokhari Thado Khola Dharapani Dhikurpokhari	Private
84	Vegetable Seed Production	Ward 7 & 8 Bhadaure Tamagi Kudmi Danda ward no. 4, Harpan Chapakot - 7 Ainselchaur Khorpakha.	Agriculture Services Center Seed Promotion Project
85	Horticulture	Pumdi Bhumdee Chapkot Bhadaure Tamagee	Private
86	Herbs Farming	Scattered	
87	Environment Education and Capacity Building	Pokhara Sub- Metropolis Area	Pokhara Sub-Metropolis, EHDAG/HEMRA
88	Environmental Improvements	Pokhara Sub- Metropolis Area	PSMC, HEMRA/EHDAG
90	Slum Community Development Study	Pokhara Sub- Metropolis	EHDAG
91	Capacity Building Training	Pokhara Sub- Metropolis	PSMC

ANNEX –7
List of NGO and CBO Operating in the Study Area

List of Some of the NGOs and CBOs Operating in the Study Area

1. Amrit Mauri-Palan Samooha
2. Dikhur Pokharee Samudaik Sanstha
3. EHDAG
4. HEMRA
5. Indreni Club
6. Jan Heet Yuwa Club
7. Li Bird
8. Machhapuchhre Development Organization
9. Maula Aama Samooha
10. Nari Sewa Kendra
11. Nava Prabhat Baal Samooha
12. Om Shanti Aama Samooha
13. Pame Aama Samooha
14. Pardi Baidam Sarsafai Committee
15. Pardi Environment Committee
16. Pariyar Yuwa Samaj
17. Phewa Boat Association
18. Phewa Lake Conservation Committee
19. Phewa Lake Environment Conservation Committee - Bhattarai Group
20. Phewa Trust
21. Phewa Youth Club
22. Pokhara Tourism Promotion Center
23. Pragateeshil Reen Tatha Bachat Samooha
24. Pragateeshil Yuwa Club
25. Prasidha Yuwa Club
26. Red Cross
27. Samajik Watabaran Mahila Samooha

28. SEDA
29. Shidhartha Club
30. Shree Guptkaalika Dugdha Utpadak Bahooudeshya Sahakaree
31. Srijana Club
32. Subha Srijanshil Aama Samooha
33. Tole Level Environmental Improvements Committees in Pokhara Sub-metropolis (174 numbers)
34. TOLI
35. Women Groups In Phewa Catchment Area (57 numbers)