

Part B

Appendix 6.3 Agricultural Development Plan

App. 6.3.5-1 Population Projection

Area	Annual Population Increase Rate						2000/01 (no.)
	(%)	1995/96 (no.)	1996/97 (no.)	1997/98 (no.)	1998/99 (no.)	1999/00 (no.)	
Bidur Municipality	2.3	21,005	21,488	21,982	22,488	23,005	23,534
Khadga Bharjyan VDC	2.2	6,506	6,649	6,795	6,945	7,098	7,254
Gerku VDC	2.2	7,024	7,179	7,336	7,498	7,663	7,831
Study Area	2.3	-	8,742	8,943	9,149	9,359	9,575
Nuwakot District	2.2	-	276,454	282,536	288,752	295,104	301,597
Kathmandu District	6.7	875,348	933,996	996,574	1,063,344	1,134,589	1,210,606

Source: 1) District Statistical Office, Nuwakot.

2) "Agricultural Marketing Information Bulletin, 1996", Marketing Development Division, Department of Agriculture.

App. 6.3.5-2 Crop Losses

Crop	Post Harvest Losses (%)	Processing Losses (%)	Milling Recovery (%)	Seed Rate (kg/ha)
Paddy/Rice	10	1.75	62.85	55
Maize/Flour	10	1	97	20
Wheat/Flour	10	1	96	100
Millet/Flour	10	0	93	20
Vegetables	10	0	0	0

Source: "Agricultural Marketing Information Bulletin, 1996",
Marketing Development Division, Department of Agriculture.

App. 6.3.5-3 Irrigation Block-wise Estimated Self-sufficiency Rates (1/2)

Irrigation Block	Crops	FW/O						FW (9 Months Irrigation)						FW (12 Months Irrigation)									
		Production		Foodgrain Availability		Population		Foodgrain Requirement		Self-sufficiency Rate (%)		Production		Foodgrain Availability		Population		Foodgrain Requirement		Self-sufficiency Rate (%)			
		(mt)	(no.)	(mt)	(no.)	(mt)	(no.)	(mt)	(no.)	(%)	(%)	(mt)	(no.)	(mt)	(no.)	(mt)	(no.)	(mt)	(no.)	(%)	(%)		
A	Paddy	61.51	33.40	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06
	Maize	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Sub-total	61.51	33.40	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06	116.5	64.03	37.28	32.06
B	Paddy	58.75	31.9	240.00	131.47	191.06	127.18	240.00	131.47	191.06	127.18	240.00	131.47	191.06	127.18	240.00	131.47	191.06	127.18	240.00	131.47	191.06	127.18
	Maize	44.93	38.46	76.80	66.05	0	0	76.80	66.05	0	0	76.80	66.05	0	0	76.80	66.05	0	0	76.80	66.05	0	0
	Millet	31.58	26.15	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	3.26	2.58	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	138.52	99.09	316.80	197.52	191.06	127.18	316.80	197.52	191.06	127.18	316.80	197.52	191.06	127.18	316.80	197.52	191.06	127.18	316.80	197.52	191.06	127.18	
C	Paddy	64.18	34.85	371.50	203.74	118.88	102.23	371.50	203.74	118.88	102.23	371.50	203.74	118.88	102.23	371.50	203.74	118.88	102.23	371.50	203.74	118.88	102.23
	Upland Paddy	3.07	1.66	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maize	77.27	66.14	118.88	102.23	0	0	118.88	102.23	0	0	118.88	102.23	0	0	118.88	102.23	0	0	118.88	102.23	0	0
	Millet	41.91	34.7	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sub-total	186.43	137.35	490.38	305.97	118.88	102.23	490.38	305.97	118.88	102.23	490.38	305.97	118.88	102.23	490.38	305.97	118.88	102.23	490.38	305.97	118.88	102.23	
D	Paddy	46.87	25.45	325.60	179.87	65.12	56.00	325.60	179.87	65.12	56.00	325.60	179.87	65.12	56.00	325.60	179.87	65.12	56.00	325.60	179.87	65.12	56.00
	Upland Paddy	8.38	4.53	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maize	110.05	94.2	65.12	56.00	0	0	65.12	56.00	0	0	65.12	56.00	0	0	65.12	56.00	0	0	65.12	56.00	0	0
	Millet	56.63	46.9	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sub-total	221.93	171.08	390.72	235.87	65.12	56.00	390.72	235.87	65.12	56.00	390.72	235.87	65.12	56.00	390.72	235.87	65.12	56.00	390.72	235.87	65.12	56.00	
E	Paddy	82.54	44.82	416.80	230.26	83.36	71.68	416.80	230.26	83.36	71.68	416.80	230.26	83.36	71.68	416.80	230.26	83.36	71.68	416.80	230.26	83.36	71.68
	Upland Paddy	6.43	3.48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maize	147.39	126.16	83.36	71.68	0	0	83.36	71.68	0	0	83.36	71.68	0	0	83.36	71.68	0	0	83.36	71.68	0	0
	Millet	27.43	22.72	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	14.17	11.23	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sub-total	277.96	208.41	500.16	301.94	83.36	71.68	500.16	301.94	83.36	71.68	500.16	301.94	83.36	71.68	500.16	301.94	83.36	71.68	500.16	301.94	83.36	71.68	
F	Paddy	0	0	74.75	41.30	500.16	301.94	74.75	41.30	500.16	301.94	74.75	41.30	500.16	301.94	74.75	41.30	500.16	301.94	74.75	41.30	500.16	301.94
	Upland Paddy	4.33	2.34	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maize	38.69	33.12	59.80	51.42	0	0	59.80	51.42	0	0	59.80	51.42	0	0	59.80	51.42	0	0	59.80	51.42	0	0
	Millet	9.59	7.94	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sub-total	52.61	43.40	134.55	92.72	0	0	134.55	92.72	0	0	134.55	92.72	0	0	134.55	92.72	0	0	134.55	92.72	0	0	
G	Paddy	0	0	128.75	71.12	103.00	88.57	128.75	71.12	103.00	88.57	128.75	71.12	103.00	88.57	128.75	71.12	103.00	88.57	128.75	71.12	103.00	88.57
	Upland Paddy	11.7	6.33	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Maize	57.95	49.60	103.00	88.57	0	0	103.00	88.57	0	0	103.00	88.57	0	0	103.00	88.57	0	0	103.00	88.57	0	0
	Millet	33.95	28.11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Sub-total	103.6	84.04	231.75	159.69	0	0	231.75	159.69	0	0	231.75	159.69	0	0	231.75	159.69	0	0	231.75	159.69	0	0	
H	Paddy	16.61	9.02	173.00	95.57	55.36	47.60	173.00	95.57	55.36	47.60	173.00	95.57	55.36	47.60	173.00	95.57	55.36	47.60	173.00	95.57	55.36	47.60
	Maize	53.98	46.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Millet	16.26	13.47	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	86.85	68.69	228.36	143.17	55.36	47.60	228.36	143.17	55.36	47.60	228.36	143.17	55.36	47.60	228.36	143.17	55.36	47.60	228.36	143.17	55.36	47.60	

App. 6.3.5-3 Irrigation Block-wise Estimated Self-sufficiency Rates (22)

Irrigation Block	Crops	FW/O						FW (9 Months Irrigation)						FW (12 Months Irrigation)					
		Production (mt)	Foodgrain Availability (mt)	Population (no.)	Foodgrain Requirement (mt)	Self-sufficiency Rate (%)	Production (mt)	Foodgrain Availability (mt)	Population (2000/2001) (no.)	Foodgrain Requirement (mt)	Self-sufficiency Rate (%)	Production (mt)	Foodgrain Availability (mt)	Population (2000/2001) (no.)	Foodgrain Requirement (mt)	Self-sufficiency Rate (%)			
I	Upland Paddy	15.22	8.23				46.20	25.45				46.20	25.45						
	Maize	62.46	53.46				92.40	79.46				92.40	79.46						
	Millet	13.03	11.14				0	0				0	0						
	Sub-total	90.71	72.83	733	140.00	52.0	138.60	104.91	803	153.37	68.4	138.60	104.91	803	153.37	68.4			
J	Upland Paddy	8.2	4.43				56.80	31.29				56.80	31.29						
	Maize	75.61	64.72				113.60	97.69				113.60	97.69						
	Millet	16.02	13.27				0	0				0	0						
	Sub-total	99.83	82.42	308	58.83	140.1	170.40	128.98	337	64.37	200.4	170.40	128.98	337	64.37	200.4			
K	Upland Paddy	11.39	6.16				79.00	43.52				79.00	43.52						
	Maize	105.16	90.01				158.00	135.87				158.00	135.87						
	Millet	22.28	18.45				0	0				0	0						
	Sub-total	138.83	114.62	412	78.69	145.7	237.00	179.39	451	86.14	208.3	237.00	179.39	451	86.14	208.3			
L	Paddy	178.87	97.13				514.00	283.95				514.00	283.95						
	Maize	125.63	107.53				154.20	132.60				154.20	132.60						
	Millet	19.33	16				0	0				0	0						
	Wheat	34.95	27.7				257.00	214.33				257.00	214.33						
Sub-total	358.78	248.36	1,384	264.34	94.0	925.20	630.88	1,516	289.56	217.9	925.20	630.88	1,516	289.56	217.9				
Total	509.33	276.57				2,360.90	1,301.31				2,360.90	1,301.31							
Upland Paddy		68.72	37.16				182.00	100.26				182.00	100.26						
	Maize	899.12	769.60				1,117.80	961.23				1,117.80	961.23						
	Millet	288.01	238.85				0	0				0	0						
	Wheat	52.38	41.51				257.00	214.33				257.00	214.33						
Sub-total	1,817.56	1,365.69	8,742	1,669.71	81.7	3,917.70	2,577.13	9,575	1,828.82	140.9	4,633.22	3,173.84	9,575	1,828.82	173.5				

Note: DOA calculation method was adopted for estimation of self-sufficiency rates in food production. Annual population increase rate was assumed at 2.3%.

App. 6.3.5-4 Crop-wise Incremental Production (1/3)

Irrigation Block	Crops	FW/O		IW		
		Production (mt)	Production under 9 months Irrigation (mt)	Increment (mt)	Production under 12 months Irrigation (mt)	Increment (mt)
A	Paddy	61.51	116.5	54.99	116.5	54.99
	Maize	0	37.28	37.28	37.28	37.28
	Wheat	0	0	0	37.28	37.28
	Sub-total	61.51	153.78	92.27	191.06	129.55
	Oilseeds	0	0	0	0	0
	Vegetables	0	229.62	229.62	459.24	459.24
	Total	61.51	383.4	321.89	650.3	588.79
B	Paddy	58.75	240.00	181.25	240.00	181.25
	Maize	44.93	76.80	31.87	76.80	31.87
	Millet	31.58	0	-31.58	0	-31.58
	Wheat	3.26	0	-3.26	76.80	73.54
	Sub-total	138.52	316.80	178.28	393.60	255.08
	Oilseeds	1.06	0	-1.06	0	-1.06
	Total	139.58	789.84	650.26	1,339.68	1,200.10
C	Paddy	64.18	371.50	307.32	371.50	307.32
	Upland Paddy	3.07	0	-3.07	0	-3.07
	Maize	77.27	118.88	41.61	118.88	41.61
	Millet	41.91	0	-41.91	0	-41.91
	Wheat	0	0	0	118.88	118.88
	Sub-total	186.43	490.38	303.95	609.26	422.83
	Oilseeds	5.23	0	-5.23	0	-5.23
	Total	191.66	1,222.61	1,030.95	2,073.71	1,484.73
D	Paddy	46.87	325.60	278.73	325.60	278.73
	Upland Paddy	8.38	0	-8.38	0	-8.38
	Maize	110.05	65.12	-44.93	65.12	-44.93
	Millet	56.63	0	-56.63	0	-56.63
	Wheat	0	0	0	130.24	130.24
	Sub-total	221.93	390.72	168.79	520.96	299.03
	Oilseeds	3.58	0	-3.58	0	-3.58
	Total	225.51	1,727.72	1,502.21	2,660.15	2,434.64
E	Paddy	82.54	416.80	334.26	416.80	334.26
	Upland Paddy	6.43	0	-6.43	0	-6.43
	Maize	147.39	83.36	-64.03	83.36	-64.03
	Millet	27.43	0	-27.43	0	-27.43
	Wheat	14.17	0	-14.17	166.72	152.55
	Sub-total	277.96	500.16	222.2	666.88	388.92
	Oilseeds	8.25	0	-8.25	0	-8.25
	Total	286.21	2,211.65	1,925.44	3,405.26	3,119.05

App. 6.3.5-4 Crop-wise Incremental Production (2/3)

Irrigation Block	Crops	FW/O		FW		
		Production (mt)	Production under 9 months Irrigation (mt)	Increment (mt)	Production under 12 months Irrigation (mt)	Increment (mt)
F	Paddy	0	74.75	74.75	74.75	74.75
	Upland Paddy	4.33	0	-4.33	0	-4.33
	Maize	38.69	59.80	21.11	59.80	21.11
	Millet	9.59	0	-9.59	0	-9.59
	Wheat	0	0	0	47.84	47.84
	Sub-total	52.61	134.55	81.94	182.39	129.78
	Oilseeds	5.81	0	-5.81	0	-5.81
	Vegetables	0	491.11	491.11	785.77	785.77
	Total	58.42	625.66	567.24	968.16	909.74
	G	Paddy	0	128.75	128.75	128.75
Upland Paddy		11.7	0	-11.7	0	-11.7
Maize		57.95	103.00	45.05	103.00	45.05
Millet		33.95	0	-33.95	0	-33.95
Wheat		0	0	0	82.40	82.40
Sub-total		103.6	231.75	128.15	314.15	210.55
Oilseeds		8.4	0	-8.4	0	-8.4
Vegetables		0	845.89	845.89	1,353.42	1,353.42
Total		112.00	1,077.64	965.64	1,667.57	1,555.57
H		Paddy	16.61	173	156.39	173
	Maize	53.98	55.36	1.38	55.36	1.38
	Millet	16.26	0	-16.26	0	-16.26
	Wheat	0	0	0	55.36	55.36
	Sub-total	86.85	228.36	141.51	283.72	196.87
	Oilseeds	2.13	0	-2.13	0	-2.13
	Vegetables	0	340.98	340.98	681.97	681.97
	Total	88.98	569.34	480.36	965.69	876.71
I	Upland Paddy	15.22	46.20	30.98	46.20	30.98
	Maize	62.46	92.40	29.94	92.4	29.94
	Millet	13.03	0	-13.03	0	-13.03
	Sub-total	90.71	138.60	47.89	138.60	47.89
	Oilseeds	6.71	0	-6.71	0	-6.71
	Vegetables	0	948.54	948.54	1,707.38	1,053.36
	Total	97.42	1,087.14	989.72	1,845.98	1,161.84
J	Upland Paddy	8.2	56.80	48.6	56.80	48.6
	Maize	75.61	113.60	37.99	113.60	37.99
	Millet	16.02	0	-16.02	0	-16.02
	Sub-total	99.83	170.40	70.57	170.40	70.57
	Oilseeds	11	0	-11	0	-11
	Vegetables	0	1,166.18	1,166.18	2,099.12	2,099.12
	Total	110.83	1,336.58	1,225.75	2,269.52	2,158.69

App. 6.3.5-4 Crop-wise Incremental Production (3/3)

Irrigation Block	Crops	FW/O		FW		
		Production (mt)	Production under 9 months Irrigation (mt)	Increment (mt)	Production under 12 months Irrigation (mt)	Increment (mt)
K	Upland Paddy	11.39	79.00	67.61	79.00	67.61
	Maize	105.16	158.00	52.84	158.00	52.84
	Millet	22.28	0	-22.28	0	-22.28
	Sub-total	138.83	237.00	98.17	237.00	98.17
	Oilseeds	15.29	0	-15.29	0	-15.29
	Vegetables	0	1,621.97	1,621.97	2,919.54	2,919.54
	Total	154.12	1,858.97	1,704.85	3,156.54	3,002.42
L	Paddy	178.87	514	335.13	514	335.13
	Maize	125.63	154.2	28.57	154.2	28.57
	Millet	19.33	0	-19.33	0	-19.33
	Wheat	34.95	257	222.05	257	222.05
	Sub-total	358.78	925.20	566.42	925.20	566.42
	Oilseeds	10.18	0	-10.18	0	-10.18
	Vegetables	0	2,954.86	2,954.86	2,954.86	2,954.86
Total	368.96	3,880.06	3,511.10	3,880.06	3,511.10	
Total	Paddy	509.33	2,360.90	1,851.57	2,360.90	1,851.57
	Upland Paddy	68.72	182.00	113.28	182.00	113.28
	Maize	899.12	1,117.80	218.68	1,117.80	218.68
	Millet	288.01	0	-288.01	0	-288.01
	Wheat	52.38	257.00	204.62	972.52	920.14
	Sub-total	1,817.56	3,917.70	2,100.14	4,633.22	2,815.66
	Oilseeds	77.64	0	-77.64	0	-77.64
	Vegetables	0	12,852.91	12,852.91	20,249.40	20,249.40
Total	1,895.20	16,770.61	14,875.41	24,882.62	22,987.42	

App. 6.3.5-5 Surplus Foodgrain Available for Marketing (1/2)

Irrigation Block	Crops	FW (9 Months Irrigation)	FW (12 Months Irrigation)
		Estimated Marketable Volume (mt)	Estimated Marketable Volume (mt)
A	Paddy	64	64
	Maize	4	17
	Wheat	0	23
	Sub-total	68	104
	Vegetables	199	429
	Total	267	533
B	Paddy	160	160
	Maize	27	47
	Wheat	0	55
	Sub-total	187	262
	Vegetables	428	901
	Total	615	1,163
C	Paddy	0	20
	Maize	0	0
	Wheat	0	10
	Sub-total	0	30
	Vegetables	321	1,259
	Total	321	1,289
D	Paddy	173	198
	Maize	0	16
	Wheat	0	94
	Sub-total	173	308
	Vegetables	1,262	2,064
	Total	1,435	2,372
E	Paddy	278	282
	Maize	0	32
	Wheat	0	128
	Sub-total	278	442
	Vegetables	1,633	2,660
	Total	1,911	3,102
F&G	Paddy	0	0
	Maize	18	73
	Wheat	0	72
	Sub-total	18	145
	Vegetables	1,211	2,013
	Total	1,229	2,158

App. 6.3.5-5 Surplus Foodgrain Available for Marketing (2/2)

Irrigation Block	Crops	FW (9 Months Irrigation)	FW (12 Months Irrigation)
		Estimated Marketable Volume (mt)	Estimated Marketable Volume (mt)
H	Paddy	0	6
	Maize	0	0
	Wheat	0	2
	Sub-total	0	8
	Vegetables	138	584
	Total	138	592
I	Upland Paddy	0	0
	Maize	0	0
	Sub-total	0	0
	Vegetables	742	1,501
	Total	742	1,501
J	Upland Paddy	0	0
	Maize	75	75
	Sub-total	75	75
	Vegetables	1,132	2,065
	Total	1,207	2,140
K	Upland Paddy	0	0
	Maize	108	108
	Sub-total	108	108
	Vegetables	1,576	2,874
	Total	1,684	2,982
L	Paddy	250	254
	Maize	53	54
	Wheat	183	184
	Sub-total	486	492
	Vegetables	2,800	2,800
	Total	3,286	3,292
Total	Paddy	925	984
	Upland Paddy	0	0
	Maize	285	422
	Wheat	183	568
	Sub-total	1,393	1,974
	Total	11,442	19,150
	Total	12,835	21,124

Note: Calculation was made based on the per capita minimum calorie requirement (191kg of cereals and 102kg of vegetables including potato).

App. 6.3.5-6 Irrigation Block-wise Seeds Requirements (1/2)

Irrigation Block	Crops	FW/O			FW (9 Months Irrigation)			FW (12 Months Irrigation)			9 Months Increment (kg)	12 Months Increment (kg)
		Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)	Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)	Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)		
A	Paddy	25.63	65	1,666	23.30	55	1,282	23.30	55	1,282	-384	-384
	Maize	0	0	0	9.32	20	186	9.32	20	186	186	186
	Wheat	0	0	0	0	100	932	0	100	932	932	932
	Vegetables	0	0	0	13.98	1,251	17,489	27.96	1,251	34,978	17,489	34,978
	Sub-total	25.63		1,666	46.60		18,957	69.90		37,778	17,291	35,712
B	Paddy	24.48	65	1,591	48.00	55	2,640	48.00	55	2,640	1,049	1,049
	Maize	21.60	26	562	19.20	20	384	19.20	20	384	-178	-178
	Miller	16.80	20	336	0	0	0	0	0	0	-336	-336
	Wheat	2.40	120	288	0	100	0	19.20	100	1,920	-288	1,632
	Oilseeds	2.40	20	48	0	0	0	0	0	0	-48	-48
Sub-total	67.68		2,825	96.00		39,053	57.60		72,058	36,029	72,058	
C	Paddy	26.74	65	1,738	74.30	55	4,087	74.30	55	4,087	2,349	2,349
	Upland Paddy	1.49	0	0	0	0	0	0	0	0	0	0
	Maize	37.15	26	966	29.72	20	594	29.72	20	594	-372	-372
	Miller	22.29	20	446	0	0	0	0	0	0	-446	-446
	Wheat	0	120	0	0	100	0	29.72	100	2,972	0	2,972
Sub-total	99.36		3,388	148.60		60,451	89.16		111,539	55,770	111,539	
D	Paddy	19.53	65	1,269	65.12	55	3,582	65.12	55	3,582	2,313	2,313
	Upland Paddy	4.07	0	0	0	0	0	0	0	0	0	0
	Maize	52.91	26	1,376	16.28	20	326	16.28	20	326	-1,050	-1,050
	Miller	30.12	20	602	0	0	0	0	0	0	-602	-602
	Wheat	0	120	0	0	100	0	32.56	100	3,256	0	3,256
Sub-total	114.77		3,410	162.80		103,739	130.24		162,930	101,831	162,930	
E	Paddy	34.39	65	2,235	83.36	55	4,585	83.36	55	4,585	2,350	2,350
	Upland Paddy	3.12	0	0	0	0	0	0	0	0	0	0
	Maize	70.86	26	1,842	20.84	20	417	20.84	20	417	-1,425	-1,425
	Miller	14.59	20	292	0	0	0	0	0	0	-292	-292
	Wheat	10.42	120	1,250	0	100	0	41.68	100	4,168	-1,250	2,918
Sub-total	152.13		5,964	208.40		130,354	166.72		208,567	130,354	208,567	
F	Paddy	0	65	0	14.95	55	822	14.95	55	822	822	822
	Upland Paddy	2.10	60	126	0	0	0	0	0	0	-126	-126
	Maize	18.60	26	484	14.95	20	299	14.95	20	299	-185	-185
	Miller	5.10	20	102	0	0	0	0	0	0	-102	-102
	Wheat	0	120	0	0	100	0	11.96	100	1,196	0	1,196
Sub-total	39.00		976	59.80		38,526	47.84		59,848	37,405	59,848	

App. 6.3.5-6 Irrigation Block-wise Seeds Requirements (2/2)

Irrigation Block	FW/O			FW (9 Months- Irrigation)			FW (12 Months- Irrigation)			9 Months	12 Months
	Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)	Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)	Cropped Area (ha)	Unit (kg)	Seeds Requirement (kg)	Increment (kg)	Increment (kg)
G	Crops										
	Paddy	0	0	0	55	1,416	25.75	55	1,416	1,416	1,416
	Upland Paddy	5.68	341	0	55	0	0	55	0	-341	-341
	Maize	27.86	724	0	20	515	25.75	20	515	-209	-209
	Millet	18.06	361	0	0	0	0	0	0	-361	-361
	Wheat	0	0	0	100	0	20.60	100	0	0	2,060
	Oilseeds	19.09	382	0	0	0	0	0	0	-382	-382
	Vegetables	0	0	0	1251	64,427	82.40	1251	103,082	64,427	103,082
	Sub-total	70.69	1,808	0	1,808	66,358	154.50	1,808	107,073	64,550	105,245
	H	Paddy	6.92	450	0	55	1,903	34.60	55	1,903	1,453
Maize		25.95	675	0	20	277	13.84	20	277	-398	-398
Millet		8.65	173	0	0	0	0	0	0	-173	-173
Wheat		0	0	0	100	0	13.84	100	1,384	0	1,384
Oilseeds		4.84	97	0	0	0	0	0	0	-97	-97
Vegetables		0	0	0	20.76	25,971	41.52	1251	51,942	25,971	51,942
Sub-total		66.36	1,395	0	1,395	28,151	103.80	1,395	55,506	26,756	54,111
Upland Paddy		7.39	443	0	55	1,155	11.55	55	635	192	192
Maize		30.03	781	0	20	462	23.10	20	462	-319	-319
Millet		6.93	139	0	0	0	0	0	0	-139	-139
Oilseeds	15.25	305	0	0	0	0	0	0	-305	-305	
Vegetables	0	0	0	57.75	72,245	103.95	1251	1,900,411	72,245	1,900,411	
Sub-total	59.60	1,668	0	1,668	73,342	138.60	1,668	1,311,338	71,674	129,470	
J	Upland Paddy	3.98	239	0	55	781	14.20	55	781	542	542
	Maize	36.35	945	0	20	568	28.40	20	568	-377	-377
	Millet	8.52	171	0	0	0	0	0	0	-171	-171
	Oilseeds	24.99	500	0	0	0	0	0	0	-500	-500
	Vegetables	0	0	0	71.00	88,821	127.80	1251	1,598,778	88,821	1,598,778
	Sub-total	73.84	1,855	0	1,855	90,170	170.40	1,855	1,612,227	88,315	1,593,372
	Upland Paddy	5.53	332	0	55	1,086	19.75	55	1,086	754	754
	Maize	50.56	1,315	0	20	790	39.50	20	790	-525	-525
	Millet	11.85	237	0	0	0	0	0	0	-237	-237
	Oilseeds	34.76	695	0	0	0	0	0	0	-695	-695
Vegetables	0	0	0	98.75	123,536	177.75	1251	222,365	123,536	222,365	
Sub-total	102.70	2,579	0	2,579	123,536	237.00	2,579	224,241	123,833	221,662	
K	Paddy	74.53	4,844	0	55	5,654	102.80	55	5,654	810	810
	Maize	60.40	1,570	0	20	771	38.55	20	771	-799	-799
	Millet	10.28	206	0	0	0	0	0	0	-206	-206
	Wheat	25.70	3,084	0	100	6,425	64.25	100	6,425	3,341	3,341
	Oilseeds	23.13	463	0	0	0	0	0	0	-463	-463
	Vegetables	0	0	0	179.90	225,055	179.90	1251	225,055	225,055	225,055
	Sub-total	194.04	10,167	0	10,167	237,905	385.50	10,167	237,905	227,738	227,738
	Paddy	212.22	13,793	0	55	25,971	472.18	55	25,971	12,178	12,178
	Maize	432.27	11,240	0	20	5,589	279.45	20	5,589	-1,021	-1,021
	Millet	153.19	3,085	0	0	0	0	0	0	-3,085	-3,085
Wheat	38.52	4,622	0	100	6,425	243.13	100	6,425	1,803	1,803	
Oilseeds	176.44	3,530	0	0	0	0	0	0	-3,530	-3,530	
Vegetables	0	0	0	782.52	978,933	1,232.84	1,251	1,542,283	978,933	1,542,283	
Total	1046.00	37,731	0	37,731	1,019,420	2,273.10	37,731	1,600,658	981,689	1,562,927	

App. 6.3.5-8 Irrigation Block-wise Agro-chemical Requirements (1/2)

Irrigation Block	Crops	FW/O				FW (9 Months Irrigation)				FW (12 Months Irrigation)				9 Months Increment (ml)	12 Months Increment (ml)
		Cropped Area (ha)	Unit (ml)	Agro-chemical Req. (ml)	Unit (ml)	Cropped Area (ha)	Unit (ml)	Agro-chemical Req. (ml)	Unit (ml)	Cropped Area (ha)	Unit (ml)	Agro-chemical Req. (ml)	Unit (ml)		
A	Paddy	25.63	350	8,971	350	23.30	350	8,155	350	23.30	350	8,155	350	-816	-816
	Maize	0	0	0	0	9.32	350	3,262	350	9.32	350	3,262	350	3,262	3,262
	Wheat	0	0	0	0	0	0	0	0	9.32	350	3,262	350	0	3,262
	Vegetables	0	0	0	0	13.98	1567	21,907	1567	27.96	1567	43,813	1567	21,907	43,813
	Sub-total	25.63	-	8,971	-	46.60	-	33,324	-	69.90	-	58,492	-	24,353	49,521
B	Paddy	24.48	350	8,568	350	48.00	350	16,800	350	48.00	350	16,800	350	8,232	8,232
	Maize	21.60	0	0	0	19.20	350	6,720	350	19.20	350	6,720	350	6,720	6,720
	Millet	16.80	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	2.40	0	0	0	0	0	0	0	19.20	350	6,720	350	6,720	6,720
	Oilseeds	2.40	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub-total	67.68	-	8,568	-	96.00	-	68,650	-	144.00	-	120,699	-	60,062	111,931	
C	Paddy	26.74	350	9,359	350	74.30	350	26,005	350	74.30	350	26,005	350	16,646	16,646
	Upland Paddy	1.49	350	522	0	0	0	0	0	0	0	0	0	-522	-522
	Maize	37.15	0	0	0	29.72	350	10,402	350	29.72	350	10,402	350	10,402	10,402
	Millet	22.29	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	29.72	350	10,402	350	10,402	10,402
Sub-total	99.56	-	9,881	-	148.60	-	106,264	-	222.90	-	186,523	-	96,383	176,642	
D	Paddy	19.53	350	6,836	350	65.12	350	22,792	350	65.12	350	22,792	350	15,956	15,956
	Upland Paddy	4.07	350	1,425	0	0	0	0	0	0	0	0	0	-1,425	-1,425
	Maize	52.91	0	0	0	16.23	350	5,698	350	16.23	350	5,698	350	5,698	5,698
	Millet	30.12	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	32.56	350	11,396	350	11,396	11,396
Sub-total	114.77	-	8,261	-	162.80	-	156,044	-	244.20	-	243,972	-	147,783	235,711	
E	Paddy	34.39	350	12,037	350	83.36	350	29,176	350	83.36	350	29,176	350	17,139	17,139
	Upland Paddy	3.12	350	1,092	0	0	0	0	0	0	0	0	0	-1,092	-1,092
	Maize	70.86	0	0	0	20.84	350	7,294	350	20.84	350	7,294	350	7,294	7,294
	Millet	14.59	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	10.42	0	0	0	0	0	0	0	41.68	350	14,588	350	14,588	14,588
Sub-total	152.13	-	13,129	-	208.40	-	199,751	-	312.60	-	312,308	-	186,622	299,179	
F	Paddy	0	0	0	0	14.95	350	5,233	350	14.95	350	5,233	350	5,233	5,233
	Upland Paddy	2.10	350	735	0	0	0	0	0	0	0	0	0	-735	-735
	Maize	18.60	0	0	0	14.95	350	5,233	350	14.95	350	5,233	350	5,233	5,233
	Millet	5.10	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	11.96	350	4,186	350	4,186	4,186
Sub-total	39.00	-	735	-	59.80	-	57,319	-	89.70	-	89,617	-	56,584	88,382	

App. 6.3.5-8 Irrigation Block-wise Agro-chemical Requirements (2/2)

Irrigation Block	Crops	FW/O				FW (9 Months Irrigation)				FW (12 Months Irrigation)				9 Months Increment (ml)	12 Months Increment (ml)
		Cropped Area (ha)	Unit (mt)	Agro-chemical Req. (ml)	Unit (mt)	Cropped Area (ha)	Unit (mt)	Agro-chemical Req. (ml)	Unit (mt)	Cropped Area (ha)	Unit (mt)	Agro-chemical Req. (ml)	Unit (mt)		
G	Paddy	0	0	0	350	25.75	9,013	350	25.75	9,013	350	25.75	9,013	9,013	9,013
	Upland Paddy	5.68	350	1,988	0	0	0	0	0	0	0	0	0	-1,988	0
	Maize	27.86	0	0	350	25.75	9,013	350	25.75	9,013	350	25.75	9,013	9,013	9,013
	Millet	18.06	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Oilseeds	19.09	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vegetables	0	0	0	1567	82.40	80,701	1567	82.40	80,701	1567	82.40	80,701	80,701	129,121
Sub-total	70.69	-	1,988	-	103.00	98,727	-	154.50	154,357	-	154,357	96,739	152,369	152,369	
H	Paddy	6.92	350	2,422	350	34.60	12,110	350	34.60	12,110	350	34.60	12,110	9,688	9,688
	Maize	25.95	0	0	350	13.84	4,844	350	13.84	4,844	350	13.84	4,844	4,844	4,844
	Millet	8.65	0	0	0	0	0	0	0	0	0	0	0	0	0
	Wheat	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Oilseeds	4.84	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vegetables	0	0	0	1567	20.76	32,531	1567	41.52	65,062	1567	41.52	65,062	32,531	65,062
	Sub-total	46.36	-	2,422	-	69.20	49,485	-	103.80	86,860	-	86,860	47,063	84,438	84,438
I	Upland Paddy	7.39	350	2,587	350	11.55	4,043	350	11.55	4,043	350	11.55	4,043	1,456	1,456
	Maize	30.03	0	0	350	23.10	8,085	350	23.10	8,085	350	23.10	8,085	8,085	8,085
	Millet	6.93	0	0	0	0	0	0	0	0	0	0	0	0	0
	Oilseeds	15.25	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vegetables	0	0	0	1567	57.75	90,494	1567	103.95	162,890	1567	103.95	162,890	90,494	162,890
	Sub-total	59.60	-	2,587	-	92.40	102,622	-	138.600	175,018	-	175,018	100,035	172,431	172,431
	J	Upland Paddy	3.98	350	1,393	350	14.20	4,970	350	14.20	4,970	350	14.20	4,970	3,577
Maize		36.35	0	0	350	28.40	9,940	350	28.40	9,940	350	28.40	9,940	9,940	9,940
Millet		8.52	0	0	0	0	0	0	0	0	0	0	0	0	0
Oilseeds		24.99	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables		0	0	0	1567	71.00	111,257	1567	127.80	200,263	1567	127.80	200,263	111,257	200,263
Sub-total		73.84	-	1,393	-	113.60	126,167	-	170.40	215,173	-	215,173	124,774	213,780	213,780
K		Upland Paddy	5.53	350	1,936	350	19.75	6,913	350	19.75	6,913	350	19.75	6,913	4,977
	Maize	50.56	0	0	350	39.50	13,825	350	39.50	13,825	350	39.50	13,825	13,825	13,825
	Millet	11.85	0	0	0	0	0	0	0	0	0	0	0	0	0
	Oilseeds	34.76	0	0	0	0	0	0	0	0	0	0	0	0	0
	Vegetables	0	0	0	1567	98.75	154,741	1567	177.75	278,534	1567	177.75	278,534	154,741	278,534
	Sub-total	102.70	-	1,936	-	158.00	175,479	-	237.00	299,272	-	299,272	173,543	297,336	297,336
	L	Paddy	74.53	350	26,086	350	102.80	35,980	350	102.80	35,980	350	102.80	35,980	9,894
Maize		60.40	0	0	350	38.55	13,493	350	38.55	13,493	350	38.55	13,493	13,493	13,493
Millet		10.28	0	0	0	0	0	0	0	0	0	0	0	0	0
Wheat		25.70	0	0	350	64.25	22,488	350	64.25	22,488	350	64.25	22,488	22,488	22,488
Oilseeds		23.13	0	0	0	0	0	0	0	0	0	0	0	0	0
Vegetables		0	0	0	1567	179.90	281,903	1567	179.90	281,903	1567	179.90	281,903	281,903	281,903
Sub-total		194.04	-	26,086	-	365.50	353,864	-	365.50	353,864	-	353,864	327,778	327,778	327,778
Total	Paddy	212.22	-	74,279	-	472.18	165,264	-	472.18	165,264	-	165,264	90,985	90,985	
	Upland Paddy	33.36	60	11,678	60	45.50	15,926	60	45.50	15,926	60	45.50	15,926	4,248	4,248
	Maize	432.27	26	279,45	26	279.45	97,809	26	279.45	97,809	26	279.45	97,809	97,809	
	Millet	153.19	20	0	20	0	0	20	0	0	20	0	0		
	Wheat	38.52	0	0	0	64.25	22,488	0	64.25	22,488	0	64.25	22,488	22,488	
	Oilseeds	176.44	20	0	20	0	0	20	0	0	20	0	0		
	Vegetables	0	0	0	1,226,209	1,226.209	1,226,209	0	1,226.209	1,226,209	0	1,226.209	1,226,209	1,226,209	
Total	1046.00	-	85,957	-	1643.90	1,527,696	-	2,273.10	2,295,955	-	2,295,955	1,441,739	2,209,998		

App. 6.3.5-9 Monthly Average Retail Prices of Cereal Crops in Kathmandu (1995/96)

(Unit: Rs/kg)

Crops	District	Apr/May	May/Jun	Jun/Jul	Jul/Aug	Aug/Sep	Sep/Oct	Oct/Nov	Nov/Dec	Dec/Jan	Jan/Feb	Feb/Mar	Mar/Apr	Average
Rice (Pokhareli)	Nuwakot	19.50	19.50	19.50	19.50	-	22.00	22.00	-	-	-	-	-	20.33
	Kathmandu	23.00	23.00	23.00	23.75	24.63	24.25	24.25	24.00	23.38	23.00	23.38	24.00	23.64
Rice (Mansuli)	Nuwakot	15.75	16.50	17.31	16.50	16.00	16.00	-	18.00	15.50	16.00	16.00	18.00	16.51
	Kathmandu	16.00	16.00	16.00	15.25	15.75	15.38	15.50	15.50	15.50	15.80	16.13	17.50	15.86
Rice (Mota)	Parsa	13.81	14.20	14.63	14.50	14.50	14.50	-	-	-	13.50	15.00	15.50	11.83
	Raxaul (India)	13.60	13.60	14.40	14.40	14.40	14.40	14.40	14.40	15.20	14.40	14.40	15.20	14.40
Rice (Mota)	Nuwakot	11.50	11.50	11.50	11.50	12.75	13.25	13.50	13.50	12.50	13.00	13.50	13.50	12.63
	Kathmandu	19.00	19.00	19.00	12.50	13.83	14.25	14.00	12.75	12.63	12.70	12.38	13.00	14.59
Rice (Mota)	Parsa	12.00	12.45	13.25	13.38	13.50	12.25	11.50	12.50	12.50	11.50	12.50	12.50	12.49
	Raxaul (India)	12.00	12.80	12.80	12.80	12.80	12.80	12.80	12.80	12.00	12.80	12.80	12.00	12.60
Maize	Nuwakot	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Kathmandu	n.a.	n.a.	n.a.	9.69	9.69	9.75	9.75	9.75	9.75	11.60	12.50	11.33	10.42
Maize	Parsa	6.76	7.05	7.34	7.38	7.25	7.00	8.50	8.25	8.25	8.50	8.25	8.25	7.71
	Raxaul (India)	7.20	7.20	8.00	8.00	8.00	8.00	8.00	8.00	12.80	8.00	8.00	16.00	8.93
Wheat	Nuwakot	8.00	8.00	8.00	8.00	-	-	-	-	-	-	-	-	8.00
	Kathmandu	10.00	-	-	9.88	9.88	10.13	10.00	9.94	9.88	10.25	10.88	11.00	10.18
Wheat	Parsa	6.71	7.10	7.31	7.50	7.50	7.50	8.50	8.25	8.25	8.50	8.25	8.25	7.80
	Raxaul (India)	7.20	-	-	-	7.52	7.52	7.52	8.00	9.20	7.52	8.00	9.60	9.80

Note: Shaded area indicates the corresponding harvesting periods of cereal crops in the study area.

Source: "Agricultural Marketing Information Bulletin, 1996" Marketing Development Division, Department of Agriculture.

App. 6.3.5-10 Monthly Average Wholesale Prices of Vegetables in Kalimati Wholesale Harvest (1995/96) (1/2)

Vegetables	District	Zone	Development Region	Ecological Belt	Apr/May (Rs/kg)	May/Jun (Rs/kg)	Jun/Jul (Rs/kg)	Jul/Aug (Rs/kg)	Aug/Sep (Rs/kg)	Sep/Oct (Rs/kg)	Oct/Nov (Rs/kg)	Nov/Dec (Rs/kg)	Dec/Jan (Rs/kg)	Jan/Feb (Rs/kg)	Feb/Mar (Rs/kg)	Mar/Apr (Rs/kg)	Average (Rs/kg)	
Cabbage	Nuwakot	Bagmati	Central	Hill	-	4.50	14.00	8.59	9.00	-	6.75	7.45	6.05	5.50	4.60	4.72	7.12	
	Kathmandu	Bagmati	Central	Hill	15.6	5.13	11.44	8.85	7.50	7.63	7.23	7.53	6.05	5.50	4.89	4.46	7.65	
	Bhaktapur & Lalitpur	Bagmati	Central	Hill	6.20	5.27	11.19	9.48	9.50	7.04	6.67	7.78	6.02	5.47	4.64	4.58	6.99	
	Dhading	Bagmati	Central	Hill	5.99	4.94	9.92	9.33	8.93	-	5.75	-	5.50	-	4.56	4.09	6.56	
	Makawanpur	Narayani	Central	Hill	5.64	5.34	11.59	10.17	8.84	7.27	6.60	7.54	6.15	5.47	4.79	3.73	6.95	
	Sarlahi	Janakpur	Central	Terai	5.50	-	15.33	8.09	8.50	-	-	-	7.00	-	-	-	7.38	
	Bara & Parsa	Narayani	Central	Terai	5.50	-	14.40	8.08	8.85	-	7.64	7.53	6.15	5.48	4.60	4.25	7.17	
	Chitwan	Narayani	Central	Terai	5.55	-	14.40	8.08	8.85	-	6.83	8.98	6.07	5.43	4.60	4.14	7.29	
	Other Districts				9.20	5.31	12.11	9.89	8.81	7.14	7.67	7.50	6.22	5.53	4.66	4.27	7.35	
	Highest				15.60	5.34	15.33	11.8	9.50	8.50	7.67	8.98	7.00	5.53	4.89	4.72	8.74	
Lowest				5.50	4.50	9.92	7.83	7.04	7.04	5.75	7.45	5.50	5.43	4.56	3.73	6.23		
Average				7.67	5.31	12.42	9.23	8.76	7.52	6.89	7.76	6.15	5.49	4.67	4.27	7.18		
Red Potato	Nuwakot	Bagmati	Central	Hill	6.53	7.54	9.78	11.14	12.28	13.06	12.20	-	-	-	-	-	9.07	
	Kathmandu	Bagmati	Central	Hill	6.50	-	9.50	-	-	-	-	-	4.50	-	4.50	-	6.25	
	Bhaktapur & Lalitpur	Bagmati	Central	Hill	6.64	-	9.82	11.40	-	-	13.80	10.30	-	9.00	5.50	-	9.49	
	Dhading	Bagmati	Central	Hill	-	7.45	9.50	-	-	-	13.80	-	-	-	-	-	-	10.25
	Kavre	Bagmati	Central	Hill	6.48	7.56	9.87	11.35	12.42	13.29	12.81	10.30	9.58	8.51	6.82	6.96	9.64	
	Makawanpur	Narayani	Central	Hill	6.17	7.07	9.10	11.40	12.61	13.60	11.40	-	-	-	-	-	-	10.19
	Dhanusha	Janakpur	Central	Terai	-	7.30	-	-	-	-	-	-	-	-	-	-	-	7.30
	Bara & Parsa	Narayani	Central	Terai	6.72	-	10.00	11.40	-	-	13.00	-	-	-	6.86	6.97	8.96	
	Sunsari	Koshi	Eastern	Terai	-	-	10.15	-	-	-	-	-	-	-	-	-	-	10.15
	Other Districts				6.63	-	9.73	11.35	12.32	13.04	12.35	10.49	9.63	9.00	6.56	6.99	9.87	
Highest				6.64	7.54	10.15	11.40	12.61	13.60	13.80	10.49	9.63	9.00	6.86	6.99	9.89		
Lowest				6.12	7.07	9.10	11.14	12.28	13.04	11.40	10.30	4.50	8.37	4.50	6.96	8.73		
Average				6.44	7.38	9.72	11.34	12.41	13.25	12.84	10.36	7.90	8.72	5.99	6.97	9.44		
White Potato	Nuwakot	Bagmati	Central	Hill	5.50	6.09	8.63	9.28	10.59	10.41	6.90	-	-	-	5.50	-	7.86	
	Kathmandu	Bagmati	Central	Hill	5.55	-	-	-	-	6.80	-	-	-	-	-	-	6.08	
	Bhaktapur & Lalitpur	Bagmati	Central	Hill	5.56	5.72	9.25	9.10	-	-	-	-	-	-	-	-	7.41	
	Dhading	Bagmati	Central	Hill	-	-	-	-	-	-	-	-	-	7.00	-	-	7.00	
	Kavre	Bagmati	Central	Hill	5.51	6.18	8.58	9.23	10.37	10.72	11.96	8.92	7.53	7.50	5.90	6.72	8.24	
	Makawanpur	Narayani	Central	Hill	5.50	6.68	8.55	9.10	10.53	10.23	-	-	-	-	5.50	-	8.01	
	Bara & Parsa	Narayani	Central	Terai	5.55	9.65	8.45	9.74	-	-	-	-	-	6.30	5.89	6.74	7.45	
	Chitwan*	Narayani	Central	Terai	-	-	13.98	-	-	-	-	-	-	-	-	-	13.98	
	Other Districts				5.60	6.42	8.71	9.28	10.49	10.72	11.77	8.90	7.22	7.00	6.25	6.78	8.26	
	Highest				5.60	9.65	13.98	9.74	10.59	10.72	11.96	8.92	7.33	7.50	6.25	6.78	9.09	
Lowest				5.55	5.72	8.45	9.10	10.37	6.80	6.90	8.90	7.22	6.30	5.50	6.72	7.28		
Average				5.48	6.79	9.45	9.29	10.50	9.78	10.21	8.91	7.28	6.95	5.81	6.75	8.10		

App. 6.3.5-10 Monthly Average Wholesale Prices of Vegetables in Kalimati Wholesale Harvest (1995/96) (2/2)

Vegetables	District	Zone	Development Region	Ecological Belt	Apr/May (Rs/kg)	May/June (Rs/kg)	Jun/Jul (Rs/kg)	Jul/Aug (Rs/kg)	Aug/Sep (Rs/kg)	Sep/Oct (Rs/kg)	Oct/Nov (Rs/kg)	Nov/Dec (Rs/kg)	Dec/Jan (Rs/kg)	Jan/Feb (Rs/kg)	Feb/Mar (Rs/kg)	Mar/Apr (Rs/kg)	Average (Rs/kg)				
Red Radish	Nuwakot	Bagmati	Central	Hill	5.57	3.75	9.78	7.50	5.50	5.17	3.17	-	-	-	-	-	-	5.78			
					10.13	-	9.50	7.70	7.50	7.43	5.90	5.02	-	4.57	6.40	6.24					
					8.93	9.13	9.82	7.50	7.50	7.00	5.79	5.07	-	5.20	7.10	7.05					
					-	-	9.50	-	-	-	-	-	-	-	-	-	9.50				
					-	-	9.87	-	-	-	-	-	-	-	5.00	-	-	7.44			
					-	3.50	9.10	6.83	5.50	5.42	3.33	-	-	-	-	-	-	5.61			
					-	-	10.00	-	-	-	-	-	-	-	-	-	-	-	10.00		
					-	-	10.15	-	-	-	-	-	-	-	-	-	-	-	-	10.15	
					-	-	9.73	-	-	-	-	-	-	-	-	-	-	-	-	-	9.73
					-	-	10.13	9.13	10.15	7.70	7.50	7.50	7.50	7.43	5.90	5.07	5.09	5.20	7.10	7.31	7.31
Lowest	-	5.57	3.50	9.10	6.83	5.50	5.50	5.17	5.17	3.37	5.02	4.50	4.57	6.40	5.99	5.99					
Average	-	8.21	5.46	9.72	7.38	6.50	6.50	6.26	6.26	4.55	5.05	4.80	4.92	6.75	6.33	6.33					
White Radish	Nuwakot	Bagmati	Central	Hill	6.50	4.16	4.61	-	-	-	3.35	3.06	2.82	2.86	2.50	-	-	3.73			
					-	7.50	-	-	-	-	-	-	-	2.25	-	-	4.88				
					-	-	-	-	-	-	-	-	-	4.00	6.50	-	-	5.25			
					-	-	-	-	-	-	-	-	-	12.9	-	-	-	6.45			
					-	3.25	4.92	-	-	-	3.27	3.41	-	2.71	2.36	-	-	3.32			
					6.50	-	-	-	-	-	-	-	-	3.00	-	-	-	-	-	4.75	
					6.50	7.50	4.92	-	-	-	-	-	-	3.00	3.00	3.00	3.00	4.00	6.50	-	6.09
					6.50	3.25	4.61	-	-	-	-	-	-	3.27	3.06	2.82	2.82	2.25	2.36	-	3.52
					6.50	4.97	4.77	-	-	-	-	-	-	6.51	3.24	2.91	2.91	2.96	3.79	-	4.46
					6.50	16.14	-	-	-	-	-	-	-	18.86	15.13	-	-	-	-	-	16.38
French Bean	Nuwakot	Bagmati	Central	Hill	13.57	-	-	-	18.86	15.13	18.21	-	-	-	-	-	-	16.38			
					-	-	-	-	-	-	18.21	19.00	-	-	-	-	-	18.61			
					-	11.00	-	-	18.92	-	18.23	18.00	-	-	-	-	-	16.54			
					13.43	14.14	-	-	19.21	15.22	16.98	18.76	-	-	-	-	-	16.29			
					-	9.50	-	-	-	14.50	14.50	-	-	-	-	-	-	12.83			
					11.00	-	-	-	23.24	20.00	15.19	18.25	-	-	-	-	-	17.54			
					-	-	16.92	-	-	-	-	-	-	-	-	-	-	16.92			
					-	-	15.50	-	-	-	-	-	-	-	-	-	-	15.50			
					-	-	-	-	-	-	-	-	-	-	14.50	-	-	-	14.50		
					13.75	-	-	-	-	-	17.32	18.85	-	-	-	-	-	16.64			
12.00	-	-	-	18.00	-	19.10	19.00	-	-	-	-	-	17.03								
13.50	-	-	-	-	-	20.50	-	-	-	-	-	-	20.50								
13.50	-	-	-	-	-	20.50	-	-	-	-	-	-	20.50								
13.50	-	-	-	-	-	20.50	-	-	-	-	-	-	20.50								
13.75	17.70	16.92	-	20.33	14.77	18.58	18.75	-	-	-	-	-	18.03								
13.75	17.70	16.92	-	25.24	20.00	19.00	19.00	-	-	-	-	-	18.73								
11.00	9.50	15.50	-	18.00	14.50	18.00	18.00	-	-	-	-	-	14.43								
12.88	13.70	16.21	-	19.76	15.92	17.65	18.66	-	-	-	-	-	16.40								

Note: Shaded area indicates corresponding harvesting periods of cereal crops in the study area.

Source: "Agricultural Marketing Information Bulletin, 1996" Marketing Development Division, Department of Agriculture.

Part B

Appendix 7.5 Project Cost

App. 7.5-1 Project Cost

Description	Project Cost			Farmers' Contribution L/C (000'N.Rs)	HMGN Fund L/C (000'N.Rs)	Total (000'N.Rs)	Other Fund			
	Total (000'N.Rs)	(%)	L/C (000'N.Rs)				(%)	L/C (000'N.Rs)	(%)	F/C (000'N.Rs)
A. Construction Cost										
1. Direct Cost										
I-1 Intake Works	9,339	100.0%	3,280			9,339	100.0%	3,280		6,059
I-2 Main Canal Facilities	256,315	100.0%	76,376			256,315	100.0%	76,376		179,939
I-3 Proposed Control Tank	14,566	100.0%	10,316			14,566	100.0%	10,316		4,250
I-4 Branch Canal Facilities	57,795	100.0%	14,341			57,795	100.0%	14,341		43,454
I-5 On-farm Level Facilities	48,316	100.0%	37,243	37,243	0	11,073	0.0%	0	0	11,073
I-6 Zone B Construction Cost	34,901	100.0%	11,916	6,099	0	22,985	0.0%	5,816		22,985
I-7 Storage Construction Cost	2,695	100.0%	2,695	2,695	0	0	0.0%	0		0
I-8 Equipment Owing Cost	27,847	100.0%	0			27,847	100.0%	0		27,847
Sub-total (A)	451,773	100.0%	156,165	46,037	0	405,736	89.8%	110,128		295,608
II. Indirect Cost										
II-1 Common Temporary Cost	35,000	100.0%	35,000			35,000	100.0%	35,000		0
II-2 Site Administration	40,000	100.0%	40,000			40,000	100.0%	40,000		0
II-3 Supervision	20,000	100.0%	20,000			20,000	100.0%	20,000		0
II-4 Transport & Packing	40,000	100.0%	0			40,000	100.0%	0		40,000
Sub-total (II)	135,000	100.0%	95,000			135,000	100.0%	95,000		40,000
Construction Cost Total (I+II)	586,773	100.0%	251,165	46,037	0	540,736	92.2%	205,128		335,608
III. Land Acquisition										
(0.5% of I)	2,259	100.0%	2,259			2,259	100.0%	0		0
IV. Administration										
500	500	100.0%	500			500	100.0%	0		0
V. Engineering Services										
(8.0% of I)	36,142	100.0%	12,493			32,459	89.8%	8,810		23,649
VI. Physical Contingency										
(2.0% of I)	9,035	100.0%	3,123			8,115	89.8%	2,203		5,912
Sub-total (I-VI)	634,710	100.0%	269,541	46,037	0	581,310	91.6%	216,141		365,169
VII. Price Contingency										
(10.0%)	63,471	100.0%	26,954			58,131	91.6%	21,614		36,517
Total (A)	698,181	100.0%	296,495	46,037	0	639,441	91.6%	237,755		401,686
B. Cost for Program										
1. Training Program	500	100.0%	500			500	100.0%	0		0
2. Equipment for Water Management	1,020	100.0%	0			1,020	100.0%	1,020		0
3. Equipment for Training	750	100.0%	0			750	100.0%	750		0
4. Multipurpose Community Hall	1,220	100.0%	1,220			1,220	100.0%	1,220		0
Total (B)	3,490	100.0%	1,720	46,037	500	2,990	85.7%	2,990		0
Ground Total	701,671	100.0%	298,215	46,037	13,203	642,431	91.6%	240,745		401,686

App. 7.5-2 Annual Fund Requirement

(1/1)

Description	Total		1998		1999		2000		2001		2002		Total	
	(000'N.Rs)	(000'N.Rs)	(000'Rs)	%	(000'Rs)	%	(000'Rs)	%	(000'Rs)	%	(000'Rs)	%	(000'Rs)	%
I. Project Cost														
A. Construction Cost														
I. Direct Cost														
1-1 Intake Works	9,339	12,927	2,585	20%	10,341	80%	0	0%	0	0%	0	0%	12,927	100%
1-2 Main Canal Facilities	256,315	354,775	0	0%	283,820	80%	70,955	20%	0	0%	0	0%	354,775	100%
1-3 Proposed Control Tank	14,566	20,161	0	0%	4,032	20%	16,129	80%	0	0%	0	0%	20,161	100%
1-4 Branch Canal Facilities	57,795	79,997	3,797	0%	47,998	60%	31,999	40%	0	0%	0	0%	79,997	100%
1-5 On-farm Level Facilities	48,316	66,876	0	0%	13,375	20%	53,501	80%	0	0%	0	0%	66,876	100%
1-6 Zone B Construction Cost	34,901	48,308	0	0%	9,662	20%	38,646	80%	0	0%	0	0%	48,308	100%
1-7 Storage Construction Cost	2,695	3,730	0	0%	0	0%	3,730	100%	0	0%	0	0%	3,730	100%
1-8 Equipment Owing Cost	27,847	858	0	0%	0	0%	0	0%	0	0%	0	0%	858	100%
Sub-total (I)	451,773	27,847	135,000											
II. Indirect Cost														
II-1 Common Temporary Cost	35,000													
II-2 Site Administration	40,000													
II-3 Supervision	20,000													
II-4 Transport & Packing	40,000													
Sub-total (II)	135,000													
Sub-total (I+II)	586,773	27,847	135,000		369,228	214,960	0	0	0	0	0	0	586,773	
III. Land Acquisition														
IV. Administration	500	2,259	2,259	100%	0	0%	0	0%	0	0%	0	0%	2,259	100%
V. Engineering Services	36,142	18,071	50%	50%	200	40%	50	10%	0	0%	0	0%	500	100%
VI. Physical Contingency	9,035	2,711	30%	30%	14,457	40%	3,614	10%	0	0%	0	0%	36,142	100%
VII. Price Contingency	63,471	12,694	20%	20%	3,614	40%	2,711	30%	0	0%	0	0%	9,035	100%
Sub-total (III-VII)	111,407	35,985	69,048		69,048	80%	6,375	0%	0	0%	0	0%	63,471	100%
Total (Construction Cost)	698,181	38,570	438,276		221,335	221,335	0	0	0	0	0	0	698,181	
B. Program														
Project Cost Total	3,490	1,047	30%	30%	1,396	40%	1,047	30%	0	0%	0	0%	3,490	100%
2. Operation & Maintenance Cost														
A. General Management														
(0.5% of Construction Cost)														
B. Equipment & DOI O & M Cost														
(0.5 Million Rs/year)														
C. Monitoring Cost														
O & M Total	600	550	2,897		3,484	3,484	0	0	0	0	0	0	3,484	
Total (Operation & Maintenance Cost)	600	550	2,897		3,484	3,484	0	0	0	0	0	0	3,484	

Remarks 1)
Cost for Equipment and Indirect Cost are included into Direct Cost with ratio of the Construction Cost items

App. 7.5-3 Summary of Direct Construction Cost

(1/1)

Description	Total (000'N.Rs)	Local Currency (000'N.Rs)	Foreign Currency (000'N.Rs)
I. Direct Construction Cost			
II. Intake Works			
11-1 Main Structure	3,845	1,189	2,657
11-2 Pipe Laying D=1000	1,607	452	1,155
11-3 Fish Farm Diversion	774	546	228
11-4 Temporary Works	3,113	1,093	2,020
Sub-total	9,339	3,280	6,059
12. Main Canal Facilities			
12-1 Pipe Laying	142,022	26,748	115,274
12-2 Water Bridge	57,507	24,309	33,198
12-3 Aqueduct-1	22,350	9,975	12,374
12-4 Aqueduct-2	8,061	3,891	4,170
12-5 Temporary Works	26,375	11,453	14,923
Sub-total	256,315	76,376	179,939
13. Proposed Control Tank			
13-1 Main Structure	9,738	9,138	600
13-2 Drainage Facility	4,828	1,177	3,650
Sub-total	14,566	10,316	4,250
14. Branch Canal Facilities			
14-1 Pipe Laying	44,348	10,999	33,349
14-2 Pump Facility	13,447	3,342	10,105
Sub-total	57,795	14,341	43,454
15. On Farm Level Facilities			
15-1 Block A	1,031	521	510
15-2 Block B	6,002	2,242	3,760
15-3 Block C	5,072	3,177	1,896
15-4 Block D	5,387	4,695	692
15-5 Block E	8,807	8,469	339
15-6 Block F	2,198	1,113	1,085
15-7 Block G	2,999	2,817	181
15-8 Block H	4,563	2,424	2,138
15-9 Block I	3,669	3,669	
15-10 Block J	2,264	2,143	121
15-11 Block K	6,323	5,973	351
Sub-total	48,316	37,243	11,073
16. Zone B Construction Cost			
16-1 Branch Canal Facilities	18,846	5,816	13,030
16-2 On Farm Level Facilities	16,055	6,099	9,955
Sub-total	34,901	11,916	22,985
17. Storage Construction Cost	2,695	2,695	
18. Equipment Owning Cost	27,847		27,847
Total	451,773	156,165	295,608

App. 7.5-4 Direct Construction Cost

(1/5)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
11. Intake Works								
11-1 Main Structure								
1. Piling	m	60	3,196	191,760	3,196	191,760		
2. Main Structure	ls	1	576,201	576,201	576,201	576,201		
3. Gate Installing	ls	1	2,967,900	2,967,900	311,400	311,400	2,656,500	2,656,500
4. Riprap	ls	1	109,387	109,387	109,387	109,387		
Sub-total				3,815,248		1,188,748		2,656,500
11-2 Pipe Laying D=1000(SP)	ls	1	1,606,737	1,606,737	451,737	451,737		1,155,000
11-3 Fish Firm Diversion	ls	1	774,052	774,052	545,902	545,902		228,150
Sub-total				2,380,789		997,639		1,383,150
11-4 Temporary Works								
1. Sheet Piling	ls	1		1,556,509		546,597		1,009,913
2. Strut & Waling	ls	1		933,906		327,958		605,948
3. Dewatering	ls	1		622,604		218,639		403,965
Sub-total				3,113,018		1,093,193		2,019,825
Total				9,339,055		3,279,580		6,059,475
12. Main Canal Facilities								
12-1 Pipe Laying								
1. D=1000(SP)								
a at flat	m	3,775	31,058	117,245,409	5,186	19,578,609	25,872	97,666,800
b at slop	m	200	37,742	7,548,436	11,870	2,374,036	25,872	5,174,400
c at slop under ground	m	125	33,898	4,237,275	8,026	1,003,275	25,872	3,234,000
2. D=600(SP) at flat	m	900	13,435	12,091,233	3,214	2,892,225	10,221	9,199,008
3. Chamber Tank	no.	3	299,948	899,843	299,948	899,843		
Sub-total				142,022,195		26,747,987		115,274,208
12-2 Water Bridge	ls	1	57,506,736	57,506,736	24,308,964	24,308,964	33,197,772	33,197,772
12-3 Aqueduct-1 (sta 0+900)	ls	1	22,349,729	22,349,729	9,975,329	9,975,329	12,374,400	12,374,400
12-4 Aqueduct-2 (sta. 4+000)	ls	1	8,060,726	8,060,726	3,890,726	3,890,726	4,170,000	4,170,000
Sub-total				87,917,191		38,175,019		49,742,172
12-5 Temporary Works								
1. Access Road for Water Bridge	ls	1		17,252,021		7,292,689		9,959,332
2. Access Road Aqueduct-1	ls	1		6,704,919		2,992,599		3,712,320
3. Access Road Aqueduct-2	ls	1		2,418,218		1,167,218		1,251,000
Sub-total				26,375,157		11,452,506		14,922,652
Total				256,314,541		76,375,512		179,939,032
13. Proposed Control Tank								
13-1 Main Structure	ls	1	9,738,338	9,738,338	9,138,338	9,138,338	600,000	600,000
13-2 Drainage Facilities	ls	1	4,827,646	4,827,646	1,177,246	1,177,246	3,650,400	3,650,400
Total				14,565,984		10,315,584		4,250,400

App. 7.5-4 Direct Construction Cost

(2/5)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
14. Branch Canal Facilities								
14-1 Pipe Laying								
1. to Block A								
a VU150 at flat	m	370	2,421	895,864	849	314,047	1,572	581,818
b Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
2. P/H No.5								
a SP150 at flat	m	170	2,789	474,145	901	153,130	1,888	321,014
b Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
3. P/H No.4								
a SP200 at flat	m	600	3,495	2,096,811	934	560,619	2,560	1,536,192
b Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
4. to P/H No.1								
a VU250 at flat	m	820	4,142	3,396,091	929	762,120	3,212	2,633,971
b SP150 at stop	m	130	2,520	327,574	631	82,092	1,888	245,482
c Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
5. to P/H No.2-Block K								
a VU450 at flat	m	1,700	6,975	11,857,915	1,210	2,057,347	5,765	9,800,568
d SP300 at stop	m	250	5,708	1,426,897	1,131	282,817	4,576	1,144,080
e SP300 at flat	m	180	5,676	1,021,680	1,100	197,942	4,576	823,738
f VU450 at flat	m	900	6,975	6,277,720	1,210	1,089,184	5,765	5,188,536
g Chamber Tank	nos	2	299,948	599,895	299,948	599,895		
6. P/H No.2-Block G								
a VU400 at flat	m	1,350	6,418	8,664,737	1,278	1,724,657	5,141	6,940,080
b VU300 at flat	m	1,100	4,735	5,208,947	978	1,075,499	3,758	4,133,448
c Chamber Tank	nos	3	299,948	899,843	299,948	899,843		
Sub-total				44,347,908		10,998,981		33,348,926
14-2 Pump Facilities								
1. Proposed P/H No.1	ls	1	3,150,878	3,150,878	945,878	945,878	2,205,000	2,205,000
2. Proposed P/H No.2	ls	1	4,930,878	4,930,878	945,878	945,878	3,985,000	3,985,000
3. Proposed P/H No.4	ls	1	1,918,539	1,918,539	483,539	483,539	1,435,000	1,435,000
4. Proposed P/H No.5	ls	1	1,633,539	1,633,539	483,539	483,539	1,150,000	1,150,000
5. Proposed P/H No.6	ls	1	1,813,539	1,813,539	483,539	483,539	1,330,000	1,330,000
Sub-total				13,447,374		3,342,374		10,105,000
Total				57,795,282		14,341,356		43,453,926

App. 7.5-4 Direct Construction Cost

(3/5)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
15. On-farm Level Facilities								
15-1 Block A								
1. Pipe Laying								
a VU100	m	700	1,389	971,965	660	462,052	728	509,914
2. Open Canal								
a Earthen	m	500	118	58,832	118	58,832		
3. Chamber Tank	nos	0	299,948	0	299,948	0		
Sub-total				1,030,797		520,884		509,914
15-2 Block B								
1. Pipe Laying								
a VU200	m	320	3,275	1,047,902	882	282,360	2,392	765,542
b VU150	m	1,450	2,421	3,510,819	849	1,230,723	1,572	2,280,096
c VU100	m	980	1,389	1,360,751	660	646,872	728	713,879
2. Open Canal								
a Earthen	m	700	118	82,365	118	82,365		
3. Chamber Tank	nos	0	299,948	0	299,948	0		
Sub-total				6,001,837		2,242,320		3,759,517
15-3 Block C								
1. Pipe Laying								
a VU200	m	450	3,275	1,473,612	882	397,068	2,392	1,076,544
b VU100	m	1,000	1,389	1,388,522	660	660,074	728	728,448
c VU75	m	150	1,235	185,296	631	94,576	605	90,720
2. Open Canal								
a B=0.5m	m	750	1,985	1,493,504	1,985	1,488,504		
b Earthen	m	2,010	118	236,504	118	236,504		
3. Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
Sub-total				5,072,385		3,176,673		1,895,712
15-4 Block D								
1. Pipe Laying								
a VU100	m	950	1,389	1,319,096	660	627,070	728	692,026
2. Open Canal								
a B=0.5m	m	800	1,985	1,587,737	1,985	1,587,737		
b B=0.4m	m	800	1,777	1,421,299	1,777	1,421,299		
c Earthen	m	1,350	118	158,846	118	158,846		
3. Chamber Tank	nos	3	299,948	899,843	299,948	899,843		
Sub-total				5,386,820		4,694,795		692,026
15-5 Block E								
1. Pipe Laying								
a VU150	m	100	2,421	242,125	849	84,877	1,572	157,248
b VU75	m	300	1,235	370,592	631	189,152	605	181,440
2. Open Canal								
a B=0.7m	m	580	3,373	1,956,181	3,373	1,956,181		
b B=0.6m	m	1,100	3,034	3,337,548	3,034	3,337,548		
c B=0.5m	m	1,020	1,985	2,024,365	1,985	2,024,365		
d Earthen	m	2,350	118	276,510	118	276,510		
3. Chamber Tank	nos	2	299,948	599,895	299,948	599,895		
Sub-total				8,807,216		8,468,528		338,688
15-6 Block F								
1. Pipe Laying								
a VU100	m	1,490	1,389	2,068,898	660	983,510	728	1,085,388
2. Open Canal								
a Earthen	m	1,100	118	129,430	118	129,430		
3. Chamber Tank	nos	0	299,948	0	299,948	0		
Sub-total				2,198,328		1,112,940		1,085,388
15-7 Block G								
1. Pipe Laying								
a VU75	m	300	1,235	370,592	631	189,152	605	181,440
2. Open Canal								
a B=0.5m	m	1,080	1,985	2,143,445	1,985	2,143,445		
b Earthen	m	1,570	118	184,732	118	184,732		
3. Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
Sub-total				2,998,717		2,817,277		181,440

App. 7.5-4 Direct Construction Cost

(4/5)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
15-8 Block H								
1. Pipe Laying								
a VU150	m	350	2,421	847,439	849	297,071	1,572	550,368
b VU100	m	2,180	1,389	3,026,978	660	1,438,961	728	1,588,017
2. Open Canal								
a Earthen	m	750	118	88,248	118	88,248		
3. Chamber Tank	nos	2	299,948	599,895	299,948	599,895		
Sub-total				4,562,559		2,424,175		2,138,385
15-9 Block I								
1. Pipe Laying	m	0						
2. Open Canal								
a B=0.5m	m	450	1,985	893,102	1,985	893,102		
b B=0.4m	m	530	1,777	941,610	1,777	941,610		
c Earthen	m	1,500						
3. Chamber Tank	nos	0		1,834,713		1,834,713		
Sub-total				3,669,425		3,669,425		
15-10 Block J								
1. Pipe Laying								
a VU75	m	200	1,235	247,061	631	126,101	605	120,960
2. Open Canal								
a B=0.4m	m	1,050	1,777	1,865,454	1,777	1,865,454		
b Earthen	m	1,290	118	151,786	118	151,786		
3. Chamber Tank	nos	0	299,948	0	299,948	0		
Sub-total				2,264,302		2,143,342		120,960
15-11 Block K								
1. Pipe Laying								
a VU75	m	580	1,235	716,477	631	365,693	605	350,784
2. Open Canal								
a B=0.4m	m	1,160	1,777	2,060,883	1,777	2,060,883		
b B=0.5m	m	1,060	1,985	2,103,752	1,985	2,103,752		
c Earthen	m	2,060	118	242,387	118	242,387		
3. Chamber Tank	nos	4	299,948	1,199,790	299,948	1,199,790		
Sub-total				6,323,290		5,972,506		350,784
Total				48,315,676		37,242,863		11,072,813
16 Zone B Construction Cost								
1. Branch Canal Facilities								
1-1. Pipe Laying								
a SP250 at slope	m	50	5,708	285,379	1,131	56,563	4,576	228,816
b SP150 at slope	m	100	2,520	251,980	631	63,148	1,888	188,832
c VU350 at flat	m	950	5,563	5,284,611	1,095	1,040,391	4,468	4,244,220
d VU250 at flat	m	750	4,142	3,106,181	929	697,061	3,212	2,409,120
e Chamber Tank	nos	5	299,948	1,499,738	299,948	1,499,738	0	0
1-2. Proposed P.H No 3 Access Road	ls ls	1 1	7,850,757	7,850,757	1,891,757	1,891,757	5,959,000	5,959,000
Sub-total				18,846,172		5,816,184		13,029,988
2. On-firm Level Facilities								
2-1. Pipe Laying								
a VU300	m	700	4,735	3,314,784	978	684,408	3,758	2,630,376
b VU200	m	2,730	3,275	8,939,916	882	2,408,882	2,392	6,531,034
c VU100	m	550	1,389	763,687	660	363,041	728	400,646
d VU75	m	650	1,235	802,949	631	409,829	605	393,120
2-2. Open Canal								
a B=0.5m	m	900	1,985	1,786,205	1,985	1,786,205		
b Earthen	m	1,250	118	147,080	118	147,080		
c Chamber Tank	nos	1	299,948	299,948	299,948	299,948		
Sub-total				16,054,567		6,099,391		9,955,176
Total				34,900,740		11,915,576		22,985,164

App. 7.5-4 Direct Construction Cost

(5/5)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
17. Storage Construction Cost								
1. Bidur	m2	65	5,923	385,002	5,923	385,002		
2. Battar	m2	130	5,923	770,003	5,923	770,003		
3. Pipaltar	m2	130	5,923	770,003	5,923	770,003		
4. Devighat	m2	130	5,923	770,003	5,923	770,003		
Total				2,695,011		2,695,011		
18. Equipment Owning Cost for Pipe Laying Works								
			Nr	Day				
1. Backhoe 0.7m3	0 400	Nr.day	0	5,100	0	5,100	0	
2. Backhoe 0.4m3	0 400	Nr.day	0	3,195	0	3,195	0	
3. Truck crane 25t	2 400	Nr.day	800	11,550	9,240,000	11,550	9,240,000	
4. Crawler crane 30t	1 400	Nr.day	400	9,000	3,600,000	9,000	3,600,000	
5. Dump truck 10t	3 400	Nr.day	1,200	3,355	4,026,000	3,355	4,026,000	
6. Bulldozer 15t	0 400	Nr.day	0	6,100	0	6,100	0	
7. Bulldozer 11t	0 400	Nr.day	0	5,300	0	5,300	0	
8. Mixer 0.5m3	0 400	Nr.day	0	845	0	845	0	
9. Mixer 0.2m3	0 400	Nr.day	0	675	0	675	0	
10. Trailer 20t	1 400	Nr.day	400	4,820	1,928,000	4,820	1,928,000	
11. Vibratory roll 2.8t	0 400	Nr.day	0	1,570	0	1,570	0	
12. Cargo truck 11t	1 400	Nr.day	400	3,270	1,308,000	3,270	1,308,000	
13. Cargo truck 8t	1 400	Nr.day	400	2,385	954,000	2,385	954,000	
14. Cargo truck 4t	1 400	Nr.day	400	1,650	660,000	1,650	660,000	
15. Tank lorry 8kl	0 400	Nr.day	0	2,610	0	2,610	0	
16. Water sprayer 8kl	0 400	Nr.day	0	2,610	0	2,610	0	
17. Air compressor 5m3/min	2 400	Nr.day	800	970	776,000	970	776,000	
18. Generator 150kva	2 400	Nr.day	800	1,890	1,512,000	1,890	1,512,000	
19. Generator 100kva	2 400	Nr.day	800	1,295	1,036,000	1,295	1,036,000	
20. Generator 60kva	4 400	Nr.day	1,600	1,030	1,648,000	1,030	1,648,000	
21. Arc welding 300A	6 400	Nr.day	2,400	99	237,600	99	237,600	
22. Water pump 6"	4 400	Nr.day	1,600	252	403,200	252	403,200	
23. Water pump 4"	4 400	Nr.day	1,600	165	264,000	165	264,000	
24. Water pump 2"	8 400	Nr.day	3,200	80	254,400	80	254,400	
Total				27,847,200		27,847,200		

App. 7.5-5 Indirect Construction Cost

(1/1)

Description	Unit Quantity		Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
II-1 Common Temporary Cost								
1. O&M for Construction Rd.	ls	1		1,750,000		1,750,000		
2. Topo. Surveys	ls	1		1,050,000		1,050,000		
3. Temporary Yard	ls	1		5,250,000		5,250,000		
4. Temporary Offices	ls	1		10,500,000		10,500,000		
5. Water Supply	ls	1		1,400,000		1,400,000		
6. Electricity Supply	ls	1		4,200,000		4,200,000		
7. Machinery Repair Works	ls	1		10,500,000		10,500,000		
8. Facilities for Security	ls	1		350,000		350,000		
	Sub-total			35,000,000		35,000,000		
II-2 Site Administration								
1. Office Equipment/Materials	ls	1		8,800,000		8,800,000		
2. Vehicle Running/Expenditure	ls	1		11,200,000		11,200,000		
3. Staffs Expenditure	ls	1		14,000,000		14,000,000		
4. Insurance	ls	1		6,000,000		6,000,000		
	Sub-total			40,000,000		40,000,000		
II-3 Supervision								
1. Foreigner S/Vs Engineering fee	ls	1		8,800,000		8,800,000		
Expenditure	ls	1		5,600,000		5,600,000		
2. Local S/Vs Engineering fee	ls	1		3,200,000		3,200,000		
Expenditure	ls	1		2,400,000		2,400,000		
	Sub-total			20,000,000		20,000,000		
II-4 Transport & Packing								
1. Steel Pipe & Valve	ls	1		29,200,000			29,200,000	
2. Pump Units	ls	1		1,200,000			1,200,000	
3. Water Bridge Materials	ls	1		2,000,000			2,000,000	
4. Construction Machinery	ls	1		4,800,000			4,800,000	
5. Sheet Pile, Steel Materials	ls	1		2,400,000			2,400,000	
6. Vehicles	ls	1		400,000			400,000	
	Sub-total			40,000,000			40,000,000	
Total				135,000,000				

App. 7.5-6 Cost Breakdown for Main Structures

(1/2)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
M-1 Intake	Main Structure							
1. Excavation	common Machinery	m3	154.80	182	28,108	182	28,108	
2. Backfilling	random Machinery	m3	45.00	43	1,928	43	1,928	
3. Removal of excavated		m3	109.80	134	14,757	134	14,757	
4. RC Concrete	Machinery	m3	37.76	5,683	214,593	5,683	214,593	
5. Reinforcement	120kg	kg	4,446.24	41	182,658	41	182,658	
6. Mass concrete	Machinery	m3	2.82	3,233	9,117	3,233	9,117	
7. Formworks	3 uses	m2	48.49	598	29,006	598	29,006	
Sub-total					480,167		480,167	
Miscel works (20%)					96,033		96,033	
Total					576,201		576,201	
M-1' Gate Installing								
1. Gate	ls	1.00	1,595,000	1,595,000	250,000	250,000	1,345,000	1,345,000
2. Spindle	ls	1.00	223,000	223,000	5,000	5,000	218,000	218,000
3. Screen	m2	4.50	34,500	155,250	1,000	4,500	33,500	150,750
4. Measuring Revcies	ls	1.00	500,000	500,000			500,000	500,000
5. Installing			250,000	0	250,000			
Sub-total				2,473,250		259,500		2,213,750
Miscel works (20%)				494,650		51,900		442,750
Total				2,967,900		311,400		2,656,500
M-2 Intake	Pipe Laying D=1000							
1. Excavation	common Machinery	m3	225.50	182	40,945	182	40,945	
2. Backfilling	random Machinery	m3	135.50	43	5,806	43	5,806	
3. Removal of excavated		m3	90.00	134	12,096	134	12,096	
4. RC Concrete	Machinery	m3	19.50	5,683	110,820	5,683	110,820	
5. Reinforcement	63kg	kg	1,224.60	41	50,308	41	50,308	
6. Mass concrete	Machinery	m3		3,233	0	3,233	0	
7. Formworks	3 uses	m2	25.50	598	15,254	598	15,254	
8. Base sand		m3	48.50	21	1,019	21	1,019	
9. Pipe & Laying	SP1000	m	50.00	22,054	1,102,700	2,804	140,200	19,250 962,500
Sub-total					1,338,948		376,448	962,500
Miscel works (20%)					267,790		75,290	192,500
Total					1,606,737		451,737	1,155,000
M-3 Intake	Riprap							
1. Excavation	Machinery	m3	28.50	182	5,175	182	5,175	
2. Removal of excavated		m3	28.50	134	3,830	134	3,830	
3. Rubble masonry	Machinery	m3	28.50	2,882	82,151	2,882	82,151	
Sub-total					91,156		91,156	
Miscel works (20%)					18,231		18,231	
Total					109,387		109,387	
M-4 Intake	Fish Farm Diverslon							
1. Excavation	common Machinery	m3	105.43	182	19,143	182	19,143	
2. Backfilling	random Machinery	m3	64.89	43	2,781	43	2,781	
3. Removal of excavated		m3	40.54	134	5,448	134	5,448	
4. RC Concrete	Machinery	m3	43.85	5,683	249,203	5,683	249,203	
5. Reinforcement	63kg	kg	2,753.78	41	113,129	41	113,129	
6. Mass concrete	Machinery	m3		3,233	0	3,233	0	
7. Formworks	3 uses	m2	33.03	598	19,758	598	19,758	
8. Base sand		m3	9.75	21	205	21	205	
9. Pipe & Laying	SP500	m	25.00	9,415	235,375	1,810	45,250	7,605 190,125
Sub-total					645,043		454,918	190,125
Miscel works (20%)					129,009		90,984	38,025
Total					774,052		545,902	228,150
M-5 Main Canal	Water Bridge							
1. Excavation	rock Manual	m3	1,601.60	431	690,414	431	690,414	
2. Backfilling	Machinery	m3		43	0	43	0	
3. Removal of excavated		m3	1,601.60	134	215,247	134	215,247	
4. RC Concrete	Machinery	m3	1,705.50	5,683	9,692,506	5,683	9,692,506	
5. Reinforcement	120kg	kg	200,822.63	41	8,250,076	41	8,250,076	
6. Mass concrete	Machinery	m3		3,233	0	3,233	0	
7. Formworks	3 uses	m2	203.80	598	121,912	598	121,912	
8. Base sand		m3		21	0	21	0	
9. Water Bridge		m	380.00					50,000 19,000,000
10. Pipe & Laying	SP1000	m	450.00	22,054	9,924,300	2,804	1,261,800	19,250 8,662,500
11. Valve Accessory	ls	1.00	25,621	25,621	25,236	25,236	385	385
12. Anticorrosion/Welding	ls	1.00	2,205	2,205	280	280	1,925	1,925
Sub-total					47,922,280		20,257,470	27,664,810
Miscel works (20%)					9,584,456		4,051,494	5,532,962
Total					57,506,736		24,308,964	33,197,772

App. 7.5-6 Cost Breakdown for Main Structures

(2/2)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency			
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)		
M-6 Main Canal	Aqueduct-1 (sta.0+900)									
1. Excavation	common	Machinery	m3	196.80	182	35,734	182	35,734		
	rock	Machinery	m3	704.00	431	303,479	431	303,479		
2. Backfilling	random	Machinery	m3	92.80	43	3,976	43	3,976		
3. Removal of excavated			m3	808.00	134	108,591	134	108,591		
4. RC Concrete		Machinery	m3	50.20	5,683	285,291	5,683	285,291		
5. Reinforcement	63kg		kg	3,152.56	41	129,512	41	129,512		
6. RC Concrete		Machinery	m3	749.68	5,683	4,260,497	5,683	4,260,497		
7. Reinforcement	120kg		kg	5,911.05	41	242,834	41	242,834		
8. Mass concrete		Machinery	m3		3,233	0	3,233	0		
9. Formworks	3 uses		m2	137.36	598	82,168	598	82,168		
10. Base sand			m3	29.16	21	612	21	612		
11. Water Bridge			m	120.00	50,000	6,000,000		0	50,000	6,000,000
12. Pipe & Laying	SP1000		m	200.00	21,054	4,410,800	2,804	560,800	19,250	3,850,000
13. Valve Accessory			ls	200.00	11,601	2,320,200	11,216	2,243,200	385	77,000
14. Anticorrosion/Welding			ls	200.00	2,205	441,080	280	56,080	1,925	385,000
	Sub-total					18,624,774		8,312,774		10,312,000
Miscel works (20%)						3,724,955		1,662,555		2,062,400
Total						22,349,729		9,975,329		12,374,400
M-7 Main Canal	Aqueduct-2 (sta.4+000)									
1. Excavation	common	Machinery	m3	396.00	182	71,904	182	71,904		
2. Backfilling	random	Machinery	m3	264.00	43	11,312	43	11,312		
3. Removal of excavated			m3	132.00	134	17,740	134	17,740		
4. RC Concrete		Machinery	m3	264.66	5,683	1,504,086	5,683	1,504,086		
5. Reinforcement	120kg		kg	31,163.72	41	1,280,249	41	1,280,249		
6. Mass concrete		Machinery	m3		3,233	0	3,233	0		
7. Formworks	3 uses		m2	128.02	598	76,581	598	76,581		
8. Water Bridge			m	31.00	50,000	1,550,000		0	50,000	1,550,000
9. Pipe & Laying	SP1000		m	100.00	22,054	2,205,400	2,804	280,400	19,250	1,925,000
10. Valve Accessory			ls	100.00	5,993	599,300	5,608	560,800	385	38,500
11. Anticorrosion/Welding			ls	100.00	2,205	220,540	280	28,040	1,925	192,500
	Sub-total					6,717,272		3,242,272		3,475,000
Miscel works (20%)						1,343,454		648,454		695,000
Total						8,060,726		3,890,726		4,170,000
M-8 Control Tank	Main Structure									
1. Excavation	common	Machinery	m3	2,419.20	182	439,266	182	439,266		
2. Backfilling	random	Machinery	m3	465.93	43	19,965	43	19,965		
3. Removal of excavated			m3	1,953.27	134	262,509	134	262,509		
4. RC Concrete		Machinery	m3	610.90	5,683	3,471,798	5,683	3,471,798		
5. Reinforcement	120kg		kg	71,933.48	41	2,955,128	41	2,955,128		
6. Mass concrete		Machinery	m3	85.10	3,233	275,133	3,233	275,133		
7. Formworks	3 uses		m2	320.10	598	191,482	598	191,482		
8. Mesuring Revice/Valves			m	1.00	500,000	500,000		0	500,000	500,000
	Sub-total					8,115,282		7,615,282		500,000
Miscel works (20%)						1,623,056		1,523,056		100,000
Total						9,738,338		9,138,338		600,000
M-9 Control Tank	Drainage Facilities D=600									
1. Excavation	common	Machinery	m3	1,036.00	182	188,112	182	188,112		
2. Backfilling	random	Machinery	m3	768.00	43	32,909	43	32,909		
3. Removal of excavated			m3	268.00	134	36,018	134	36,018		
4. RC Concrete		Machinery	m3		5,683	0	5,683	0		
5. Reinforcement			kg	0.00	41	0	41	0		
6. Mass concrete		Machinery	m3		3,233	0	3,233	0		
7. Formworks	3 uses		m2		598	0	598	0		
8. Pipe & Laying	SP600		m	400.00	9,415	3,766,000	1,810	724,000	7,605	3,042,000
	Sub-total					4,023,038		981,038		3,042,000
Miscel works (20%)						804,608		196,208		608,400
Total						4,827,646		1,177,246		3,650,400

App. 7.5-7 Cost Breakdown for Pipe Laying

(1/4)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
P-1 D=1000 (SP) at flat								
1. Excavation common Machinery	m3	4.46	182	810	182	810		
2. Backfilling random Machinery	m3	2.71	43	116	43	116		
3. Removal of Excavated	m3	1.75	134	235	134	235		
4. Base sand	m3	0.97	21	20	21	20		
5. Pipe & Laying	m	1.00	22,054	22,054	2,804	2,804	19,250	19,250
6. Valve Accessory	ls	1.00	441	441	56	56	385	385
7. Anticorrosion/Welding	ls	1.00	2,205	2,205	280	280	1,925	1,925
Sub-total				25,882		4,322		21,560
Miscel works (20%)				5,176		864		4,312
Total				31,058		5,186		25,872
P-2 D=600 (SP) at flat								
1. Excavation common Machinery	m3	2.59	182	470	182	470		
2. Backfilling random Machinery	m3	1.92	43	82	43	82		
3. Removal of Excavated	m3	0.67	134	90	134	90		
4. Base sand	m3	0.39	21	8	21	8		
5. Pipe & Laying	m	1.00	9,415	9,415	1,810	1,810	7,605	7,605
6. Valve Accessory	ls	1.00	188	188	36	36	152	152
7. Anticorrosion/Welding	ls	1.00	942	942	181	181	761	761
Sub-total				11,196		2,678		8,518
Miscel works (20%)				2,239		536		1,704
Total				13,435		3,214		10,221
P-3 D=300 (SP) at flat								
1. Excavation common Machinery	m3	1.05	182	191	182	191		
2. Backfilling random Machinery	m3	0.79	43	34	43	34		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	3,988	3,988	583	583	3,405	3,405
6. Valve Accessory	ls	1.00	80	80	12	12	68	68
7. Anticorrosion/Welding	ls	1.00	399	399	58	58	341	341
Sub-total				4,730		916		3,814
Miscel works (20%)				946		183		763
Total				5,676		1,100		4,576
P-4 D=250 (SP) at flat								
1. Excavation common Machinery	m3	1.05	182	191	182	191		
2. Backfilling random Machinery	m3	0.79	43	34	43	34		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	3,040	3,040	495	495	2,545	2,545
6. Valve Accessory	ls	1.00	61	61	10	10	51	51
7. Anticorrosion/Welding	ls	1.00	304	304	50	50	255	255
Sub-total				3,668		818		2,850
Miscel works (20%)				734		164		570
Total				4,402		981		3,420
P-5 D=200 (SP) at flat								
1. Excavation common Machinery	m3	1.05	182	191	182	191		
2. Backfilling random Machinery	m3	0.79	43	34	43	34		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	2,365	2,365	460	460	1,905	1,905
6. Valve Accessory	ls	1.00	47	47	9	9	38	38
7. Anticorrosion/Welding	ls	1.00	237	237	46	46	191	191
Sub-total				2,912		779		2,134
Miscel works (20%)				582		156		427
Total				3,495		934		2,560
P-6 D=150 (SP) at flat								
1. Excavation common Machinery	m3	1.05	182	191	182	191		
2. Backfilling random Machinery	m3	0.79	43	34	43	34		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	1,840	1,840	435	435	1,405	1,405
6. Valve Accessory	ls	1.00	37	37	9	9	28	28
7. Anticorrosion/Welding	ls	1.00	184	184	44	44	141	141
Sub-total				2,324		751		1,574
Miscel works (20%)				465		150		315
Total				2,789		901		1,888

App. 7.5-7 Cost Breakdown for Pipe Laying

(2/4)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
P-7 D=450(VU) at flat								
1. Excavation common Manual	m3	1.35	134	181	134	181		
2. Backfilling random Manual	m3	0.96	51	49	51	49		
3. Removal of Excavated	m3	0.39	134	52	134	52		
4. Base sand	m3	0.23	21	5	21	5		
5. Pipe & Laying	m	1.00	5,417	5,417	707	707	4,710	4,710
6. Valve Accessory	ls	1.00	108	108	14	14	94	94
7. Anticorrosion/Welding	ls	0.00	542	0	71	0	471	0
Sub-total				5,813		1,009		4,804
Miscel works (20%)				1,163		202		961
Total				6,975		1,210		5,765
P-8 D=400(VU) at flat								
1. Excavation common Manual	m3	1.35	134	181	134	181		
2. Backfilling random Manual	m3	0.96	51	49	51	49		
3. Removal of Excavated	m3	0.39	134	52	134	52		
4. Base sand	m3	0.23	21	5	21	5		
5. Pipe & Laying	m	1.00	4,962	4,962	762	762	4,200	4,200
6. Valve Accessory	ls	1.00	99	99	15	15	84	84
7. Anticorrosion/Welding	ls	0.00	496	0	76	0	420	0
Sub-total				5,349		1,065		4,284
Miscel works (20%)				1,070		213		857
Total				6,418		1,278		5,141
P-9 D=350(VU) at flat								
1. Excavation common Manual	m3	1.35	134	181	134	181		
2. Backfilling random Manual	m3	0.96	51	49	51	49		
3. Removal of Excavated	m3	0.39	134	52	134	52		
4. Base sand	m3	0.23	21	5	21	5		
5. Pipe & Laying	m	1.00	4,263	4,263	613	613	3,650	3,650
6. Valve Accessory	ls	1.00	85	85	12	12	73	73
7. Anticorrosion/Welding	ls	0.00	426	0	61	0	365	0
Sub-total				4,636		913		3,723
Miscel works (20%)				927		183		745
Total				5,563		1,095		4,468
P-10 D=300(VU) at flat								
1. Excavation common Manual	m3	1.05	134	141	134	141		
2. Backfilling random Manual	m3	0.79	51	40	51	40		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	3,653	3,653	583	583	3,070	3,070
6. Valve Accessory	ls	1.00	73	73	12	12	61	61
7. Anticorrosion/Welding	ls	0.00	365	0	58	0	307	0
Sub-total				3,946		815		3,131
Miscel works (20%)				789		163		626
Total				4,735		978		3,758
P-11 D=250(VU) at flat								
1. Excavation common Manual	m3	1.05	134	141	134	141		
2. Backfilling random Manual	m3	0.79	51	40	51	40		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	2,885	2,885	495	495	2,390	2,390
6. Valve Accessory	ls	1.00	58	58	10	10	48	48
7. Anticorrosion/Welding	ls	1.00	289	289	50	50	239	239
Sub-total				3,451		775		2,677
Miscel works (20%)				690		155		535
Total				4,142		929		3,212
P-12 D=200(VU) at flat								
1. Excavation common Manual	m3	1.05	134	141	134	141		
2. Backfilling random Manual	m3	0.79	51	40	51	40		
3. Removal of Excavated	m3	0.26	134	35	134	35		
4. Base sand	m3	0.19	21	4	21	4		
5. Pipe & Laying	m	1.00	2,240	2,240	460	460	1,780	1,780
6. Valve Accessory	ls	1.00	45	45	9	9	36	36
7. Anticorrosion/Welding	ls	1.00	224	224	46	46	178	178
Sub-total				2,729		735		1,994
Miscel works (20%)				546		147		399
Total				3,275		882		2,392

App. 7.5-7 Cost Breakdown for Pipe Laying

(3/4)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
P-13 D=150(VU) at flat								
1. Excavation common	Manual	m3	1.05	134	141	134	141	
2. Backfilling random	Manual	m3	0.79	51	40	51	40	
3. Removal of Excavated		m3	0.26	134	35	134	35	
4. Base sand		m3	0.19	21	4	21	4	
5. Pipe & Laying		m	1.00	1,605	1,605	435	435	1,170
6. Valve Accessory		ls	1.00	32	32	9	9	23
7. Anticorrosion/Welding		ls	1.00	161	161	44	44	117
		Sub-total			2,018		707	1,310
Miscel works (20%)				404		141		262
Total				2,421		849		1,572
P-14 D=100(VU) at flat								
1. Excavation common	Manual	m3	0.55	134	74	134	74	
2. Backfilling random	Manual	m3	0.46	51	23	51	23	
3. Removal of Excavated		m3	0.09	134	12	134	12	
4. Base sand		m3	0.08	21	2	21	2	
5. Pipe & Laying		m	1.00	934	934	392	392	542
6. Valve Accessory		ls	1.00	19	19	8	8	11
7. Anticorrosion/Welding		ls	1.00	93	93	39	39	54
		Sub-total			1,157		550	607
Miscel works (20%)				231		110		121
Total				1,389		660		728
P-15 D=75 at flat								
1. Excavation common	Manual	m3	0.55	134	74	134	74	
2. Backfilling random	Manual	m3	0.46	51	23	51	23	
3. Removal of Excavated		m3	0.09	134	12	134	12	
4. Base sand		m3	0.08	21	2	21	2	
5. Pipe & Laying		m	1.00	820	820	370	370	450
6. Valve Accessory		ls	1.00	16	16	7	7	9
7. Anticorrosion/Welding		ls	1.00	82	82	37	37	45
		Sub-total			1,029		525	504
Miscel works (20%)				206		105		101
Total				1,235		631		605
P-16 D=1000 (SP) at slop under ground								
1. Excavation common	Machinery	m3	4.51	182	819	182	819	
2. Backfilling random	Machinery	m3	2.71	43	116	43	116	
3. Removal of Excavated		m3	1.80	134	242	134	242	
4. Base sand		m3	0.97	21	20	21	20	
5. RC Concrete	Machinery	m2	0.39	5,683	2,216	5,683	2,216	
6. Reinforcement 63kg		kg	24.49	41	1,006	41	1,006	
7. Formworks 3 uses		m2	0.51	598	305	598	305	
8. Pipe & Laying		m	1.00	22,054	22,054	2,804	2,804	19,250
9. Valve Accessory		ls	1.00	441	441	56	56	385
10. Anticorrosion/Welding		ls	1.00	2,205	2,205	280	280	1,925
		Sub-total			28,248		6,688	21,560
Miscel works (20%)				5,650		1,338		4,312
Total				33,898		8,026		25,872
P-17 D=450 (SP) at slop under ground								
1. Excavation common	Machinery	m3	1.37	182	249	182	249	
2. Backfilling random	Machinery	m3	0.96	43	41	43	41	
3. Removal of Excavated		m3	0.41	134	55	134	55	
4. Base sand		m3	0.23	21	5	21	5	
5. RC Concrete	Machinery	m2	0.07	5,683	398	5,683	398	
6. Reinforcement 63kg		kg	4.40	41	181	41	181	
7. Formworks 3 uses		m2	0.13	598	78	598	78	
8. Pipe & Laying		m	1.00	5,942	5,942	707	707	5,235
9. Valve Accessory		ls	1.00	119	119	14	14	105
10. Anticorrosion/Welding		ls	1.00	594	594	71	71	524
		Sub-total			7,316		1,453	5,863
Miscel works (20%)				1,463		291		1,173
Total				8,779		1,743		7,036

App. 7.5-7 Cost Breakdown for Pipe Laying

(4/4)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency			
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)		
P-18 D=1000 (SP) at slop										
1. Excavation	common	Machinery	m3	1.23	182	223	182	223		
2. Backfilling	random	Machinery	m3	0.23	43	10	43	10		
3. Removal of Excavated			m3	1.00	134	134	134	134		
4. Base sand			m3		21	0	21	0		
5. RC Concrete		Machinery	m2	0.77	5,683	4,376	5,683	4,376		
6. Reinforcement	63kg		kg	48.36	41	1,987	41	1,987		
7. Formworks	3 uses		m2	0.65	598	389	598	389		
8. Pipe & Laying			m	1.00	22,054	22,054	2,804	2,804	19,250	19,250
9. Valve Accessory			ls	1.00	441	441	56	56	385	385
10. Anticorrosion/Welding			ls	1.00	2,205	2,205	280	280	1,925	1,925
	Sub-total							9,892		21,560
	Miscel works (20%)									4,312
	Total							11,870		25,872
P-19 D=300 (SP) at slop										
1. Excavation	common	Machinery	m3	0.05	182	9	182	9		
2. Backfilling	random	Machinery	m3	0.02	43	1	43	1		
3. Removal of Excavated			m3	0.03	134	4	134	4		
4. Base sand			m3		21	0	21	0		
5. RC Concrete		Machinery	m2	0.03	5,683	170	5,683	170		
6. Reinforcement	63kg		kg	1.88	41	77	41	77		
7. Formworks	3 uses		m2	0.07	598	42	598	42		
8. Pipe & Laying			m	1.00	3,988	3,988	583	583	3,405	3,405
9. Valve Accessory			ls	1.00	80	80	12	12	68	68
10. Anticorrosion/Welding			ls	1.00	399	399	58	58	341	341
	Sub-total							943		3,814
	Miscel works (20%)									763
	Total							1,131		4,576
P-20 D=150 (SP) at slop										
1. Excavation	common	Machinery	m3	0.03	182	5	182	5		
2. Backfilling	random	Machinery	m3	0.02	43	1	43	1		
3. Removal of Excavated			m3	0.004	134	1	134	1		
4. Base sand			m3		21	0	21	0		
5. RC Concrete		Machinery	m2	0.004	5,683	23	5,683	23		
6. Reinforcement	63kg		kg	0.25	41	10	41	10		
7. Formworks	3 uses		m2	0.01	598	6	598	6		
8. Pipe & Laying			m	1.00	1,840	1,840	435	435	1,405	1,405
9. Valve Accessory			ls	1.00	37	37	9	9	28	28
10. Anticorrosion/Welding			ls	1.00	184	184	44	44	141	141
	Sub-total							526		1,574
	Miscel works (20%)									315
	Total							631		1,888

APP. 7.5-8 Cost Breakdown for Open Canal

(1/1)

Description	Unit Quantity			Total Cost		Local Currency		Foreign Currency	
				Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
C-1 Lined Canal	BxH = 0.70x0.55m								
1. Excavation	common	Manual	m3	0.20	134	27	134	27	
2. Backfilling	random	Manual	m3	0.75	51	38	51	38	
3. Rubble Masonry		Manual	m3	0.28	3,673	1,028	3,673	1,028	
4. Concrete		Manual	m2	0.20	4,419	884	4,419	884	
5. Reinforcement	63kg		kg	12.56	41	516	41	516	
6. Formworks	3 uses		m2	0.10	598	60	598	60	
7. Plastering	t=20		m2	1.80	102	183	102	183	
8. Grass Sod			m2	2.44	30	73	30	73	
9. Sand			m2	0.07	21	1	21	1	
	Sub-total					2,811		2,811	
Miscel works	(20%)					562		562	
Total						3,373		3,373	
C-2 Lined Canal	BxH = 0.60x0.50m								
1. Excavation	common	Manual	m3	0.18	134	24	134	24	
2. Backfilling	random	Manual	m3	0.66	51	33	51	33	
3. Rubble Masonry		Manual	m3	0.25	3,673	918	3,673	918	
4. Concrete		Manual	m2	0.18	4,419	796	4,419	796	
5. Reinforcement	63kg		kg	11.30	41	464	41	464	
6. Formworks	3 uses		m2	0.10	598	60	598	60	
7. Plastering	t=20		m2	1.60	102	163	102	163	
8. Grass Sod			m2	2.30	30	69	30	69	
9. Sand			m2	0.06	21	1	21	1	
	Sub-total					2,528		2,528	
Miscel works	(20%)					506		506	
Total						3,034		3,034	
C-3 Lined Canal	BxH = 0.50x0.45m								
1. Excavation	common	Manual	m3	0.10	134	13	134	13	
2. Backfilling	random	Manual	m3	0.58	51	29	51	29	
3. Rubble Masonry		Manual	m3	0.18	3,673	661	3,673	661	
4. Concrete		Manual	m2	0.10	4,419	442	4,419	442	
5. Reinforcement	63kg		kg	6.28	41	258	41	258	
6. Formworks	3 uses		m2	0.07	598	42	598	42	
7. Plastering	t=20		m2	1.40	102	142	102	142	
8. Grass Sod			m2	2.16	30	65	30	65	
9. Sand			m2	0.05	21	1	21	1	
	Sub-total					1,654		1,654	
Miscel works	(20%)					331		331	
Total						1,985		1,985	
C-4 Lined Canal	BxH = 0.40x0.40m								
1. Excavation	common	Manual	m3	0.09	134	12	134	12	
2. Backfilling	random	Manual	m3	0.50	51	25	51	25	
3. Rubble Masonry		Manual	m3	0.16	3,673	588	3,673	588	
4. Concrete		Manual	m2	0.09	4,419	398	4,419	398	
5. Reinforcement	63kg		kg	5.65	41	232	41	232	
6. Formworks	3 uses		m2	0.07	598	42	598	42	
7. Plastering	t=20		m2	1.20	102	122	102	122	
8. Grass Sod			m2	2.02	30	61	30	61	
9. Sand			m2	0.05	21	1	21	1	
	Sub-total					1,481		1,481	
Miscel works	(20%)					296		296	
Total						1,777		1,777	
C-5 Earth Canal									
1. Excavation	common	Manual	m3	0.09	134	12	134	12	
2. Backfilling	random	Manual	m3	0.50	51	25	51	25	
3. Rubble Masonry		Manual	m3		3,673	0	3,673	0	
4. Concrete		Manual	m2		4,419	0	4,419	0	
5. Reinforcement	63kg		kg	0.00	41	0	41	0	
6. Formworks	3 uses		m2		598	0	598	0	
7. Plastering	t=20		m2		102	0	102	0	
8. Grass Sod			m2	2.02	30	61	30	61	
9. Sand			m2		21	0	21	0	
	Sub-total					98		98	
Miscel works	(20%)					20		20	
Total						118		118	
O-3 Chamber Tank									
1. Excavation	common	Manual	m3	37.21	134	5,001	134	5,001	
2. Backfilling	random	Manual	m3	12.00	51	609	51	609	
3. Removal of excavated		Manual	m3	25.21	134	3,388	134	3,388	
4. RC Concrete		Manual	m3	28.49	4,419	125,911	4,419	125,911	
5. Reinforcement	63kg		kg	1,789.17	41	73,502	41	73,502	
6. Mass concrete		Manual	m3	3.73	3,620	13,502	3,620	13,502	
7. Formworks	3 uses		m2	46.88	598	28,043	598	28,043	
	Sub-total					249,956		249,956	
Miscel works	(20%)					49,991		49,991	
Total						299,948		299,948	

App. 7.5-9 Cost Breakdown for Pump Station

(1/1)

Description	Unit	Quantity	Total Cost		Local Currency		Foreign Currency	
			Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)	Unit Price (N.Rs)	Amount (N.Rs)
II-1 Pump House No.1								
1. Pump	39mHx15kw	nos	3	285,000	855,000	0	285,000	855,000
2. Pump House		m2	64	5,923	379,078	5,923	379,078	
3. Suction Sump		ls	1	545,800	545,800	545,800	545,800	
4. Switch Board	100KVA	ls	1	1,350,000	1,350,000	0	1,350,000	1,350,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Total					3,150,878		945,878	2,205,000
II-2 Pump House No.2								
1. Pump	45mHx55kw	nos	3	695,000	2,085,000	0	695,000	2,085,000
2. Pump House		m2	64	5,923	379,078	5,923	379,078	
3. Suction Sump		ls	1	545,800	545,800	545,800	545,800	
4. Switch Board	300KVA	ls	1	1,900,000	1,900,000	0	1,900,000	1,900,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Total					4,930,878		945,878	3,985,000
II-3 Pump House No.3								
<P/H 3a>								
1. Pump	33mHx37kw	nos	3	573,000	1,719,000	0	573,000	1,719,000
2. Pump House		m2	64	5,923	379,078	5,923	379,078	
3. Suction Sump		ls	1	545,800	545,800	545,800	545,800	
4. Switch Board	300KVA	ls	1	1,900,000	1,900,000	0	1,900,000	1,900,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Sub-total					4,564,878		945,878	3,619,000
<P/H 3b>								
1. Pump	55mHx30kw	nos	3	330,000	990,000	0	330,000	990,000
2. Pump House		m2	64	5,923	379,078	5,923	379,078	
3. Suction Sump		ls	1	545,800	545,800	545,800	545,800	
4. Switch Board	100KVA	ls	1	1,350,000	1,350,000	0	1,350,000	1,350,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Sub-total					3,285,878		945,878	2,340,000
Total					7,850,757		1,891,757	5,959,000
II-4 Pump House No.4								
1. Pump	30mHx7.5kw	nos	3	145,000	435,000	0	145,000	435,000
2. Pump House		m2	32	5,923	189,539	5,923	189,539	
3. Suction Sump		ls	1	273,000	273,000	273,000	273,000	
4. Switch Board	50KVA	ls	1	1,000,000	1,000,000	0	1,000,000	1,000,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Total					1,918,539		483,539	1,435,000
II-5 Pump House No.5								
1. Pump	9mHx1.5kw	nos	3	50,000	150,000	0	50,000	150,000
2. Pump House		m2	32	5,923	189,539	5,923	189,539	
3. Suction Sump		ls	1	273,000	273,000	273,000	273,000	
4. Switch Board	50KVA	ls	1	1,000,000	1,000,000	0	1,000,000	1,000,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Total					1,633,539		483,539	1,150,000
II-6 Pump House No.6								
1. Pump	27mHx5.5kw	nos	3	110,000	330,000	0	110,000	330,000
2. Pump House		m2	32	5,923	189,539	5,923	189,539	
3. Suction Sump		ls	1	273,000	273,000	273,000	273,000	
4. Switch Board	50KVA	ls	1	1,000,000	1,000,000	0	1,000,000	1,000,000
5. Installation		ls	1	21,000	21,000	21,000	21,000	
Total					1,813,539		483,539	1,330,000

App. 7.5-10 Unit Construction Cost

(1 / 1)

Description				Unit	Total Cost Unit Price (N.Rs)	L/C Unit Price (N.Rs)	F/C Unit Price (N.Rs)
A Earthworks							
1. Excavation	Common	Manual	m3	134.4	134.4		
		Machinery	m3	181.6	181.6		
	Rock	Manual	m3	431.1	431.1		
2. Backfill		Manual	m3	50.7	50.7		
		Machinery	m3	42.9	42.9		
3. Removal of excavated		Manual	m3	134.4	134.4		
4. Grass Sod		Manual	m2	30.0	30.0		
B Stone Works							
1. Rubble Masonary		Manual	m3	3,673.1	3,673.1		
		Machinery	m3	2,882.5	2,882.5		
2. Brick works		Manual	m3	3,403.9	3,403.9		
3. Gabions	Box	Manual	m3	1,494.0	1,494.0		
C Cement Works							
1. Mass concrete		Manual	m3	3,619.9	3,619.9		
		Machinery	m3	3,233.1	3,233.1		
2. Reinforced Concrete		Manual	m3	4,419.5	4,419.5		
		Machinery	m3	5,683.1	5,683.1		
3. Plastering	20mm	Manual	m2	101.6	101.6		
D Reinforcement	tor steel	Manual	kg	41.1	41.1		
E Formworks		Manual	m2	598.2	598.2		
F Pipe & Pipe Laying						<u>Pipe laying</u>	<u>Materials</u>
1. SP1000mm			m	22,054.0	2,804.0	19,250.0	
2. SP 600mm			m	9,415.0	1,810.0	7,605.0	
3. SP 450mm			m	5,942.0	707.0	5,235.0	
4. SP 300mm			m	3,988.0	583.0	3,405.0	
5. SP 250mm			m	3,040.0	495.0	2,545.0	
6. SP 200mm			m	2,365.0	460.0	1,905.0	
7. SP 150mm			m	1,840.0	435.0	1,405.0	
8. VU 450mm			m	5,417.0	707.0	4,710.0	
9. VU 400mm			m	4,962.0	762.0	4,200.0	
10. VU 350mm			m	4,263.0	613.0	3,650.0	
11. VU 300mm			m	3,653.0	583.0	3,070.0	
12. VU 250mm			m	2,885.0	495.0	2,390.0	
13. VU 200mm			m	2,240.0	460.0	1,780.0	
14. VU 150mm			m	1,605.0	435.0	1,170.0	
15. VU 100mm			m	934.0	392.0	542.0	
16. VU 75mm			m	820.0	370.0	450.0	
G Storage			m2	5,923.1	5,923.1		

App. 7.5-11 Construction Works Rate Analysis in Manual

(1/2)

S.No.	Description of Work	Unit	Resources					Construction Material					Total Rate (L2015 * 8 R)	Remarks	
			Class	Unit	Quantity	Unit Rate	Cost	Type	Unit	Quantity	Unit Rate	Cost			Basic Rate
1. Site Preparation	1. Fell trees, cut up & dispose 5m away from the construction site (the dia. of tree is measured from 1m above the ground) a. 12-30 cm dia. b. 31-60 cm dia. c. 61-90 cm dia. d. 91-120 cm dia. e. 121-180 cm dia. f. 181-240 cm dia. g. 241-300 cm dia. h. above 301 cm.	each	Unskilled	md	0.13	70.00	9.10						9.1	11.0	Sheet 1
		each	Unskilled	md	0.39	70.00	27.30						27.3	33.0	
		each	Unskilled	md	0.98	70.00	68.60						68.6	82.8	
		each	Unskilled	md	0.98	70.00	68.60						68.6	82.8	
		each	Unskilled	md	4.00	70.00	280.00						280.0	338.1	
		each	Unskilled	md	4.00	70.00	280.00						280.0	338.1	
		each	Unskilled	md	10.40	70.00	728.00						728.0	879.1	
		each	Unskilled	md	41.67	70.00	2916.90						2916.9	3522.2	
2. Earthworks	2. Uprooting trees & disposal 15 m away from the construction site a. 12-30 cm dia. b. 31-60 cm dia. c. 61-90 cm dia. d. 91-120 cm dia. e. 121-180 cm dia. f. 181-240 cm dia. g. 241-300 cm dia. h. above 301 cm.	each	Unskilled	md	0.40	70.00	28.00						28.0	33.8	Sheet 1
		each	Unskilled	md	0.53	70.00	37.10						37.1	44.8	
		each	Unskilled	md	2.52	70.00	176.40						176.4	213.0	
		each	Unskilled	md	2.52	70.00	176.40						176.4	213.0	
		each	Unskilled	md	12.00	70.00	840.00						840.0	1014.3	
		each	Unskilled	md	12.00	70.00	840.00						840.0	1014.3	
		each	Unskilled	md	29.63	70.00	2074.10						2074.1	2504.5	
		each	Unskilled	md	29.63	70.00	2074.10						2074.1	2504.5	
	14. Excavation for pipeline in boulder mixed soil disposal upto 10 m and 1.5 m fill. 15. Trench cutting in hard rock with drilling and blasting, disposal	cu.m.	unskilled	md	1.59	70.00	111.30						111.3	134.4	Sheet 4, Manpower-1
		cu.m.	unskilled	md	4.50	70.00	315.00	Octafine	kg	0.25	111.00	27.75	342.8	413.9	Sheet 4, 13
		cu.m.	skilled	md	0.05	125.00	6.25	Detonator	No.	2.00	2.00	4.00	10.3	12.4	
								Fuse wire	m	2.00	2.00	4.00	4.0	4.8	
								Total				357.0	431.1		
39. Filling soils in pipeline benches in 30 cm thick layers including hand compaction and water sprinkline d. gravel and boulder mixed soil	cu.m.	unskilled	md	0.60	70.00	42.00						42.0	50.7	Sheet-8, Manpower-1	
5. Brickworks	1. Brick masonry works along with supplying bricks, making cement sand mortar and construction of Brick walls including haulage distance upto 30 m. a. Machine made bricks-1:3 cement sand mortar	cu.m.	skilled	md	1.50	125.00	187.50	Brick	No.	530.00	2.75	1458.56	1646.4	1987.6	Sheet-14, Manpower-3
		cu.m.	Unskilled	md	2.20	70.00	154.00	Cement	MT	0.13	6297.00	818.61	972.6	1174.4	Manpower-1
								sand	cu.m.	0.27	741.72	200.26	200.3	241.8	Material-1, 19, and 17
												2818.9	3403.9		
6. Stone works	1. Rubble masonry works including supply of hard stone blocks, preparing cement mortar, and construction of walls upto 5m high, haulage upto 10 m a. Cement mortar 1:3	cu.m.	skilled	md	1.50	125.00	187.50	cement	MT	0.19	6297.00	1221.62	1409.1	1701.5	Sheet-16 Manpower-1 and 3
								sand	cu.m.	0.42	741.72	311.52	661.5	798.8	
								Block Stone	cu.m.	1.00	883.00	883.00	883.0	1066.2	
								Bond stone	cu.m.	0.10	883.00	88.30	88.3	106.6	
												3041.9	3673.1		
6. Gabion	16. Box Size 2mx1mx0.5m	cu.m.	skilled	md	1.65	125.00	206.25	G.I wire	kg	24.55	35.00	859.25	1065.5	1286.6	Sheet-65
			Unskilled	md	0.83	70.00	57.75	Set Wire	kg	3.00	38.00	114.00	171.8	207.4	
7. Cement Concrete works	1. Concreting of foundation, vertical faces, walls and abutments (cement concrete) including supply of materials and haulage distance upto 30 m. b. P.C.C. 1:2:4	cu.m.	skilled	md	0.30	125.00	37.50	cement	MT	0.32	6297.00	2015.04	2052.5	2478.4	Sheet-19 Manpower-1 and 3
								Agg. 40 mm	cu.m.	0.52	1200.87	624.45	904.5	1092.1	
								Agg. 20 mm	cu.m.	0.22	1200.87	264.19	264.2	319.0	
								Agg. 10 mm	cu.m.	0.11	988.96	108.79	108.8	131.4	
								sand	cu.m.	0.45	741.72	330.06	330.1	398.6	
												3660.0	4419.5		
	4. Concreting works of superstructure, deck slab, beams including supply of materials and haulage distance upto 30 m. a. P.C.C. 1:2:4	cu.m.	skilled	md	0.80	125.00	100.00	cement	MT	0.32	6297.00	2015.04	2115.0	2553.9	Sheet-19 manpower-1 and 3
								Agg. 40 mm	cu.m.	0.52	1200.87	624.45	1114.5	1345.7	
								Agg. 20 mm	cu.m.	0.22	1200.87	264.19	264.2	319.0	
								Agg. 10 mm	cu.m.	0.11	988.96	108.79	108.8	131.4	
								sand	cu.m.	0.45	741.72	330.06	330.1	398.6	
												3932.5	4748.5		
4. Mass Concrete		cu.m.	skilled	md	0.30	125.00	37.50	cement	MT	0.32	6297.00	1985.34	1422.8	1718.1	Sheet-19
								Agg. 40 mm	cu.m.	0.14	1200.87	168.12	308.1	372.1	
								Agg. 20 mm	cu.m.	0.60	1200.87	720.52	720.5	870.0	
								Agg. 10 mm	cu.m.	0.20	988.96	197.79	197.8	238.8	
								sand	cu.m.	0.47	741.72	348.61	348.6	420.9	
												2997.9	3619.9		
12.4 (20mm) thick cement sand plaster 1:4		100-sq.m	skilled	md	14.00	125.00	1750.00	Sand	cu.m.	2.35	741.72	1743.03	3493.0	4217.8	Sheet-44
			Unskilled	md	19.00	70.00	1330.00	Cement	MT	0.57	6297.00	3589.29	4919.3	5940.0	
						Total					8411.3	10157.9			

App. 7.5-11 Construction Works Rate Analysis in Manual

(2/2)

S.No.	Description of Work	Unit	Resources				Construction Material					Total Rate (1.2075 * B.R)	Remarks			
			Class	Unit	Quantity	Unit Rate	Cost	Type	Unit	Quantity	Unit Rate			Cost	Basic Ra	
7 Reinforce ment	3. Cutting, bending, placing in position as per drawing and binding by Q1 wire of reinforcement steel bars for R.C.C works including haulage upto 30 m.	MT	skilled	md	12.00	125.00	1500.00	Reinforc. bars	MT	1.05	2988.37	31298.78	32798.8	39604.5	Sheet-20 Manpower-1, and 3 Material-28, and 29	
			unskilled	md	12.00	70.00	840.00	Binding wires	kg	10.00	38.31	383.08	1223.1	1476.9		
												34021.9	41081.4			
8. Formwork	2. Making wooden forms including supply and selection of materials, fixing, nailing according to drawings, placing separators, dismantling forms and hauling upto 30 m distance. a. Flooring and slab works	10 sq.m	unskilled	md	1.72	70.00	120.40	Timber	cu.m	0.53	8388.46	4412.33	4532.7	5473.3	Manpower-1, 3 Material-30, 33	
			skilled	md	2.57	125.00	321.25	Nails	kg	2.50	40.00	100.00	421.3	508.7		
														4984.6	5981.9	
		b. Vertical surface, wall etc 4 m high and 0.5 m wide.	10 sq.m	Unskilled	md	1.44	70.00	100.80	Timber	cu.m	0.53	8388.46	4412.33	4513.1	5449.6	Manpower-1, 3 Material-30, 33
				skilled	md	2.10	125.00	262.50	Nails	kg	2.50	40.00	100.00	262.5	437.7	
														4874.6	5687.3	
		c. Vertical surface, wall etc 4.5 m high and 0.5 m wide.	10 sq.m	Unskilled	md	3.19	70.00	223.30	Timber	cu.m	0.66	8388.46	5519.61	5742.9	6934.6	Manpower-1, 3 Material-30, 33
				skilled	md	3.10	125.00	387.50	Nails	kg	3.13	40.00	125.20	512.7	619.1	
														6244.6	7553.6	
		d. Vertical surface, wall etc 5 to 10 m high and 0.5 m wide.	10 sq.m	Unskilled	md	5.19	70.00	363.30	Timber	cu.m	1.48	8388.46	12398.15	12761.4	15409.4	Manpower-1, 3 Material-30, 33
				skilled	md	7.50	125.00	937.50	Nails	kg	6.93	40.00	277.20	1214.7	1466.8	
														13976.1	16876.2	
		e. Vertical surface, wall etc upto 5 m high and 0.5 m to 1 m wide.	10 sq.m	Unskilled	md	2.16	70.00	151.20	Timber	cu.m	0.53	8388.46	4412.33	4563.5	5510.5	Manpower-1, 3 Material-30, 33
				skilled	md	3.24	125.00	405.00	Nails	kg	2.50	40.00	100.00	505.0	609.8	
												5068.8	6126.3			
f. Vertical surface, wall etc 5 to 10 m high and 0.5 m to 1 m wide.	10 sq.m	Unskilled	md	5.16	70.00	361.20	Timber	cu.m	1.35	8388.46	11290.87	11652.1	14069.9	Manpower-1, 3 Material-30, 33		
		skilled	md	7.64	125.00	955.00	Nails	kg	6.30	40.00	252.00	1207.0	1457.5			
												12859.1	15537.3			
15. Road Works	1. Making Road side ditch from rubble stone masonry and cement sand mortar including supply of materials, preparing mortar, and haulage upto 30 m. a. cement mortar (1:3)	cu.m	Skilled	md	1.50	125.00	187.50	cement sand	MT	0.19	6297.00	1221.62	1409.1	1701.5		
			Unskilled	md	4.80	70.00	336.00		Block stone	cu.m	0.42	741.72	311.52	647.5		781.9
														883.00	883.00	1066.2
														88.30	88.30	106.6
														3077.9	3658.1	
		3. Cleaning sub grade by cutting grass, hauling and removing upto 10 m distance from the construction site.	sq.m	unskilled	md	0.05	70.00	3.50						3.5	4.2	Manpower-1
		4. Sub grade preparation by cutting common soils hauling and removing upto 10 m away from the construction site. b. Up to 20 cm depth.	sq.m	unskilled	md	0.18	70.00	12.60						12.6	15.2	Manpower-1
		5. Sub grade preparation by cutting stone mixed common soil including haulage and removal upto 10 m from the construction site. c. stone 20 % to 40 % and 20 cm deep.	sq.m	unskilled	md	0.36	70.00	25.20						25.2	30.4	Manpower-1
6. Making subgrade by bringing soil and filling including levelling and hauling upto 10 m distance. b. upto 20 cm depth.	sq.m	unskilled	md	0.16	70.00	11.20						11.2	13.5	Manpower-1		

APP. 7.5- 12 Construction Works Rate Analysis in Machinery Use

(1/1)

Description	Unit	Quantity	Unit Price (N.Rs)	Amount (N.Rs)
R-1 Excavation	(output:	20.0 m ³)		
1. Skilled Labourer	m ³ /hour	5.0	18.0	90.0
2. Unskilled Labourer	m ³ /hour	12.0	8.0	96.0
3. Excavator (90HP)	m ³ /hour	1.5	2,297.0	3,445.5
Total				3,631.5
			Per m³:	181.6
R-2 Backfill	(output:	10.0 m ³)		
1. Foreman	m ³ /hour	1.0	16.0	16.0
2. Skilled Labourer	m ³ /hour	4.0	18.0	72.0
3. Unskilled Labourer	m ³ /hour	20.0	8.0	160.0
4. Pedestrian Roller	m ³ /hour	0.2	550.0	110.0
5. Water on Site	m ³ /hour	1.5	47.0	70.5
Total				428.5
			Per m³:	42.9
R-3 Mass Concrete	(output:	10.0 m ³)		
1. Foreman	m ³ /hour	1.0	16.0	16.0
2. Skilled Labourer	m ³ /hour	2.0	18.0	36.0
3. Unskilled Labourer	m ³ /hour	8.0	8.0	64.0
4. Cement	m ³ /hour	2.5	10,213.0	25,532.5
5. Concrete Mixer (20HP)	m ³ /hour	2.0	153.0	306.0
6. Coarse Aggregate	m ³ /hour	8.9	245.0	2,180.5
7. Load/haul Aggregate to site	m ³ /hour	8.9	156.0	1,388.4
8. Extract/screen sand,load on truck	m ³ /hour	5.2	228.0	1,185.6
9. Wash sand	m ³ /hour	5.2	160.0	832.0
10. Load/haul sand to site	m ³ /hour	4.7	156.0	733.2
11. Water on Site	m ³ /hour	1.2	47.0	56.4
Total				32,330.6
			Per m³:	3,233.1
R-4 Reinforced Concrete	(output:	8.0 m ³)		
1. Foreman	m ³ /hour	2.0	16.0	32.0
2. Skilled Labourer	m ³ /hour	4.0	18.0	72.0
3. Unskilled Labourer	m ³ /hour	18.0	8.0	144.0
4. Cement	m ³ /hour	3.0	10,213.0	30,639.0
5. Concrete Mixer (20HP)	m ³ /hour	2.0	153.0	306.0
6. Coarse Aggregate	m ³ /hour	6.8	245.0	1,666.0
7. Load/haul Aggregate to site	m ³ /hour	6.8	156.0	1,060.8
8. Extract/screen sand,load on truck	m ³ /hour	4.5	258.0	1,161.0
9. Haul sand	m ³ /hour	4.5	2,271.0	10,219.5
10. Concrete Vibrator	m ³ /hour	1.0	108.0	108.0
11. Water on Site	m ³ /hour	1.2	47.0	56.4
Total				45,464.7
			Per m³:	5,683.1
R-5 Rubble Masonary	(output:	10.0 m ³)		
1. Foreman	m ³ /hour	1.0	16.0	16.0
2. Skilled Labourer	m ³ /hour	15.0	18.0	270.0
3. Unskilled Labourer	m ³ /hour	42.0	8.0	336.0
4. Cement	m ³ /hour	1.9	10,213.0	19,404.7
5. Sand	m ³ /hour	4.2	229.0	961.8
6. Haul sand	m ³ /hour	4.2	398.0	1,671.6
7. Extraction Stones	m ³ /hour	11.0	162.0	1,782.0
8. Haul Stones	m ³ /hour	11.0	398.0	4,378.0
9. Water on Site	m ³ /hour	0.1	47.0	4.7
Total				28,824.8
			Per m³:	2,882.5

Part B

Appendix 8.2 Economic and Financial Evaluation

App. 8.2.2-1 Projected Energy Generation Capability of Power Stations

(Unit: GWh)

Station	1995	1996	1997	1998	1999	2000	2001
Marsyangdi	430	430	430	430	430	430	430
Kulckhani I	165	165	165	165	165	165	165
Kulckhani II	65	65	65	65	65	65	65
Trisuli	139	157	160	160	160	160	160
Devighat	96	109	109	109	109	109	109
Sunkoshi	50	50	50	50	50	50	50
Gandak	50	50	50	50	50	50	50
Small Hydro	20	20	20	20	20	20	20
Andhikhola	20	20	20	20	20	20	20
Jhimruk	78	78	78	78	78	78	78
Khimti Khola						350	350
Upper Bhote Koshi							244
Puwa				44	44	44	44
Chilime				136	136	136	136
Modi					91	91	91
Kaligandaki - A							840
Total	1,113	1,144	1,147	1,327	1,418	1,768	2,608
NEA forecast		1,272	1,392	1,530	1,688	1,860	2,047
Energy Balance	Deficit	Deficit	Deficit	Deficit	Deficit	Deficit	Surplus

Source: "Report on Water Availability for Trisuli Irrigation Project from Trisuli Hydro Project", CEMAT, February 1997.

Note: The gap between supply and demand is within manageable limit of 20%, which can be met by import or generation by stand by diesel generators.

App.8.2.2-2 Price Structures of Traded Commodities

Price Structure	Unit	Rice/Paddy	Maize	Wheat	Urea	DAP	MOP
Net Trade Status		Import	Import	Import	Import	Import	Import
2005 Projected International Market Price (Constant 1996)	US\$/mt	297	101	162	156	177	114
Quality Factor	%	90	90	95	100	100	100
Adjusted FOB	US\$/mt	267	91	154	156	177	114
Freight & Insurance	US\$/mt	30	40	40	30	40	35
CIF Price (Calcutta)	US\$/mt	297	131	194	186	217	149
Port Handling Charges	US\$/mt	7	7	7	7	7	7
Transport from Calcutta to Nepal Border	US\$/mt	31	31	31	31	31	31
CIF Price at Birgunj	US\$/mt	335	169	232	224	255	187
Equivalent to Rs. (US\$1 = Rs.56.7)	Rs/mt	18,995	9,582	13,154	12,701	14,459	10,603
Transport/Handling Costs from Nepal Border to Wholesale Market	Rs/mt	1,710	862	1,184	1,143	1,301	954
Wholesale Price	Rs/mt	20,705	10,444	14,338	13,844	15,760	11,557
Transport/Handling Costs from Wholesale Market to Farmgate	Rs/mt	-1,863	-940	-1,290	-1,246	-1,418	-1,040
Dike in Project Area	Rs/mt	18,842	9,504	13,048	15,090	17,178	12,597
Processing Ratio	%	65	100	90	100	100	100
Processing Cost	Rs/mt	-450	0	0	0	0	0
By-product Value from Processing	Rs/mt	689	0	0	0	0	0
Economic Farmgate Price (2005 Constant)	Rs/mt	12,486	9,504	11,743	15,090	17,178	12,597
Financial Farmgate Price (1996)	Rs/mt	9,250	8,500	7,000	6,950	17,100	8,700

Note: 1) The 2005 prices were estimated based on the World Bank's project international market prices (1996 constant price). For base data, reference was made to "Commodity Markets and the Developing Countries", November 1994.

2) Agricultural commodities and inputs

- Rice: Thai 5% broken, FOB Bangkok
- Maize: US No. 2 Yellow, FOB Gulf ports
- Wheat: Canadian No. 1 Western Red Spring, FOB St. Lawrence
- Urea: Bagged, FOB NW Europe
- DAP: Bulk, FOB US Gulf
- MOP: Bulk, FOB Vancouver

3) Transport/handling costs (Nepal border - wholesale market) were calculated at 10% of CIF at Birgunj, multiplied by SCF of 0.9.

4) Transport/handling costs (wholesale market - farmgate) were calculated at 10% of wholesale prices multiplied by SCF of 0.9.

5) Processing cost and by-product value were multiplied by SCF of 0.9.

App.8.2.2-3 Price Summary of Agricultural Commodities and Inputs

Item	Unit	Financial Cost	Conversion Factor	Economic Cost
Paddy	Rs/kg	9.25	1.35	12.50
Upland Paddy	Rs/kg	8.00	1.35	10.80
Maize	Rs/kg	8.50	1.12	9.50
Millet	Rs/kg	6.75	0.90	6.10
Wheat	Rs/kg	7.00	1.67	11.70
Niger	Rs/kg	20.00	0.90	18.00
Vegetables	Rs/kg	5.25	0.90	4.73
Bran	Rs/kg	7.50	0.90	6.75
Chaff	Rs/kg	0.75	0.90	0.68
Urea	Rs/kg	6.95	2.17	15.10
DAP	Rs/kg	17.10	1.006	17.20
MOP	Rs/kg	8.70	1.45	12.60
Organic Manure	Rs/kg	0.80	0.90	0.72
Agro-chemical	Rs/100ml	150.00	0.90	135.00
Draft Animals	Rs/ad	100.00	0.90	90.0
Farm Labour	Rs/md	40.00	0.675	27.00

Note: Vegetables comprise potato, cabbage, radish and beans.

App. 8.2.3-1 Conversion Factor of Construction Cost

Item	(1) Proportion (%)	Traded Good			Unskilled Labour		Non-traded Goods		Transfer Payment	(2) Item-wise	
		1.0*	0.9*	0.9*	0.675*	0.9*	0.9*	0*		Conversion Factors	(1) x (2)
Intake Works	2.1	(65)	(2)	(4)	(13)	(16)	(13)	(100)			
Main Canal Facilities	56.7	0.65 (72)	0.02 (2)	0.03 (7)	0 (12)	0.14 (7)	0 (12)	0.84 (100)	0	0.018	
Proposed Control Tank	3.2	0.72 (31)	0.02 (3)	0.05 (8)	0 (6)	0.06 (52)	0 (6)	0.85 (100)	0	0.482	
Branch Canal Facilities	12.8	0.31 (75)	0.03 (2)	0.05 (13)	0 (7)	0.47 (3)	0 (7)	0.86 (100)	0	0.028	
On-farm Level Facilities	10.7	0.75 (16)	0.02 (12)	0.09 (13)	0 (3)	0.03 (56)	0 (3)	0.89 (100)	0	0.114	
Zone B Construction Cost	7.7	0.16 (62)	0.11 (2)	0.09 (10)	0 (12)	0.50 (14)	0 (12)	0.86 (100)	0	0.092	
Storage Construction Cost	0.6	0.62 (0)	0.02 (5)	0.07 (12)	0 (15)	0.13 (68)	0 (15)	0.84 (100)	0	0.065	
Equipment Owning Cost	6.2	0 (90)	0.04 (0)	0.08 (0)	0 (10)	0.61 (0)	0 (10)	0.73 (100)	0	0.004	
Total	100.0	0.90	0	0	0	0	0	0.90	0	0.056	0.859

Note: 1) Calculation is based on direct construction cost only.

2) * indicates conversion factors.

App. 8.2.3-2 Breakdown of Project Cost

(Unit: Rs.1,000)

Item	Financial Cost	Conversion Factor	Economic Cost
(1) Construction Cost			
Direct Cost	451,773	0.859	388,073
Indirect Cost	135,000	0.9	121,500
Land Acquisition	2,259	0.9	2,033
Administration	500	0.9	450
Engineering Services	36,142	0.9	32,528
Physical Contingency	9,035	0.9	8,132
Price Contingency	63,471	0	0
Sub-total	698,181	-	552,716
(2) Cost for Program			
Training Program	500	0.9	450
Equipment for Water Management	1,020	0.9	918
Equipment for Training	750	0.9	675
Multipurpose Community Hall	1,220	0.9	1,098
Sub-total	3,490	-	3,141
Total	701,671	-	555,857

App.8.2.4-1 Annual Changes in Cropped Area and Yield (9 and 12 Months Irrigation)

Item	Case	1st Year	2nd Year	3rd Year	4th Year	5th Year	6th Year	7th Year	8th Year	9th Year	10-25th Years
Cropped Area (ha)											
(1) Paddy	FW/O	212	212	212	212	212	212	212	212	212	212
	FW	212	212	472	472	472	472	472	472	472	472
(2) Upland Paddy	FW/O	33	33	33	33	33	33	33	33	33	33
	FW	33	33	46	46	46	46	46	46	46	46
(3) Maize	FW/O	432	432	432	432	432	432	432	432	432	432
	FW	432	432	279	279	279	279	279	279	279	279
(4) Millet	FW/O	153	153	153	153	153	153	153	153	153	153
	FW	0	0	0	0	0	0	0	0	0	0
(5) Wheat	FW/O	39	39	39	39	39	39	39	39	39	39
	FW	39	39	64	64	243	243	243	243	243	243
(6) OFCs (Niger)	FW/O	177	177	177	177	177	177	177	177	177	177
	FW	0	0	0	0	0	0	0	0	0	0
(7) Vegetables	FW/O	0	0	0	0	0	0	0	0	0	0
	FW	0	235	783	783	1,233	1,233	1,233	1,233	1,233	1,233
Average Yield (kg/ha)											
(1) Paddy	FW/O	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400	2,400
	FW	2,400	3,050	3,700	5,000	5,000	5,000	5,000	5,000	5,000	5,000
(2) Upland Paddy	FW/O	2,060	2,060	2,060	2,060	2,060	2,060	2,060	2,060	2,060	2,060
	FW	2,060	2,545	3,030	4,000	4,000	4,000	4,000	4,000	4,000	4,000
(3) Maize	FW/O	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080	2,080
	FW	2,080	2,560	3,040	4,000	4,000	4,000	4,000	4,000	4,000	4,000
(4) Millet	FW/O	1,880	1,880	1,880	1,880	1,880	1,880	1,880	1,880	1,880	1,880
	FW	0	0	0	0	0	0	0	0	0	0
(5) Wheat	FW/O	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360	1,360
	FW	1,360	2,020	2,680	4,000	4,000	4,000	4,000	4,000	4,000	4,000
(6) OFCs (Niger)	FW/O	440	440	440	440	440	440	440	440	440	440
	FW	0	0	0	0	0	0	0	0	0	0
(7) Vegetables	FW/O	0	0	0	0	0	0	0	0	0	0
	FW	0	11,863	14,600	18,250	18,250	18,250	18,250	18,250	18,250	18,250

App.3.2.4.2 Crop Budget of Agricultural Products (Future Without Project Case)

Item	Price for Evaluation	Unit	Unit Price/Conversion Factor										OFCs (Niger)			
			Upland		Paddy		Maize		Millet		Wheat			OFCs (Niger)		
			Paddy	Paddy	Maize	Millet	Wheat	Maize	Millet	Wheat	Amount	Value	Amount	Value	Amount	Value
Value of Output																
(1) Yield		kg/ha														
(2) Production value	F	R\$/kg	9.25	8.00	8.50	6.75	7.00	20.00			2,400	2,080	1,880	1,360	440	8,800
	E	R\$/kg	12.50	10.80	9.50	6.10	11.70	18.00			22,200	17,680	12,690	9,520	7,920	7,920
(3) By-product value																
(a) Bran	F	R\$/kg	7.50	7.50							192	1,440	165	1,238		
	E	R\$/kg	(0.9)	(0.9)							192	1,296	165	1,114		
(b) Chaff	F	R\$/kg	0.75	0.75							528	396	453	340		
	E	R\$/kg	(0.9)	(0.9)							528	356	453	306		
Total	F	R\$/ha									24,036	18,058	12,690	9,520		8,800
	E	R\$/ha									31,652	23,668	11,468	15,912		7,920
Input Costs																
(1) Seeds																
F	R\$/kg		11.28	10.00	9.85	8.00	7.50	20.00			65	740	60	600	26	256
E	R\$/kg		(0.9)	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)			65	666	60	540	26	250
(2) Fertilizer																
(a) Urea	F	R\$/kg	6.95	6.95	6.95	6.95	6.95	6.95			180	1,251	200	1,390	200	1,390
	E	R\$/kg	15.10	15.10	15.10	15.10	15.10	15.10			180	2,718	200	3,020	200	3,020
(b) DAP	F	R\$/kg	17.10	17.10	17.10	17.10	17.10	17.10			160	2,736			100	1,710
	E	R\$/kg	17.20	17.20	17.20	17.20	17.20	17.20			160	2,752			100	1,720
(c) Organic Manure	F	R\$/kg	0.30	0.30	0.30		0.30				3,000	900	6,000	1,800	3,000	900
	E	R\$/kg	(0.9)	(0.9)	(0.9)		(0.9)				3,000	810	6,000	1,620	3,000	810
(3) Agro-chemical																
Insecticides and Fungicides	F	R\$/100ml	150.00	150.00							350	525	350	525		
	E	R\$/100ml	(0.9)	(0.9)							350	473	350	473		
(4) Draft Animals	F	R\$/ad	100.00	100.00	100.00		100.00				28	2,800	20	2,000	24	2,400
	E	R\$/ad	(0.9)	(0.9)	(0.9)		(0.9)				28	2,520	20	1,800	24	2,160
(5) Labour																
(a) Family Labour	F	R\$/md	40.00	40.00	40.00	40.00	40.00	40.00			150	6,000	150	6,000	100	4,000
	E	R\$/md	(0.675)	(0.675)	(0.675)	(0.675)	(0.675)	(0.675)			150	4,050	150	4,050	100	2,700
(b) Hired Labour	F	R\$/md	40.00	40.00	40.00	40.00	40.00	40.00			90	3,600	55	2,200	50	2,000
	E	R\$/md	(0.675)	(0.675)	(0.675)	(0.675)	(0.675)	(0.675)			90	2,430	35	1,350	50	2,000
(6) Others	F	R\$/ha									575	600	600	200	200	
	E	R\$/ha	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)	(0.9)			575	540	540	180	180	
Total	F	R\$/ha									19,127	14,315	8,603	10,900	5,400	
	E	R\$/ha									16,937	12,988	7,449	10,770	3,780	
Net Value	E	R\$/ha									14,715	10,680	7,230	4,019	5,142	
Net Crop Income	F	R\$/ha									10,909	9,743	8,424	1,820	7,400	

Note: F and E represent financial and economic prices, respectively.

Appendix 1: Crop Budget of Agricultural Products at Full Development (Future With Project Case)

Item	Unit	Unit Price/Conversion Factor												Beans	Beans			
		Paddy	Upland Paddy	Millet	Wheat	Maize	Upland Paddy	Maize	Wheat	Peanut	Cashew	Rubber	Value			Amount	Value	Amount
Value of Output																		
(1) Yield	kg/ha	9.23	6.00	4.50	7.00	5.00	3.00	8.00	4.00	4.00	32.000	34.000	4.000	18.000	90.000	20.000	10.000	80.000
(2) Production value	Rp/kg	12.50	10.40	9.50	11.70	4.50	2.70	7.20	62.500	43.200	38.000	46.400	4.000	28.000	81.000	112.500	54.000	72.000
(3) By-product value																		
(a) Bran	Rp/kg	7.50	7.50						400	3.000	320	2.400						
(b) Chaff	Rp/kg	0.75	0.75						400	2.700	320	2.160						
(c) Husk	Rp/kg	0.75	0.75						1.100	825	890	660						
Total	Rp/ha								1.100	743	890	594						
	Rp/ha		30.075		35.040		34.000		34.000		28.000			90.000		125.000		80.000
	Rp/ha		65.943		45.934		38.000		38.000		46.400			81.000		112.500		72.000
Input Costs																		
(1) Seeds/Seedlings	Rp/kg	22.00	22.00	17.10	16.20	17.00	1.30	100.00	55	1.210	55	1.210	100	1.920	1.000	6.000	0.2	20
(2) Fertilizer	Rp/kg	6.95	6.95	6.95	6.95	6.95	6.95	6.95	55	1.099	55	1.099	20	308	1.000	4.000	0.2	18
(a) Urea	Rp/kg	15.10	15.10	15.10	15.10	15.10	15.10	15.10	200	3.020	200	3.020	200	3.020	200	3.020	100	1.510
(b) DAP	Rp/kg	17.10	17.10	17.10	17.10	17.10	17.10	17.10	100	1.710	100	1.710	100	1.710	100	1.710	100	1.710
(c) Organic Manure	Rp/kg	0.30	0.30	0.30	0.30	0.30	0.30	0.30	100	1.720	100	1.720	100	1.720	100	1.720	100	1.720
(3) Agro-chemical	Rp/100ml	150.00	150.00	150.00	150.00	150.00	150.00	150.00	3.000	900	1.500	405	3.000	910	6.000	1.620	4.000	1.620
(4) Pesticides and Fungicides	Rp/100ml	0.99	0.99	0.99	0.99	0.99	0.99	0.99	350	325	350	325	350	325	3.400	4.000	0	0
(5) Draft Animals	Rp/day	100.00	100.00	100.00	100.00	100.00	100.00	100.00	28	2.800	20	2.000	24	2.400	54	5.400	28	2.800
(6) Labour	Rp/day	40.00	40.00	40.00	40.00	40.00	40.00	40.00	28	2.320	20	1.800	24	2.160	54	4.860	28	2.320
(a) Family Labour	Rp/day	0.675	0.675	0.675	0.675	0.675	0.675	0.675	150	6.000	150	6.000	100	4.000	260	10.400	200	8.000
(b) Hired Labour	Rp/day	40.00	40.00	40.00	40.00	40.00	40.00	40.00	150	4.050	150	4.050	100	2.700	500	7.020	300	8.100
(c) Others	Rp/ha	0.99	0.99	0.99	0.99	0.99	0.99	0.99	150	4.950	100	2.700	150	4.050	700	28.000	100	4.000
Total	Rp/ha								21.310	17.865	17.865	16.545		45.700		64.200		18.563
Net Value	Rp/ha								18.250	15.797	13.601	39.840		32.680		15.438		15.438
Net Farm Income	Rp/ha								47.693	30.157	22.219	33.179		59.820		38.512		36.596
Net Farm Income	Rp/ha								34.993	23.175	20.133	16.653		34.700		48.975		69.435

Note: P and E represent financial and economic prices, respectively.

App.8.2.4-4

**Net Incremental Value of Agricultural Commodities
at Full Development (9 Months Irrigation)**

Item	Price of Evaluation	Net Value (Rs/ha)	Cropped Area (ha)	Total Net Value (Rs)
1. FW/O				
(1) Paddy	E	14,715	212.22	3,122,817
(2) Upland Paddy	E	10,680	33.36	356,285
(3) Maize	E	7,230	432.27	3,125,312
(4) Millet	E	4,019	153.19	615,671
(5) Wheat	E	5,142	38.52	198,070
(6) OFCs (Niger)	E	4,140	176.44	730,462
Total	E	-	1,046.00	8,148,617
2. FW				
(1) Paddy	E	47,693	472.18	22,519,681
(2) Upland Paddy	E	30,157	45.50	1,372,144
(3) Maize	E	22,219	279.45	6,209,100
(4) Wheat	E	33,199	64.25	2,133,036
(5) Vegetables	E	54,847	782.52	42,918,874
Total	E	-	1,643.90	75,152,835
3. Net Incremental Value	E		597.90	67,004,218

Note: 1) E represents economic prices.

2) The proportion of cabbage, french beans, radish, and potato cultivation to the total cropped area is assumed at 50%, 30%, 10%, and 10%, respectively.

**App.8.2.4-5 Net Incremental Value of Agricultural Commodities
at Full Development (12 Months Irrigation)**

Item	Price of Evaluation	Net Value (Rs/ha)	Cropped Area (ha)	Total Net Value (Rs)
1. FW/O				
(1) Paddy	E	14,715	212.22	3,122,817
(2) Upland Paddy	E	10,680	33.36	356,285
(3) Maize	E	7,230	432.27	3,125,312
(4) Millet	E	4,019	153.19	615,671
(5) Wheat	E	5,142	38.52	198,070
(6) OFCs (Niger)	E	4,140	176.44	730,462
Total	E	-	1,046.00	8,148,617
2. FW				
(1) Paddy	E	47,693	472.18	22,519,681
(2) Upland Paddy	E	30,157	45.50	1,372,144
(3) Maize	E	22,219	279.45	6,209,100
(4) Wheat	E	33,199	243.13	8,071,673
(5) Vegetables	E	54,847	1,232.84	67,617,575
Total	E	-	2,273.10	105,790,173
3. Net Incremental Value	E		1,227.10	97,641,556

Note: 1) E represents economic prices.

2) The proportion of cabbage, french beans, radish, and potato cultivation to the total cropped area is assumed at 50%, 30%, 10%, and 10%, respectively.

App. 8.2.5-1 Flow of Economic Project Cost and Benefit

(Unit: Rs.1,000)

Year	Cost			Total	Benefit	Balance
	Construction	Program	O&M			
1	30,572	942	540	32,054	0	-32,054
2	349,078	1,257	495	350,830	6,409	-344,421
3	176,207	942	2,778	179,927	40,564	-139,363
4	0	0	3,349	3,349	64,779	61,430
5	0	0	3,349	3,349	97,642	94,293
6	0	0	3,349	3,349	97,642	94,293
7	0	0	3,349	3,349	97,642	94,293
8	0	0	3,349	3,349	95,416	92,067
9	0	0	3,349	3,349	97,642	94,293
10	0	0	3,349	3,349	97,642	94,293
11	0	0	3,349	3,349	97,642	94,293
12	0	0	3,349	3,349	95,416	92,067
13	0	0	3,349	3,349	97,642	94,293
14	0	0	3,349	3,349	97,642	94,293
15	0	0	3,349	3,349	97,642	94,293
16	0	0	3,349	3,349	95,416	92,067
17	0	0	3,349	3,349	97,642	94,293
18	0	0	3,349	3,349	97,642	94,293
19	0	0	3,349	3,349	97,642	94,293
20	0	0	3,349	3,349	95,416	92,067
21	0	0	3,349	3,349	97,642	94,293
22	0	0	3,349	3,349	97,642	94,293
23	0	0	3,349	3,349	97,642	94,293
24	0	0	3,349	3,349	95,416	92,067
25	0	0	3,349	3,349	97,642	94,293

App.8.2.5-2 Economic Profitability

*** Net Present Value and Benefit-Cost Ratio ***

Year	Cost	10%		Benefits	10%	
		D.F.	Present Worth		D.F.	Present Worth
1	32,054	1.000	32,054	0	1.000	0
2	350,830	0.909	318,904	6,409	0.909	5,826
3	179,927	0.826	148,620	40,564	0.826	33,506
4	3,349	0.751	2,515	64,779	0.751	48,649
5	3,349	0.683	2,287	97,642	0.683	66,689
6	3,349	0.621	2,080	97,642	0.621	60,636
7	3,349	0.564	1,889	97,642	0.564	55,070
8	3,349	0.513	1,718	95,416	0.513	48,948
9	3,349	0.467	1,564	97,642	0.467	45,599
10	3,349	0.424	1,420	97,642	0.424	41,400
11	3,349	0.386	1,293	97,642	0.386	37,690
12	3,349	0.350	1,172	95,416	0.350	33,396
13	3,349	0.319	1,068	97,642	0.319	31,148
14	3,349	0.290	971	97,642	0.290	28,316
15	3,349	0.263	881	97,642	0.263	25,680
16	3,349	0.239	800	95,416	0.239	22,804
17	3,349	0.218	730	97,642	0.218	21,286
18	3,349	0.198	663	97,642	0.198	19,333
19	3,349	0.180	603	97,642	0.180	17,576
20	3,349	0.164	549	95,416	0.164	15,648
21	3,349	0.149	499	97,642	0.149	14,549
22	3,349	0.135	452	97,642	0.135	13,182
23	3,349	0.123	412	97,642	0.123	12,010
24	3,349	0.112	375	95,416	0.112	10,687
25	3,349	0.102	342	97,642	0.102	9,959
(Total)			523,861			719,587

Net Present Value at: 10% 195,726

Benefit-Cost Ratio at: 10% 1.37

*** Internal Rate of Return ***

Year	Incremental Benefits	14%		Incremental Benefits	15%	
		D.F.	Present Worth		D.F.	Present Worth
1	-32,054	1.000	-32,054	1.000	-32,054	
2	-344,421	0.877	-302,058	0.870	-299,647	
3	-139,363	0.769	-107,171	0.756	-105,359	
4	61,430	0.675	41,465	0.658	40,420	
5	94,293	0.592	55,821	0.572	53,935	
6	94,293	0.519	48,938	0.497	46,863	
7	94,293	0.456	42,997	0.432	40,734	
8	92,067	0.400	36,826	0.376	34,617	
9	94,293	0.351	33,096	0.327	30,833	
10	94,293	0.308	29,042	0.284	26,779	
11	94,293	0.270	25,459	0.247	23,290	
12	92,067	0.237	21,819	0.215	19,794	
13	94,293	0.208	19,612	0.187	17,632	
14	94,293	0.182	17,161	0.163	15,369	
15	94,293	0.160	15,086	0.141	13,295	
16	92,067	0.140	12,889	0.123	11,324	
17	94,293	0.123	11,598	0.107	10,089	
18	94,293	0.108	10,183	0.093	8,769	
19	94,293	0.095	8,957	0.081	7,637	
20	92,067	0.083	7,641	0.070	6,444	
21	94,293	0.073	6,883	0.061	5,751	
22	94,293	0.064	6,034	0.053	4,997	
23	94,293	0.056	5,280	0.046	4,337	
24	92,067	0.049	4,511	0.040	3,682	
25	94,293	0.043	4,054	0.035	3,300	
(Total)			24,069		-7,169	

Internal Rate of Return : 14.77

App. 8.2.7-1 Irrigation Block-wise Crop Incomes (1/4)

Irrigation Block	Crops	FAVO				FW (9 Months Irrigation)				Net Income	
		Cropped Area (ha)	Unit Return (Rs./1,000)	Gross Income (Rs./1,000)	Per Capita Net Income (Rs./1,000)	Cropped Area (ha)	Unit Return (Rs./1,000)	Gross Income (Rs./1,000)	Per Capita Net Income (Rs./1,000)	Per Household (Rs./1,000)	Per Capita (Rs./1,000)
A	Paddy	23.63	24,036	568	10,909	23.3	50,075	1,167	34,965	815	198
	Maize	0	17.68	0	0	9.52	34	317	20,133	0	0
	Wheat	0	9.52	0	0	0	28	0	0	0	0
	Subtotal	23.63	24,036	568	10,909	32.82	1,464	1,464	0	0	0
	Others	0	8.8	0	0	0	0	0	52,602	735	49.66
B	Vegetables	0	0	0	0	15.98	79,875	1,117	17.8	17.8	17.8
	Total	23.63	24,036	568	10,909	48.8	1,464	1,464	34,965	1,778	6.39
	Paddy	24.48	24,036	588	10,909	48	50,075	2,404	20,133	347	0
	Maize	21.6	17.68	382	8,424	19.2	34	653	0	0	0
	Millet	16.8	12.69	213	8,887	0	0	0	0	0	0
C	Wheat	2.4	9.52	23	1.82	4.00	0	0	0	0	0
	Subtotal	65.28	12.06	12.06	62.00	67.2	3,057	3,057	0	0	0
	Others	2.4	8.8	21	7.4	18.00	0	0	0	0	0
	Vegetables	0	0	0	0	24.8	79,875	2,300	52,602	1,515	8.74
	Total	67.68	24,036	609	10,909	96.0	1,464	1,464	34,965	2,598	8.08
D	Paddy	26.74	24,036	643	10,909	74.3	50,075	3,721	0	0	0
	Upland Paddy	1.49	18,058	27	9,743	15.00	0	0	0	0	0
	Maize	37.15	17.68	657	8,424	313.00	34	1,010	20,133	598	0
	Millet	22.29	12.69	283	8,887	198.00	0	0	0	0	0
	Wheat	0	9.52	0	1.82	0.00	0	0	0	0	0
E	Subtotal	87.67	16.10	16.10	818.00	104.02	4731	4,731	0	0	0
	Others	11.89	8.8	105	7.4	88.00	0	0	0	0	0
	Vegetables	0	0	0	0	44.58	79,875	3,561	52,602	2,345	18.66
	Total	99.56	24,036	1715	10,909	148.6	1,464	1,464	34,965	5,541	3
	Paddy	19.53	24,036	469	10,909	213.00	3,281	3,281	0	0	0
F	Upland Paddy	4.07	18,058	73	9,743	40.00	0	0	0	0	0
	Maize	52.91	17.68	935	8,424	446.00	34	554	20,133	328	0
	Millet	30.12	12.69	382	8,887	286.00	0	0	0	0	0
	Wheat	0	9.52	0	1.82	0.00	0	0	0	0	0
	Subtotal	106.63	16.10	1,856	1,856	667.00	3,815	3,815	0	0	0
G	Others	8.14	8.8	72	7.4	60.00	0	0	0	0	0
	Vegetables	0	0	0	0	81.4	79,875	6,502	52,602	4,282	63.77
	Total	114.77	24,036	1,931	10,909	149.8	1,464	1,464	34,965	6,897	10.29
	Paddy	34.39	24,036	827	10,909	375.00	4,174	4,174	0	0	0
	Upland Paddy	3.12	18,058	56	9,743	30.00	0	0	0	0	0
H	Maize	70.86	17.68	1,253	8,424	597.00	34	769	20,133	420	0
	Millet	14.59	12.69	185	8,887	130.00	0	0	0	0	0
	Wheat	10.42	9.52	99	1.82	19.00	0	0	0	0	0
	Subtotal	133.34	16.10	2,420	1,856	743.00	4,883	4,883	0	0	0
	Others	18.23	8.8	165	7.4	139.00	0	0	0	0	0
I	Vegetables	0	0	0	0	104.2	79,875	8,323	52,602	5,481	70.53
	Total	151.57	24,036	2,585	10,909	857.2	1,464	1,464	34,965	8,964	12.52
	Paddy	0	24,036	0	0	0	0	0	0	0	0
	Upland Paddy	2.1	18,058	38	9,743	20.00	0	0	0	0	0
	Maize	18.6	17.68	329	8,424	157.00	34	508	20,133	301	0
J	Millet	5.1	12.69	65	8,887	45.00	0	0	0	0	0
	Wheat	0	9.52	0	1.82	0.00	0	0	0	0	0
	Subtotal	25.8	16.10	432	1,856	222.00	0	0	0	0	0
	Others	13.2	8.8	116	7.4	96.00	0	0	0	0	0
	Vegetables	0	0	0	0	29.9	79,875	2,388	52,602	1,573	19.43
Total	39	24,036	548	10,909	320.00	3,645	3,645	0	0	0	

App. 8.2.7-1 Irrigation Block-wise Crop Incomes (2/4)

Irrigation Block	Crop	Chopped Area (ha)	Unit Return		Gross Income		Per Capita		Net Income	
			(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)
PW (12 Months Irrigation)										
A	Paddy	23.3	50,075	1167	34,965	115	34,965	188	0	1001
	Maize	9.32	34	317	20,133	0	20,133	0	0	0
	Wheat	9.32	24	261	0	0	0	0	0	0
	Sub-total	41.94		1745						
	Onwards	0		0						
	Vegetables	27.96	79,875	2233	52,602	1471	52,602	2474	70,649	91
Total	69.9	113.66	13,35	14.63	17.20	18.91	19.40	20.13	20.58	11.50
B	Paddy	44	50,075	2604	34,965	1678	34,965	387	0	0
	Maize	19.2	34	653	20,133	0	20,133	0	0	0
	Miller	0	0	0	0	0	0	0	0	0
	Wheat	19.2	0	0	0	0	0	0	0	0
	Sub-total	86.4		3057						
	Onwards	0		0						
Total	57.6	79,875	4601	52,602	3070	52,602	3070	82.18	12.58	11.50
C	Paddy	74.3	50,075	3721	34,965	2598	34,965	2598	0	0
	Upland Paddy	0	0	0	0	0	0	0	0	0
	Maize	29.72	34	1010	20,133	598	20,133	598	0	0
	Miller	0	0	0	0	0	0	0	0	0
	Wheat	29.72	0	0	0	0	0	0	0	0
	Sub-total	133.74		4731						
Onwards	0		0							
Total	89.16	79,875	7122	52,602	4690	52,602	4690	76.55	4.28	3.90
D	Paddy	22.9	50,075	3261	34,965	2277	34,965	2277	0	0
	Upland Paddy	0	0	0	0	0	0	0	0	0
	Maize	16.24	34	554	20,133	328	20,133	328	0	0
	Miller	0	0	0	0	0	0	0	0	0
	Wheat	32.56	0	0	0	0	0	0	0	0
	Sub-total	113.96		3815						
Onwards	0		0							
Total	170.24	79,875	10403	52,602	6451	52,602	6451	87.56	14.13	12.90
E	Paddy	24.2	50,075	4174	34,965	2915	34,965	2915	0	0
	Upland Paddy	0	0	0	0	0	0	0	0	0
	Maize	20.04	34	709	20,133	420	20,133	420	0	0
	Miller	0	0	0	0	0	0	0	0	0
	Wheat	41.68	0	0	0	0	0	0	0	0
	Sub-total	145.94		4883						
Onwards	0		0							
Total	166.72	79,875	13317	52,602	8770	52,602	8770	96.84	17.19	15.70
F	Paddy	14.95	50,075	749	34,965	523	34,965	523	0	0
	Upland Paddy	0	0	0	0	0	0	0	0	0
	Maize	14.95	34	508	20,133	301	20,133	301	0	0
	Miller	0	0	0	0	0	0	0	0	0
	Wheat	11.96	0	0	0	0	0	0	0	0
	Sub-total	41.86		1257						
Onwards	0		0							
Total	47.84	79,875	2421	52,602	2516	52,602	2516	33.60	0.078	0.078

App. 8.2.7-1 Irrigation Block-wise Crop Incomes (344)

Irrigation Block	Crop	FMO										FW (9 Months Irrigation)											
		Cropped Area		Unit Return		Gross Income		Per Household		Per Capita		Gross Income		Per Household		Per Capita		Gross Income		Per Household		Per Capita	
		(ha)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(ha)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)	(Rs./1,000)
G	Paddy	0	24,036	0	10,909	0.00	0.00	0.00	0.00	0.00	25.75	30,075	1289	34,965	940	0	0	0	0	0	0	0	0
	Upland Paddy	5.68	18,058	103	9,743	55.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Maize	27.96	17,68	693	8,424	235.00	34	876	0	0	25.75	34	0	20,133	518	0	0	0	0	0	0	0	
	Miller	18.06	12,69	229	8,887	161.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Wheat	0	9.52	0	1.82	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	51.6	8.8	925	7.4	141.00	0.00	0	0	0	51.5	21.65	2165	34,965	1418	0	0	0	0	0	0	0	0
H	Vegetables	19.09	8.8	168	7.4	0.00	0.00	0.00	0.00	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	70.69	0	903	1.36	4.66	0.81	0.81	0.81	51.5	79,875	4114	52,602	2709	4127	16.65	5.76	5.76	5.76	5.76	5.76	5.76	
	Paddy	6.92	24,036	166	10,909	75.00	1733	0	0	34.6	50,075	1733	34,965	1210	0	0	0	0	0	0	0	0	
	Maize	25.95	17,68	459	8,424	219.00	34	471	0	0	13.94	34	0	20,133	179	0	0	0	0	0	0	0	
	Miller	6.65	12,69	110	8,887	77.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	41.52	0	735	37.04	0.00	0.00	0.00	0.00	48.44	27.04	27.04	1189	0	0	0	0	0	0	0	0	0	0
I	Vegetables	4.84	8.8	43	7.4	36.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	46.36	0	778	0.89	5.02	0.46	0.46	0.46	20.76	79,875	1658	52,602	1092	2481	16.01	2.82	2.82	2.82	2.82	2.82	2.82	
	Paddy	7.39	18,058	133	9,743	171.26	408	0	0	11.35	35.06	408	23,175	268	0	0	0	0	0	0	0	0	
	Maize	30.03	17,68	531	8,424	252.00	34	785	0	23.1	34	0	20,133	465	0	0	0	0	0	0	0	0	
	Miller	6.93	12,69	88	8,887	62.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	44.35	0	762	48.26	0.00	0.00	0.00	0.00	34.65	11.80	11.80	733	0	0	0	0	0	0	0	0	0	
J	Vegetables	15.25	8.8	134	7.4	115.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	59.6	0	886	1.21	6.66	0.62	0.62	0.62	57.75	79,875	4613	52,602	3038	3771	28.35	5.14	5.14	5.14	5.14	5.14	5.14	
	Paddy	3.98	18,058	72	9,743	39.00	498	0	0	14.2	35.06	498	23,175	329	0	0	0	0	0	0	0	0	
	Maize	36.35	17,68	643	8,424	306.00	34	966	0	28.4	34	0	20,133	572	0	0	0	0	0	0	0	0	
	Miller	8.52	12,69	108	8,887	76.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	48.85	0	823	42.10	0.00	0.00	0.00	0.00	42.6	14.64	14.64	733	0	0	0	0	0	0	0	0	0	
K	Vegetables	24.99	8.8	220	7.4	185.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	73.84	0	1043	3.37	20.45	1.97	1.97	1.97	113.6	79,875	5671	52,602	3735	4656	90.9	15.05	15.05	15.05	15.05	15.05	15.05	
	Paddy	5.53	18,058	100	9,743	34.00	438	0	0	19.75	35.06	438	23,175	458	0	0	0	0	0	0	0	0	
	Maize	30.56	17,68	494	8,424	426.00	34	1543	0	39.5	34	0	20,133	795	0	0	0	0	0	0	0	0	
	Miller	11.85	12,69	150	8,887	105.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	67.94	0	1144	42.10	0.00	0.00	0.00	0.00	59.25	20.35	20.35	1253	0	0	0	0	0	0	0	0	0	
L	Vegetables	34.76	8.8	308	7.4	257.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	102.7	0	1450	3.52	27.14	2.04	2.04	2.04	94.75	79,875	7684	52,602	5194	6427	80.54	15.65	15.65	15.65	15.65	15.65	15.65	
	Paddy	74.53	24,036	1791	10,909	815.00	1311	0	0	102.8	30,075	5148	34,965	3594	0	0	0	0	0	0	0	0	
	Maize	60.4	17,68	1068	8,424	509.00	34	1311	0	36.55	34	0	20,133	776	0	0	0	0	0	0	0	0	
	Miller	10.28	12,69	130	8,887	91.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	25.7	9.52	245	1.82	47.00	0	0	0	64.25	28	0	16,955	1070	0	0	0	0	0	0	0	0	
M	Vegetables	21.13	8.8	204	7.4	171.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	194.04	0	2438	2.48	15.01	1.18	1.18	1.18	176.9	79,875	14870	52,602	6463	14903	65.08	10.77	10.77	10.77	10.77	10.77	10.77	
	Paddy	212.22	0	3100	2.35	2315.00	0	0	0	472.18	30,075	23666.00	16510.00	34,965	0	0	0	0	0	0	0	0	
	Maize	432.27	0	602.00	45.5	1955.00	0	0	0	45.5	34	1955.00	1055.00	0	0	0	0	0	0	0	0	0	
	Miller	153.19	0	1943.00	136.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	869.56	0	15655.00	7714.00	0	0	0	0	64.25	1799.00	1799.00	1070.00	0	0	0	0	0	0	0	0	0	
N	Vegetables	176.44	0	1554.00	1306.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	1046	0	17210.00	11.91	1.97	1.03	1.03	1.03	782.52	0	62503.00	41162.00	0	0	0	0	0	0	0	0	0	
	Paddy	212.22	0	3100	2.35	2315.00	0	0	0	472.18	30,075	23666.00	16510.00	34,965	0	0	0	0	0	0	0	0	
	Maize	432.27	0	602.00	45.5	1955.00	0	0	0	45.5	34	1955.00	1055.00	0	0	0	0	0	0	0	0	0	
	Miller	153.19	0	1943.00	136.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	869.56	0	15655.00	7714.00	0	0	0	0	64.25	1799.00	1799.00	1070.00	0	0	0	0	0	0	0	0	0	
O	Vegetables	176.44	0	1554.00	1306.00	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Total	1046	0	17210.00	11.91	1.97	1.03	1.03	1.03	782.52	0	62503.00	41162.00	0	0	0	0	0	0	0	0	0	
	Paddy	212.22	0	3100	2.35	2315.00	0	0	0	472.18	30,075	23666.00	16510.00	34,965	0	0	0	0	0	0	0	0	
	Maize	432.27	0	602.00	45.5	1955.00	0	0	0	45.5	34	1955.00	1055.00	0	0	0	0	0	0	0	0	0	
	Miller	153.19	0	1943.00	136.2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
	Sub-total	869.56	0	15655.00	7714.00	0	0	0	0	64.25	1799.00	1799.00	1070.00	0	0	0	0	0	0	0	0	0	

App. 8.2.7-1 Irrigation Block-wise Crop Incomes (4/4)

Irrigation Block	Crops	Cropped Area (ha)	FW (12 Months Irrigation)			Net Income (Rs.1,000)	Per Household	Per Capita	Net Income (Rs.1,000)	Per Household	Per Capita
			Chi Return (Rs.1,000)	Gross Income (Rs.1,000)	Unit Return (Rs.1,000)						
G	Paddy	25.75	50,075	1289	34,965	900					
	Upland Paddy	0	0	0	0	0					
	Maize	25.75	34	876	20,133	518					
	Millet	0	0	0	0	0					
	Wheat	20.6	0	0	0	0					
	Sub-total	72.1	0	2165	1414						
	Chickoo	0	0	0	0	0					
Vegetables	82.4	79,875	6582	4374	52,602	4374					
Total	154.5	8747	77.67	12.21	11.15	5752	51.08	8.03	7.33		
H	Paddy	34.6	50,075	1733	34,965	1210					
	Upland Paddy	0	0	0	0	0					
	Maize	13.84	34	471	20,133	279					
	Millet	0	0	0	0	0					
	Wheat	13.84	0	0	0	0					
	Sub-total	62.24	2794	0	0	1489					
	Chickoo	0	0	0	0	0					
Vegetables	41.52	79,875	3316	2184	52,602	2184					
Total	103.8	5520	35.61	6.24	5.75	3673	23.7	4.18	3.81		
I	Paddy	11.55	35,06	405	23,175	264					
	Upland Paddy	0	0	0	0	0					
	Maize	23.1	34	785	20,133	465					
	Millet	0	0	0	0	0					
	Wheat	0	0	0	0	0					
	Sub-total	34.65	1190	0	0	733					
	Chickoo	0	0	0	0	0					
Vegetables	103.95	79,875	8903	5468	52,602	5468					
Total	138.6	9493	71.34	12.95	11.82	6501	46.62	8.46	7.72		
J	Paddy	14.2	35,06	498	23,175	329					
	Upland Paddy	0	0	0	0	0					
	Maize	28.4	34	966	20,133	572					
	Millet	0	0	0	0	0					
	Wheat	0	0	0	0	0					
	Sub-total	42.6	1464	0	0	901					
	Chickoo	0	0	0	0	0					
Vegetables	127.4	79,875	10204	6723	52,602	6723					
Total	170.4	11672	224.86	37.4	34.64	7624	149.49	24.75	22.62		
K	Paddy	19.25	35,06	692	23,175	456					
	Upland Paddy	0	0	0	0	0					
	Maize	39.5	34	1343	20,133	795					
	Millet	0	0	0	0	0					
	Wheat	0	0	0	0	0					
	Sub-total	59.25	2035	0	0	1253					
	Chickoo	0	0	0	0	0					
Vegetables	177.75	79,875	14198	9350	52,602	9350					
Total	237	16233	225.46	39.4	35.99	10903	147.26	25.74	23.51		
L	Paddy	102.4	50,075	5148	34,965	1594					
	Upland Paddy	0	0	0	0	0					
	Maize	34.55	34	1311	20,133	776					
	Millet	0	0	0	0	0					
	Wheat	64.25	24	1799	16,655	1070					
	Sub-total	205.6	8258	0	0	5460					
	Chickoo	0	0	0	0	0					
Vegetables	179.9	79,875	14370	9463	52,602	9463					
Total	385.5	22628	94.41	16.35	14.93	14903	45.08	10.77	9.83		
M	Paddy	472.18	23646.00	16510.00	16510.00						
	Upland Paddy	45.5	1595.00	1055.00	1055.00						
	Maize	279.45	9503.00	5627.00	5627.00						
	Millet	0	0.00	0.00	0.00						
	Wheat	243.13	2060.00	1070.00	1070.00						
	Sub-total	1040.26	36804.00	24262.00	24262.00						
	Chickoo	0	0.00	0.00	0.00						
Vegetables	1232.84	98474.00	64850.00	64850.00							
Total	2273.1	135278.00	93.62	15.47	14.13	89112.00	61.67	10.19	9.31		

App. 8.2.8-1 O & M Cost Payment Capacity

Item	Unit	Marginal	Small	Medium	Large	Average
(1) Incremental Net Income						
- 9 Months Condition	Rs/year	8,981	27,280	57,096	121,028	39,175
- 12 Months Condition	Rs/year	13,199	40,407	84,607	177,360	57,399
(2) O & M Cost Borne by Beneficiaries						
1) Gravity Irrigation						
- 9 Months Condition	Rs/year	120	370	780	1,600	524
- 12 Months Condition	Rs/year	150	463	975	2,000	655
2) Pump Irrigation						
- 9 Months Condition	Rs/year	780	2,405	5,070	10,400	3,406
- 12 Months Condition	Rs/year	1,080	3,330	7,020	14,400	4,716
(2)/(1)						
1) Gravity Irrigation						
- 9 Months Condition	%	1.3	1.4	1.4	1.3	1.3
- 12 Months Condition	%	1.1	1.1	1.2	1.1	1.1
2) Pump Irrigation						
- 9 Months Condition	%	8.7	8.8	8.9	8.6	8.7
- 12 Months Condition	%	8.2	8.2	8.3	8.1	8.2

App. 8.2.8-2 Capital Cost Payment Capacity

Item	Unit	Marginal	Small	Medium	Large	Average
(1) Incremental Net Income						
1) Gravity Irrigation						
- 9 Months Condition	Rs/year	8,861	26,910	56,316	119,428	38,651
- 12 Months Condition	Rs/year	13,049	39,944	83,632	175,360	56,744
2) Pump Irrigation						
- 9 Months Condition	Rs/year	8,201	24,875	52,026	110,628	35,769
- 12 Months Condition	Rs/year	12,119	37,077	77,587	162,960	52,683
(2) Capital Cost Payment						
- Labour (2 years), or	Rs/year	7,867	24,257	51,136	104,894	34,353
- Loan (20 years at 5%)	md/2 years	112	344	731	1,498	491
	Rs/year	631	1,946	4,103	8,417	2,757
(3) Repayment of Loan (2)/(1)						
1) Gravity Irrigation						
- 9 Months Condition	%	7.1	7.2	7.3	7.0	7.1
- 12 Months Condition	%	4.8	4.9	4.9	4.8	4.9
2) Pump Irrigation						
- 9 Months Condition	%	7.7	7.8	7.9	7.6	7.7
- 12 Months Condition	%	5.2	5.2	5.3	5.2	5.2

Note: 1) The net farm income is calculated subtracting production cost and O & M cost from gross farm income.

2) The annual capital cost payment consisting of sum of the principal and interest is calculated based on twenty year repayment period at 5% interest rate.

App. 8.2.9-1 Incremental Income of Seed Sales Outlets

Crops	FW/O	FW (9 Months Irrigation)			FW (12 Months Irrigation)		
	Input Volume (mt)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)
Paddy	13.8	26.0	12.2	38.2	26.0	12.2	38.2
Upland Paddy	1.5	2.5	1.0	3.5	2.5	1.0	3.5
Maize	11.3	5.6	-5.7	-1.2	5.6	-5.7	-1.2
Millet	3.0	0	-3.0	-2.1	0	-3.0	-2.1
Wheat	4.6	6.4	1.8	6.4	24.3	19.7	70.0
OFCs (Niger)	3.5	0	-3.5	-6.3	0	-3.5	-6.3
Vegetables	0	978.9	978.9	6,313.9	1,542.3	1,542.3	9,947.8
Total	37.7	1,019.4	981.7	6,352.4	1,600.7	1,563.0	10,049.9

App. 8.2.9-2 Incremental Income of Fertilizer Sales Outlets

Crops	FW/O	FW (9 Months Irrigation)			FW (12 Months Irrigation)		
	Input Volume (mt)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)
Paddy	72.2	141.6	69.4	16.8	141.6	69.4	16.8
Upland Paddy	6.7	13.7	7.0	2.5	13.7	7.0	2.5
Maize	129.6	83.8	-45.8	-12.7	83.8	-45.8	-12.7
Millet	23.0	0	-23.0	-4.5	0	23.0	-4.5
Wheat	11.5	19.3	7.8	2.1	72.9	61.4	16.5
OFCs (Niger)	0	0	0	0	0	0	0
Vegetables	0	254.3	254.3	73.5	400.7	400.7	115.8
Total	243.0	512.7	269.7	77.7	712.7	469.7	134.4

App. 8.2.9-3 Incremental Income of Agro-chemical Sales Outlets

Crops	FW/O	FW (9 Months Irrigation)			FW (12 Months Irrigation)		
	Input Volume (liter)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)	Input Volume (mt)	Increment (mt)	Incremental Income (Rs.1,000)
Paddy	74.3	165.3	91.0	7.7	165.3	91.0	7.7
Upland Paddy	11.7	15.9	4.2	0.4	15.9	4.2	0.4
Maize	0	97.8	97.8	8.3	97.8	97.8	8.3
Millet	0	0	0	0	0	0	0
Wheat	0	22.5	22.5	1.9	85.1	85.1	7.2
OFCs (Niger)	0	0	0	0	0	0	0
Vegetables	0	1,226.2	1,226.2	104.2	1,931.9	1,931.9	164.2
Total	86.0	1,527.7	1,441.7	122.5	2,296.0	2,210.0	187.8

App.8.2.9-4 Incremental Income of Cereal Collectors

Crops	F/W (9 Months Irrigation)		F/W (12 Months Irrigation)	
	Kathmandu Markets	Incremental Income	Kathmandu Markets	Incremental Income
	(mt)	(Rs.1,000)	(mt)	(Rs.1,000)
Paddy	428	428	487	487
Maize	94	47	231	116
Wheat	54	54	439	439
Total	576	529	1,157	1,042

App.8.2.9-5 Incremental Income of Millers

Crops	FW (9 Months Irrigation)		Incremental Income			FW (12 Months Irrigation)		Incremental Income		
	Local Markets	Kathmandu Markets	Local Markets	Kathmandu Markets	Total	Local Markets	Kathmandu Markets	Local Markets	Kathmandu Markets	Total
	(mt)	(mt)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)	(mt)	(mt)	(Rs.1,000)	(Rs.1,000)	(Rs.1,000)
Paddy	497.0	428.0	248.5	214.0	462.5	497.0	487.0	248.5	243.5	492.0
Maize	191.0	94.0	191.0	94.0	285.0	191.0	231.0	191.0	231.0	422.0
Wheat	129.0	54.0	129.0	54.0	183.0	129.0	439.0	129.0	439.0	568.0
Total	817.0	576.0	568.5	362.0	930.5	817.0	1,157.0	568.5	913.5	1,482.0

App. 8.2.9-6 Incremental Income of Agricultural Wage Laborers

Crops	FW/O	FW (9 Months Irrigation)			FW (12 Months Irrigation)		
	Input Volume (md)	Input Volume (md)	Increment (md)	Incremental Income (Rs.1,000)	Input Volume (md)	Increment (md)	Incremental Income (Rs.1,000)
Paddy	31,835	70,828	38,993	1,560	70,828	38,993	1,560
Upland Paddy	5,006	6,826	1,820	73	6,826	1,820	73
Maize	43,227	27,945	-15,282	-611	27,945	-15,282	-611
Millet	18,383	0	-18,383	-735	0	-18,383	-735
Wheat	3,082	5,140	2,058	82	19,451	16,369	655
OFCs (Niger)	17,644	0	-17,644	-706	0	-17,644	-706
Vegetables	0	187,804	187,804	7,512	295,882	295,882	11,835
Total	119,177	298,543	179,366	7,175	420,932	301,755	12,071

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