

## **FINAL REPORT**

# **STUDY ON MANAGEMENT AND COSTS OF OPERATION AND MAINTENANCE OF IRRIGATION SYSTEMS UNDER THE IRRIGATION DEPARTMENT, SRI LANKA**

### **APPENDICES AND MAPS Volume 2**

**Submitted to**

**INTERNATIONAL IRRIGATION MANAGEMENT INSTITUTE  
SRI LANKA FIELD OPERATIONS**

**COLOMBO, SRI LANKA**

**BY**

**TEAMS (PVT) LTD**

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## STUDY ON MANAGEMENT AND COSTS OF OPERATION AND MAINTENANCE OF IRRIGATION SYSTEMS UNDER THE IRRIGATION DEPARTMENT, SRI LANKA

The study reported in this volume was carried out by TEAMS (Pvt) Ltd under a research agreement with IIMI. The study was funded by the United States Agency for International Development (USAID) under a Cooperative Agreement between USAID and IIMI (Agreement Number 383-0080-A-PG-7040-00). Under this Agreement, IIMI is responsible for managing the applied research component of the Irrigation Systems Management (ISM) Project. Overall guidance and coordination is done through the ISM Research Advisory Committee, chaired by the Director of the Irrigation Management Division, and with the assistance of the ISM Project Director.

This study examines the management of O&M, especially maintenance, on five major schemes. Based on the research, the study attempts to identify alternative levels of maintenance of systems, recommends one particular level, and analyzes the costs involved. The study also analyzes the present system for planning, budgeting, allocating funds, implementing O&M, and monitoring and evaluating the results. Important gaps in the present management system are clearly identified; and a number of useful recommendations are made for improvements.

This Final Report has been prepared taking into consideration the comments and suggestions made by IIMI and by members of the ISM Project Research Advisory Committee at a meeting several months ago. Although there may still be sections that could be further improved, nevertheless the report is a very useful pioneering attempt to address a very difficult and complex problem. The report would provide a basis for further analysis and work, to assist the Department in developing more effective management systems for O&M.

IIMI would like to express its appreciation to the Irrigation Department for having requested this study initially, and having cooperated fully in its implementation. We believe that the results will be useful to the Department as it works to strengthen its capacity to improve the performance of irrigation systems in Sri Lanka. We would also like to thank the Research Advisory Committee members for their support and comments on previous drafts. We are very appreciative of USAID's support, including its close involvement in guiding and evaluating the results. I am also grateful to the Chairman of TEAMS, Professor Wimal Gunawardena, for his patience with and responsiveness to our constantly asking for further analysis, or additional data, sometimes beyond the original terms of reference.

The views expressed in this report are those of the authors (TEAMS) alone. They do not necessarily represent the views of IIMI or of the agencies and individuals who have cooperated in this study.

Sincerely,

Douglas J Merrey  
Head, Sri Lanka Field Operations

**Please Note:** This report has been produced in two volumes. Volume 1 contains the main report. Volume 2 contains the appendices. We have made fewer copies of the second volume to control costs, but it will be available at the IIMI Headquarters Library.

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Typical O&M Costs per Annum for  
Granting Irrigation Works (1982 & 1989 prices)

Annexure I  
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DESCRIPTION	UNIT	QUANTITY	1982(Prices)	1982	1989(prices)	1989
			IN RS.	IN RS.	IN RS.	IN RS.
<b>A LABOUR</b>						
1. To attendants including + 10% to cover Headworks	ac	1	25.4	25.4	45.5	45.5
2. Weeding	sq	20	1.14	22.8	1.95	39
3. Removal of salvinis	sq	2	2.38	4.76	4.6	9.2
4. Desilting	cu	0.5	57	28.5	72.5	36.25
5. Filling scourrs	md	0.15	28.5	4.275	85.3	12.795
6. Repairs to structures	md	0.1	62.39	6.239	90.5	9.05
Spreading gravel	sq	0.2	2.85	0.57	32	6.4
 Total for A				92.544		158.195
<b>B SUPERVISION</b>						
Work Supervisor	ac	1	5.04	5.04	10.08	10.08
<b>C DRIVERS AND OPERATION</b>						
1. Drivers, Jeeps, lorries, tippers @ 4% of labour cost in A	ac	1	3.7	3.7	8	8
2. Operation of farm Labour cost in A	ac	1	1.8	1.8	8	8
<b>D TRAVELLING &amp; COMBINED ALLOWANCE</b>						
1. Work supervisor-3600 mls @ Rs.1/- plus 48 days @ Rs.45/-	ac	1	2.3	2.3	2.5	2.5
2. To attendant - Bicycle allowance @ Rs.16/- per month	ac	1	0.38	0.38	0.6	0.6
<b>E FUELS AND REPAIRS TO VEHICLES</b>						
1. Fuel for jeeps, lorries, tippers and farm tractors	gl	0.25	28	7	45	11.25
2. Repairs to vehicles @ 50% of fuel cost	ac	1	3.5	3.5	7	7
3. Overtime for drivers and operators @ 5% item 1	ac	1	0.35	0.35	0.6	0.6
<b>F PURCHASE OF MATERIALS AND TOOLS</b>						
1. Cement	bg	0.1	82.75	8.275	115	11.5
2. Sand	cu	0.005	216	1.08	120	0.8
3. Metal	cu	0.005	526	2.63	667	3.335
4. Rubble	cu	0.005	461	2,305	350	1.75
5. Gravel	cu	0.05	228	11.4	200	10
6. Paints	gl	0.005	325	1,625	330	1.65
7. Gunny bags	bag	0.15	15	2.25	25	3.75
8. Cane baskets	no	0.05	8	0.4	14	0.7
9. Miscellaneous of materials @ 5% of items 1 to 8	ac	1	1.5	1.5	1.7	1.7
10. For replacement of tools @ 5% of items 1 to 8	ac	1	1.5	1.5	2	2
<b>G PHYSICAL CONTINGENCY</b> at 5% of items A to F	ac	1	7.48	7.48	12.5	12.5
Base cost for O&M per ac per annum-total of Items A to G				64.515		97.515
				157.059		255.71

### List of Maps

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- Figure 2. Ridi Bendi Ela Scheme, North West Province
- Figure 3. Gal Oya Left Bank Scheme, Ampara and Batticaloa Districts
- Figure 3A. Gal Oya Left Bank Main Canal: Gonagolla Branch Canal
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- Figure 5. Mahakandarawa Tank, Anuradhapura

Description	Annual Salary in rupees	no	1982	1989(prices)	no	1989
			Amount in Rs	Annual Salary in rupees		Amount in Rs
Deputy Director	38000	1	38000	86640	1	86640
Senior Irrigation Engineer	25000	1	25000	57000	1	57000
Irrigation Engineer	22000	1	22000	50160	1	50160
Accounting Officer	20000	1	20000	45600	1	45600
Head Clerk	24000	1	24000	54720	1	54720
Clerk Typists	12500	1	12500	28500	1	28500
Minor Employees	10500	12	126000	287280	12	3447360
Drawing office assistants	8000	5	40000	91200	5	456000
Draughtsmen	20500	1	20500	46740	1	46740
Divisional assistants	10500	5	52500	119700	5	598500
(Senior technical Assista.	18000		-----	-----		-----
			380500			4871220

	UNIT	QUANTITY	UNIT RATE IN RS (1982)	AMOUNT RS (1982)	UNIT RATE IN RS (1989)	AMOUNT RS(1989)
1. technical assistants	ac	1	2.8	2.8	6.384	6.384
2. Administration & OH of range office	ac	1	4.76	4.76	10.8528	10.8528
3. Administration & OH of Divisional office	ac	1	7.13	7.13	16.2564	16.2564
4. Travelling, combined Allowance (per Diem Expenses), Overtime and repairs @ 20% of items 1 to 3						
5. physical contingency @ 5% of items 1 to 4	ac	1	0.88	0.88	2.0064	2.0064
Administration and OH cost for O&M per ac per annum				18.51		42.2028

#### 1. DEPRECIATION OF VEHICLES AND EQUIPMENT

3Jeeps, 1 lorry and 5 farm Tractor trailers are required form O&M for 1500 acres

Assume: depreciation period is 5 years

Average Investment cost (AIC)=0.6 Capital cost

Depreciation per annum is as below

	1982(PRICES)			1989(PRICES)			1982(prices) unit rate amount in Rs.      Rs.	1989(prices) unit rate amount in Rs.      Rs.
	3Jeeps	1 lorry	5 T/Trailers	3Jeeps	1 lorry	5 T/Trailers		
Fixed cost	90000	47000	155000	180000	94000	310000		
Insurance	2700	1410	4650	5400	2820	9300		
Overhead at 10%	9270	4841	15965	18540	9682	31930		
	101970	53261	175615	203940	10502	351230		
1. Depreciation cost of jeeps				ac	1	6.8	6.8	15.504
2. Depreciation cost of lorry				ac	1	3.55	3.55	8.094
3. Depreciation cost of tractor trailers				ac	1	11.71	11.71	26.6988
4. Depreciation cost of miscellaneous items @5% of 1 to 3				ac	1	1.1	1.1	2.508
5. Contingency at 5% of 1 to 3				ac	1	1.1	1.1	2.508
Depreciation cost for O&M per ac.per annum							24.26	55.3128
TOTAL O&M COST PER AC. PER ANNUM							199.829	353.2256

1/ad=man-day  
a/semi-skilled wage (32.08)      b/Unskilled wage (28.50)      c/Skilled wage(33.89)      Unskilled wage(28.50)

Modified Estimate Format for O & M**I Operation**

1. Salaries and allowances of labourers on operation	mm
2. Salaries and allowances of night watchers for structures	mm
3. O/T for labourers on operation	mh
4. O/T for night watchers for structures	mh
5. Combined allowances for labourers on operation	mm
6. Misc. expenses	allow

**II Maintenance (labour)**

7. Weeding and Light J/C	sq
8. Removal of water plants	sq
9. Desilting	cu
10. Earthwork in filling scours & potholes	cu
11. Repair to structures	
a. Earth excavation in foundations & back fill	cu
b. Concrete	cu
c. RR. Masonry	cu
d. Plastering	sq
f. Laying Hume Pipes	Lft
12. Spreading gravel	cu
13. Salaries and allowances of watchers in field stores	mm
14. O/T of day and night watchers	mh
15. Other Misc : items	allow

**III Maintenance (Materials)**

16. Cement	bags
17. Sand	cu
18. Metal	cu
19. Rubble	cu
20. Gravel	cu
21. Paint	gal
22. Misc. Materials	
a. Hume Pipes	Lft
b. Stop plankes/gates	No
c. Steel	cwt
d. Other items	allow
23. Tools	allow

**IV General Charges**

24. Salaries and allowances of work supervisors on O & M	mm
25. Salaries and allowances of operators & drivers	mm
26. O/T operators and drivers	mh
27. Combined allowances of W.SS & T.AA	mm
28. Combined allowances of operators & drivers	mm
29. Cost of fuel and lubricant	gal
30. Repairs to vehicles	allow
31. Other misc. expenses	allow

**V**

32. Physical Contingencies	allow
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Note: mm = per month; md = per day; mh = per hour; sq = square = 100 square feet; cu = cubic = 10 cubic feet

## O &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) GIRITALA 1985

Annexure 3A

SI Description No.	Full Estimate			Approved			Estimate Headworks	Actual work done and expenditure incurred 1985								
	Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity	Rate	Headworks	Distributory System	Total						
<b>Item I - OPERATION</b>																
1 Salaries & allow. of labour on Op. of Head works	ac	6192	3.41	21115 ac	6192	3.41	21115									
1a Salaries & allow. of labour on Op. of Distrib. System	mm	72	1200	86400 mm	72	1200	1	86400 mm	4	4531	61	19323 mm				
2 Salaries & allowances of Watchers	ac	6192	7.7	47678 ac	6192	7.7	47678	mm		8	9344 mm	66	68478	104		
3 Salaries & allowances of Operators & drivers	ac	12	1100	13200 mm	12	1100	13200	mm				8	9344	112		
4 Salaries & allowances of casual office employees	mm															
4a Salaries & allowances of work supervisors																
5 Travelling & Combined allowances of M.SS + Tech. Asst.	ac	6192	2.3	14242 ac	6192	2.3	14242	mm		1.3	1795	1.3	1795	136		
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	6192	0.38	2353 ac	6192	0.38	2353	mm		34	18475 mm	34	18475	54		
7 O/T & Comb. allowances of operators + drivers	ac	6192	0.48	2972 ac	6192	0.48	2972	mm		32	512 mm	32	512	1		
8 Cost of fuel and lubricant	gal	619	38	23522 gal	620	38.8	23560 gal	100	3800	511	19422 gal	5.4	4203	78		
9 Other misc expenses	allow	item	sum	8518 allow item	allow	item	sum	8480			9622 allow items	611	23222	3		
10 Repairs to Vehicle	allow	item	sum	15000 allow item	allow	item	sum	15000			21366 allow items	21366 sum	21366 sum			
				235000				235000			168009		176340			
<b>Item II MAINTENANCE (LABOUR)</b>																
11 Wedging	sq	123840	1.84	227865 sq	25000	1.84	46000	sq	6675	10680	34141	54626 sq	40418	65306	1.	
12 Removal of Water plants	sq	12384	3.84	47554 sq	3000	3.84	11520	sq		5761	21892	5761	21892	3.		
13 Desilting	cu	3096	55	170280 Cu	500	55.5	27500	Cu		1348	60660	1348	60660	4		
14 E/E in filling scours etc.	ad	920	46.19	42495 ad	300	46.19	13857	Cu	21	2058	522	51151	Cu	543	53214	9
15 Repairs to structures	ad	619	95.98	59412 ad	100	95.98	9598			7969		item	9227			
a) E/E in founds + backfill							0	Cu		9 [900		11 [1100	Cu	20 [2000	10	
b) Concrete							0	Cu		1.3 [858]		4.7 3102	Cu	6 3960	66	
c) R.R. Masonry / bricklining							0	Cu				14.8 3700	Cu	14.8 3700	25	
d) ct. plastering							6	sq		0.7 67]	sq	0.7 67]	sq	0.7 67]	9	
e) Laying H.PP.																
f) Stop planks.																
15a Other Items																
16 Spreading gravel	sq	1238	4.61	5707 sq	300	4.61	2400	allow item		3624		23123	item	26747		
				553313			233700			18120		219426		237546		
<b>Item III MATERIALS</b>																
17 Cement	bags	619	120	74280 bags	120	120	14400	bags	16	1600	41	4150 bags	57	5750	10	
18 Sand	Cu	31	200	6200 Cu	10	200	2000									
19 Metal	Cu	31	592	18352 Cu	10	592	5920									
20 Rubble	Cu	31	438	13578 Cu	10	438	4380									
21 Gravel	Cu	310	212	65720 Cu	75	212	15900									
22 Paints	gal	31	315	9765 gal	10	315	3150	gal	5	1650		5	1650	31		
23 Gunny bags	No.	930	13.5	12555 No.	150	13.5	2025 No.			215	2795 No.	215	2795	1		
24 Cane baskets	No.	310	13	4030 No.	75	13.0	1125 No.			315	3150 No.	315	3150	1		
25 Misc Materials	ac	6192	0.5	3096 ac	6192	0.5	3096				39096		39096			
a) Stop planks								item	[5507			[5507	sum			
B) H.PP.								item	3496			3496	sum			
c) Steel								item	1791			1791	sum			
d) Other items								item	28222]			28222]	sum			
26 Tools	ac	6192	0.5	3096 ac	6192	0.5	3096									
				210672			54092			3250		49191		52441		
27 Physical Contingencies				21015			20052									
GRAND TOTAL				1020000			420000			29701		436626		466327		

Note : ac = acres      sq = square = 100 square feet  
 mm = man months      cu = cube = 100 cubic feet  
 gal = gallons      ad = man days

## O &amp; M COST STUDY - COMPARATIVE STATEMENT (IND) SIRITALA 1985

Annexure 2A

SI Description No.	Unit	Full Estimate			Approved			Estimate Amount(Rs)	Actual work done and expenditure incurred 1985		
		Quantity	Rate	Amount(Rs)	Unit	Quantity	Rate		Headworks	Distributary System	Total
<b>Item I - OPERATION</b>											
1 Salaries & allow. of labour on Co. of Head works	ac	6192	3.41	21113 ac	sq	6191	3.41	21113	sq	18722 sq	15.7
1a Salaries & allow. of labour on Co. of Distrib. System	sq	72	1200	86400 sq	sq	72	1200	86400	sq	63747 sq	104
2 Salaries & allowances of Watchers	sq	72	1200	86400 sq	sq	72	1200	86400	sq	63747 sq	104
3 Salaries & allowances of Operators & drivers	ac	6192	7.7	47578 ac	sq	6191	7.7	47578	sq	50144 sq	112
4 Salaries & allowances of casual office employees	sqm	12	1100	13200 sqm	sq	12	1100	13200	sqm	13200 sqm	12
4a Salaries & allowances of work supervisors											
5 Travelling & Combined allowances of W.E.S + Tech. Asst.	ac	6192	2.3	14242 ac	sq	6192	2.3	14242	sq	18475 sq	136
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	6192	0.58	2353 ac	sq	6192	0.58	2353	sq	512 sq	1
7 O/T & Comb. allowances of operators + drivers	ac	6192	0.48	2972 ac	sq	6192	0.48	2972	sq	4203 sq	78
8 Cost of fuel and lubricant	gal	619	38	35522 gal	gal	619	38	35522	gal	19422 gal	3
9 Other misc expenses	allow	item sum		8519 allow item sum				8486		9522 allow item	sum
10 Repairs to Vehicle	allow	item sum		15000 allow item sum				15000		21250 allow item	sum
				215000				235000		38371	176446
<b>Total</b>											
<b>Item II MAINTENANCE (LABOUR)</b>											
11 Weeding	sq	123840	1.34	227865 sq	sq	25000	1.24	31411	sq	54626 sq	1.
12 Removal of Water plants	sq	11384	3.84	47554 sq	sq	3000	3.84	5761	sq	21872 sq	3.
13 Desilting	cu	3096	55	170280 Cu	cu	500	55	11520	cu	1348	50680
14 E/E in filling scour etc.	ad	920	46.19	42495 ad	ad	100	46.19	13857	ad	51151	53214
15 Repairs to structures	ad	619	95.98	59412 ad	ad	100	95.98	9598	ad	9767	10
a) E/E in founds + backfill				0				0	sq	9 [900	11 [1100
b) Concrete				0				0	cu	1.3 [858]	4.7 [3102
c) R.R. Masonry / bricklining				0				0	cu	14.8 [3700	14.8 [3700
d) ct. plastering				6				6	sq	0.7 [671	0.7 [671
e) Laying H.P.P.											9
f) Stop planks.											
15a Other Items											
16 Spreading gravel	sq	1278	4.61	5707 sq	sq	300	4.61	3624	sq	23123	26747
				553513				2400		18120	219426
								233700			237545
<b>Item III MATERIALS</b>											
17 Cement	bags	619	120	74280 bags	sq	120	120	14400 bags	sq	1600	41
18 Sand	Cu	31	200	6290 Cu	Cu	10	200	2000	Cu	5912	5750
19 Metal	Cu	31	592	12352 Cu	Cu	10	592	5912	Cu	3480	31
20 Rubble	Cu	31	438	13578 Cu	Cu	10	438	4380	Cu	2025	1
21 Gravel	Cu	310	212	65720 Cu	Cu	75	212	15900	No.	315	1
22 Paints	gal	31	315	9765 gal	gal	10	315	3150 gal	gal	5	1650
23 Gunny bags	No.	930	13.5	12555 No.	No.	150	13.5	2025 No.	No.	215	2795
24 Cane baskets	No.	310	17	4030 No.	No.	75	17	1125 No.	No.	315	3150
25 Misc Materials	ac	6192	0.5	3096 ac	sq	6192	0.5	3096	sq	39096	39096
a) Stop planks								item	item	5507	sum
B) H.P.P.								item	item	3486	sum
c) Steel								item	item	1791	sum
d) Other items								item	item	28222	sum
26 Tools	ac	6192	0.5	3096 ac	sq	6192	0.5	3096	sq	3250	49191
				210672				54080			52441
				11913				20052			
				1029000				42000			
								29701			
											466327
27 Physical Contingencies											
<b>GRAND TOTAL</b>											

Note : ac = acres      sq = square = 100 square feet  
       m = mohr months      cu = cube = 100 cubic feet  
       gal = gallons      no = no. days



## D &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) - GIRITALA 1987

Annexure 3C

SI Description No.	Full Estimate		Approved		Estimate		Actual work Done and expenditure incurred 1987						
	Unit	Quantity	Amount(Rs)	Unit	Quantity	Headworks	Distributary System	Total	Amount(Rs)	Quantity	Amount(Rs)	Unit	Rate
<b>Item I - OPERATION</b>													
1 Salaries & allow. of labour on Op. of Head works	ac	6192	21362 ac	6192	21362 m	1.5	1822	m	1.5	1822	1224		
1a Salaries & allow. of labour on Op. of Distrib. System	m	72	86400 m	72	86400 m	30	36398	43	5895 m	43	5895	1224	
2 Salaries & allowances of Watchers	m	72	86400 m	72	86400 m	30	36398	43	52591 m	73	86989	1224	
3 Salaries & allowances of Operators & drivers	ac	6192	47678 ac	4000	30800 m	15	19718	11	14550 m	26	34268	1296	
4 Salaries & allowances of casual office employees	m	12	13200 m	12	13200 m	11	12871	19	23614 m	30	36485	1224	
4a Salaries & allowances of work supervisors													
5 Travelling & Combined allowances of W.SS + Tech. Asst.	ac	6192	14241 ac	6192	14241 m	7.5	4042	27.5	14831 m	35	18873	540	
6 O/T, Trav. & Comb. allowances of Turn out attendents	ac	6192	2353 ac	6192	2353 m	30	480	156	2496 m	186	2976	16	
7 O/T & Comb. allowances of operators + drivers	ac	6192	2972 ac	4000	1920 m	4.5	3695	5	3945 m	9.5	7641	807	
8 Cost of fuel and lubricant	gal	619	23522 gal	350	13300 gal	194	7389	760	28880 gal	954	36269	38	
9 Other misc expenses	allow	item	8272 allow item		6824 allow item		862		17642 allow item		16504 sum		
10 Repairs to Vehicle	allow	item	15000 allow item		10000 allow item		240		13485 allow item		13725 sum		
			235000		200400		87517		177930		265447		
<b>Item II MAINTENANCE (LABOUR)</b>													
11 Weeding	sq	123840	237773 sq	50000	96000 sq	14666	23465	88806	142090 sq	103442	165555	1.6	
12 Removal of Water plants	sq	12384	49536 sq	6000	24000 sq			1020	4080 sq	1020	4080	4	
13 Desilting	cu	3096	170280 Cu	1500	82500 Cu			739	40645 Cu	739	40645	55	
14 E/E in filling scours etc.	md	920	44160 md	400	19200 Cu			1056	147840 Cu	1056	147840	140	
15 Repairs to structures	md	619	59424 md	100	9600			3248	5409			8557	
a) E/E in founds + backfill					Cu	[341]	14.4 [1814	Cu	14.4 [1814			126	
b) Concrete					Cu	0.5	2.9 1977	Cu	3.4 2316			682	
c) R.R. Masonry / bricklining					Cu		3.4 1006	Cu	3.4 1006			296	
d) ct. plastering					sq		2.3 243	sq	2.3 243			106	
e) Laying H.PP.					Lft		6 144	Lft	6 144				
f) Stop planks,					No	5 2907]	1 225]	No	6 3132]				
15a Other Items													
16 Spreading gravel	sq	1238	5942 sq	500	2400			1167 item	8863 allow item			10030	
			567115		233700			26347	348927			376807	
<b>Item III MATERIALS</b>													
17 Cement	bags	619	74280 bags	350	42000 bags				50	5850 bags	50	5850	117
18 Sand	Cu	31	6200 Cu	20	4000								
19 Metal	Cu	31	18352 Cu	20	11840 Cu			12	6965 Cu	12	6965	580	
20 Rubble	Cu	31	13578 Cu	20	8760								
21 Gravel	Cu	310	65720 Cu	125	26500								
22 Paints	gal	31	9765 gal	20	6300								
23 Gunny bags	No.	930	12555 No.	500	6750 No.			250	3250 No.	250	3250	13	
24 Cane baskets	No.	310	4650 No.	500	7500								
25 Misc Materials	ac	6192	3096 ac	6192	3096								
a) Stop planks									13437			13437	
B) H.PP.									[5632			[5632	
c) Steel									7805]			7805]	
d) Other items													
26 Tools	ac	6192	3096 ac	6192	3096								
			211292		119842				29502			29502	
27 Physical Contingencies			36593		41058								
GRAND TOTAL			1050000		595000				556359			671756 892268	

Note : ac = acres      sq = square = 100 square feet  
           m = man months      cu = cube = 100 cubic feet  
           gal = gallons      d = man days

## G &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) GIRITALA 1988

Annexure 3D

SI. Description No.	Full Estimate						Approved						Estimate						Actual work done and expenditure incurred 1988					
	Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity	Rate	Headworks	Distributary System	Total	Amount(Rs)	Unit	Quantity	Amount(Rs)	Unit	Quantity	Amount(Rs)	Rate						
<b>Item I - OPERATION</b>																								
1 Salaries & allow. of labour on Op. of Head works	ac	6192	3.45	21362 ac	6192	3.45	21362 ss	0.4	671	ss	0.4	671	1592											
1a Salaries & allow. of labour on Op. of Distrib. System	ss	72	1500	108000 ss	72	1500	108000 ss	22	35620	27	25972 ss	16	25972	1592										
2 Salaries & allowances of Watchers	ss	6192	7.7	43344 ac	2500	7.7	19250 ss	19	32513	11	18852 ss	30	51365	1702										
3 Salaries & allowances of Operators & drivers	ac	12	1500	18000 ss	12	1500	18000 ss	1.5	2459 ss	1.5	2459 ss	1.5	2459	1592										
4 Salaries & allowances of casual office employees	ss	6192	1.38	2352 ac	6192	0.38	14241 ss	2.5	1340	21.5	11396 ss	24	12736	540										
5 Travelling & Combined allowances of W.SS + Tech. Asst.	ac	6192	0.38	2352 ac	6192	0.38	2352 ss	15	246	114	1819 ss	129	2065	16										
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	6192	0.48	2972 ac	2500	0.48	1200 ss	0.4	329	0.8	650 ss	1.2	879	848										
7 O/T & Comb. allowances of operators + drivers	ac	6192	0.48	2972 ac	2500	0.48	11400 gal	92	3515	gal	92	3515	38											
8 Cost of fuel and lubricant	gal	619	38	23522 gal	300	38	6993 allow item	1476		11535 allow item	1476	11535 allow item	13011 sum											
9 Other misc expenses	allow	item	sum	16217 allow item	sum		10000 allow item	4312		6472 allow item	4312	6472 allow item	10784 sum											
10 Repairs to Vehicle	allow	item	sum	20000 allow item	sum		212800	88525		121855	88525	121855	210380											
	Total			270000																				
<b>Item II MAINTENANCE (LABOUR)</b>																								
11 Weeding	sq	123840	1.92	237773 sq	40000	1.92	76800 sq	10883	23827	78498	125612 ss	89381	149439	1.67										
12 Removal of Water plants	sq	12384	4	49536 sq	4000	4	16000																	
13 Desilting	cu	3096	55	170280 Cu	800	55	44000 Cu																	
14 E/E in filling scour etc.	md	920	48	44160 md	150	48	7200 Cu	8	1080	154	14784 Cu	154	14784	96										
15 Repairs to structures	md	619	96	59424 md	50	96	2400																	
a) E/E in founds + backfill							Cu				2.3 [1911	Cu	2.3 [1911	831										
b) Concrete							Cu				0.9 284	Cu	0.9 284	315										
c) R.R. Masonry / bricklining							sq				1 113]	sq	1 113]	113										
d) ct. plastering																								
e) Laying H.PP.																								
f) Stop planks.																								
15a Other Items																								
16 Spreading gravel	sq	1238	4.8	5942 sq	240	4.8	1152				item		5400 allow item	5400										
	Total			567115			233700				24907		207774		232681									
<b>Item III MATERIALS</b>																								
17 Cement	bags	619	120	74280 bags	200	120	24000 bags																	
18 Sand	Cu	31	200	6200 Cu	20	200	4000																	
19 Metal	Cu	31	592	18352 Cu	20	592	11840 Cu																	
20 Rubble	Cu	31	438	13578 Cu	20	438	8760																	
21 Gravel	Cu	310	212	65720 Cu	60	212	12720																	
22 Paints	gal	31	315	9765 gal	5	315	1575																	
23 Gunny bags	No.	930	13.5	12555 No.	300	13.5	4050 No.																	
24 Cane baskets	No.	310	15	4650 No.	300	15	4500																	
25 Misc Materials	ac	6192	0.5	3096 ac	6192	0.5	3096																	
a) Stop planks																								
B) H.PP.																								
c) Steel																								
d) Other items																								
26 Tools	ac	6192	0.5	3096 ac	6192	0.5	3096																	
	Total			211292			77637																	
27 Physical Contingencies	allow item			31593 allow item			22361																	
<b>GRAND TOTAL</b>				1100000			460350																	
Note : ac = acres	sq = square = 100 square feet																							
ss = man months	cu = cube = 100 cubic feet																							
gal = gallons	md = man days																							

## O &amp; M COST STUDY - COMPARATIVE STATEMENT (IND) - GIRITALE 1989

Annexure 3E

SI Description NO.		Full Estimate			Approved			Estimate Headworks Amount(Rs)	Actual work done and expenditure incurred 1989		
		Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity		Distributary System Amount(Rs)	Total Amount(Rs)	
<b>Item I - OPERATION</b>											
1 Salaries & allow. of labour on Op. of Head works	ac	6192	3.75	23220							
1a Salaries & allow. of labour on Op. of Distrib. System	ac	72	1500	108000	1700			0.8	1251	13.4	22838
2 Salaries & allowances of Watchers	ma	72	8	49536	1700					14	24089
3 Salaries & allowances of Operators & drivers	ac	6192	1500	18000	1847					10483	10483
4 Salaries & allowances of casual office employees	ma	12	1500		1700			Same as Full Estimate	4.5	7607	12.2
4a Salaries & allowances of work supervisors					2160				11205	20725	16.7
5 Travelling & Combined allowances of M.SS + Tech. Asst.	ac	6192	2.5	15480	540				1060	5075	6135
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	6192	0.5	3096	16					2390	2390
7 O/T & Comb. allowances of operators + drivers	ac	6192	0.6	3715							
8 Cost of fuel and lubricant	gal	619	38.5	23931	38.5				5213	8788	14001
9 Other misc expenses	allow	item sum		15121						3505	3509
10 Repairs to Vehicle	allow	item sum		20000					189	10684	10873
				280000					26525	104181	130706
<b>Total</b>											
<b>Item II MAINTENANCE (LABOUR)</b>											
11 Weeding	sq	123840	2	247680	1.96			sq	8976	17593	68216
12 Removal of Water plants	sq	12384	4.5	55728					133703	sq	77192
13 Desilting	cu	3096	96	297216	96			Cu	380	36480	Cu
14 E/E in filling scours etc.	ad	920	48	44592	173			Cu	26	4498	112
15 Repairs to structures	ad	619	48	29712				Estimate	19376	138	23874
a) E/E in founds + backfill											
b) Concrete											
c) R.R. Masonry / bricklining											
d) ct. plastering											
e) Laying H.PP.											
f) Stop planks.											
15a Other Items											
16 Spreading gravel	sq	1238	5	6190					681118	22091	189559
	Total			681118							211650
<b>Item III MATERIALS</b>											
17 Cement	bags	619	120	74280	117			bags	50	5850	bags
18 Sand	Cu	31	200	6200					50	5850	
19 Metal	Cu	31	600	18600							
20 Rubble	Cu	31	460	14260				Same as Full Estimate			
21 Gravel	Cu	310	230	71300							
22 Paints	gal	31	330	10330							
23 Gunny bags	No.	930	15	13950							
24 Cane baskets	No.	310	17	5270							
25 Misc Materials	ac	6192	1	6192					8017	8017	
a) Stop planks									{1490}	{1490}	
B) H.PP.											
c) Steel									6527]	6527]	
d) Other items											
26 Tools	ac	6192	1	6192							
	Total			226574						13867	13867
27 Physical Contingencies	allow item			12308							
<b>GRAND TOTAL</b>				1200000					48616	307607	356223

Note : ac = acres      sq = square = 100 square feet  
 ma = man months      cu = cube = 100 cubic feet  
 gal = gallons      ad = man days

## O &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) R.B.E. 1985

Annexure 4A

SI Description No.	Full Estimate				Approved		Estimate Rate	Actual work done and expenditure incurred - 1985				
	Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity		Headworks	Distributary System	Total	Unit	Quantity
<b>Item I - OPERATION</b>												
1 Salaries & allow. of labour on Op. of Head works	ac	5097	3.4	17330	ac	5097	29.9	142206	aa	1.4	1422	aa
1a Salaries & allow. of labour on Op. of Distrib. System	aa	48	1200	57600				94	98365	aa	94	98365
2 Salaries & allowances of Watchers	aa	5097	6.1	31092	ac	5097	6.1	31092	aa	10	10842	40
3 Salaries & allowances of Operators & drivers	ac	12	1100	13200				aa	41820	aa	50	52662
4 Salaries & allowances of casual office employees	aa							7.8	8406	aa	7.8	8406
4a Salaries & allowance of Work supervisors								aa	704	aa	0.7	704
5 Travelling & Combined allowances of W.SS + Tech. Asst.	ac	5097	2.3	11723			1364	30008				
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	5097	0.38	1937	ac	4429	2.3	aa	0.5	265	20.5	11127
7 O/T & Comb. allowances of operators + drivers	ac	5097	0.48	2447			0.38	13660	aa			aa
8 Cost of fuel and lubricant	gal	510	38	19380	ac	5097	0.48	aa				
9 Other misc expenses	allow	item sum		7296			38	52754	gal	2	78	gal
10 Repairs to Vehicle	allow	item sum		10000				allow item	355		2	2418
				172000				allow item				33331
								allow item				33331
									195894			208778
<b>Item II MAINTENANCE (LABOUR)</b>												
11 Weeding	sq	101940	1.6	163104	sq	150720	1.55	233616	sq	23296	18171	206068
12 Removal of Water plants	sq	10194	3.3	33640	sq	25350	3.23	81881			8794	6596
13 Desilting	cu	2549	78	198882	cu	1214	77.52	94109	Cu		1706	68250
14 E/W in filling scours etc.	md	765	40	30600	md	600	38.76	23256	Cu	59	542	37425
15 Repairs to structures	md	510	90	45900	md	400	88.76	35504	item	6931	601	44356
a) E/E in founds + backfill											16797	item
b) Ct. Concrete												16797
c) R.R. Masonry / bricklining												
d) ct. plastering												
e) Laying H.PP.												
f) Stop planks./gates												
15a Other Items												
16 Spreading gravel	sq	1020	4	4080	sq	1700	3.87	6579	item	1245	item	63850
				476206				474945		108	108	11290
											26347	352577
<b>Item III MATERIALS</b>												
17 Cement	bags	510	100	51000								
18 Sand	Cu	25	120	3000								
19 Metal	Cu	25	400	10000								
20 Rubble	Cu	25	250	6250								
21 Gravel	Cu	255	212	54060								
22 Paints	gal	25	315	7875								
23 Gunny bags	No.	765	6	4590								
24 Cane baskets	No.	255	13	3315								
25 Misc Materials	ac	5097	0.5	2549			2.75			136	1431	1567
a) Stop planks												
b) H.PP.												
c) Steel												
d) Other items												
26 Tools	ac	5097	0.5	2549			2.75					
				145188				168099				
27 Physical Contingencies				36606				36662		136	1431	1567
GRAND TOTAL				830000				950000		39367	549902	589269

Note : ac = acres      sq = square = 100 square feet  
       aa = acres      sq = square = 100 square feet  
       gal = gallons     md = man days

## O &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) R.B.E. 1986

Annexure 4B

SI Description No.	Full Estimate				Approved				Estimate Rate	Actual work done and expenditure incurred - 1986											
	Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity	Headworks	Distributary System	Total	Unit	Quantity	Amount(Rs)	Unit	Quantity	Amount(Rs)	Rate					
<b>Item I - OPERATION</b>																					
1 Salaries & allow. of labour on Op. of Head works	ac	5097	3.4	17330 ac		5097		9.04	46077 <del>aa</del>		7.7	9007			7.7	9007	1170				
1a Salaries & allow. of labour on Op. of Distrib. System									<del>aa</del>						89	103858 <del>aa</del>	89	103858	1170		
2 Salaries & allowances of Watchers	aa	48	1200	57600 <del>aa</del>		48		1200	57596 <del>aa</del>		10	11437	54	63033 <del>aa</del>	64	74470	1170				
3 Salaries & allowances of Operators & drivers	ac	5097	7.7	31092					<del>aa</del>		3	3788	17	3788 <del>aa</del>	20	26207	1296				
4 Salaries & allowances of casual office employees	aa	12	1100	13200 <del>aa</del>		20		1100	21662									1170			
4a Salaries & allowance of Work supervisors																					
5 Travelling & Combined allowances of W,SS + Tech. Asst.	ac	5097	2.3	11723														540			
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	5097	0.38	1937																	
7 O/T & Comb. allowances of operators + drivers	ac	5097	0.48	2447																	
8 Cost of fuel and lubricant	gal	510	38	19380 gal		1200		38	45600 gal						528	20071 gal	528	20071	38		
9 Other misc expenses	allow	item sum		7291												4707 allow item	4707 sum				
10 Repairs to Vehicle	allow	item sum		10000												8511 allow item	8511 sum				
				172000												232593			259991		
<b>Item II MAINTENANCE (LABOUR)</b>																					
11 Weeding	sq	101940	2	203880																	
12 Removal of Water plants	sq	10194	4	40776																	
13 Desilting	cu	2549	61	155489																	
14 E/W in filling scours etc.	md	765	46	35190																	
15 Repairs to structures	md	510	96	48960																	
a) E/E in founds + backfill																					
b) Ct. Concrete																					
c) R.R. Masonry / bricklining																					
d) ct. plastering																					
e) Laying H.P.P.																					
f) Stop planks./gates																					
15a Other items																					
16 Spreading gravel	sq	1020	4.6	4692																	
				488987																	
Total																					
<b>Item III MATERIALS</b>																					
17 Cement	bags	510	100	51000																	
18 Sand	Cu	25	120	3000												3	321 bags	3	321	107	
19 Metal	Cu	25	400	10000												0.5	41	0.5	41	82	
20 Rubble	Cu	25	250	6250												1.5	567	1.5	567	378	
21 Gravel	Cu	255	212	54060												1.5	375	1.5	375	250	
22 Paints	gal	25	315	7875																	
23 Gunny bags	No.	765	8	6120																	
24 Cane baskets	No.	255	15	3825																	
25 Misc Materials	ac	5097	0.5	2549												150	888			1038	
a) Stop planks																					
B) H.P.P.																[150]	[888]			[1038]	
c) Steel																					
d) Other items																					
26 Tools	ac	5097	0.5	2549												4					
				142228																	
Total				46785													150	2192		2342	
27 Physical Contingencies				850000													561300	35537	550850	586387	
GRAND TOTAL																					

Note ac = acres      sq = square = 100 square feet  
 mm = acres      sq = square = 100 square feet  
 gal = gallons      md = man days

O & M COST STUDY - COMPARATIVE STATEMENT (IMD) R.B.E. 1987

Annexure 4C

Note	ac = acres	sq = square = 100 square feet
	sq = acres	sq = square = 100 square feet
	gal = gallons	ad = man days

## D &amp; M COST STUDY - COMPARATIVE STATEMENT (IMD) - R.B.E. 1988

Annexure 4D

SI Description No.	Full Estimate				Approved				Estimate Rate	Actual work done and expenditure incurred - 1988					
	Unit	Quantity	Rate	Amount(Rs)	Unit	Quantity	Headworks	Distributary System		Unit	Quantity	Amount(Rs)	Total		
<b>Item I - OPERATION</b>															
1 Salaries & allow. of labour on Op. of Head works	ac	5097	3.45	17584 allow item			28000 ss	2	3072	ss	2	3072			
1a Salaries & allow. of labour on Op. of Distrib. System							ss		33	52442 ss	33	52442			
2 Salaries & allowances of Watchers	ss	48	1500	72000			ss	1.5	2413	14	22224 ss	15.5	24637		
3 Salaries & allowances of Operators & drivers	ac	5097	7.7	39246 allow item			16000 ss	1	1000	23	39408 ss	24	40408		
4 Salaries & allowances of casual office employees	ss	12	1500	18000 allow item			7000 ss	1.5	2154	3.5	5908 ss	5	8062		
4a Salaries & allowance of Work supervisors															
5 Travelling & Combined allowances of W.SS + Tech. Asst.	ac	5097	2.3	11723 allow item			32000 ss	3.5	1822	28.5	15446 ss	32	17268		
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	5097	0.38	1936											
7 O/T & Comb. allowances of operators + drivers	ac	5097	0.48	2446 allow item			5000 ss			9.5	8074 ss	9.5	8074		
8 Cost of fuel and lubricant	gal	510	38	19380 allow item			20000 gal	132	5000	320	12149 gal	452	17149		
9 Other misc expenses	allow	item sum		12685			allow item		6212 item		5598 allow item		11810		
10 Repairs to Vehicle	allow	item sum		15000 allow item			allow item		item		5877 allow item		5877		
Total				210000					110969		21673		188799		
<b>Item II MAINTENANCE (LABOUR)</b>															
11 Weeding	sq	111940	3	335820 sq	29175		2.97	86650 sq	6508	7875	30138	37070 sq	36646	44945	
12 Removal of Water plants	sq	11194	4	44776 allow item			sum	5940							
13 Desilting	cu	2549	61	155489 Cu	400		60.4	24160			203	17272 Cu	203	17272	
14 E/W in filling scours etc.	ad	765	48	36720 Cu	194			21440			237	21790 Cu	237	21790	
15 Repairs to structures	ad	510	48	24480				20090			item	53556	item	53556	
a) E/E in founds + backfill				Cu	21			[1604							
b) Ct. Concrete				Cu	3			1430							
c) R.R. Masonry / bricklining				Cu	22			8708							
d) ct. plastering				sq	15			1513							
e) Laying H.PP.				Lit	150			2207							
f) Stop planks./gates				Cu	116			46281							
15a Other items				allow item											
16 Spreading gravel	sq	1019	4.8	4891 Cu	127			2408	item	26272 item	46	18154	item	44426	
Total				602176				3148 Cu		34147	46	3817 Cu	46	3817	
								163836				151659		185806	
<b>Item III MATERIALS</b>															
17 Cement	bags	510	1.13	57630	295		113	33335							
18 Sand	Cu	25	150	3750	15		150	2250			33	3762 bags	33	3762	
19 Metal	Cu	25	740	18500	5						1.5	180 Cu	1.5	180	
20 Rubble	Cu	25	250	6250	25			740	3700			1.5	1001 Cu	1.5	1001
21 Gravel	Cu	255	145	36975	127			250	6250						
22 Paints	gal	25	315	7875			237.31	30138							
23 Bunny bags	bag	765	12	9180				6593							
24 Cane baskets	No.	255	15	3825	20										
25 Misc Materials	ac	5097	0.5	2549				15	300						
a) Stop planks								40501			5931		22094	28025	
B) H.PP.								[26228					[8000	[8000	
c) Steel								12508					3900	3900	
d) Other items								1765]			[5931]		10194]	161125]	
26 Tools															
Total	ac	5097	0.5	2549				2128			61751		347790	409541	
27 Physical Contingencies				149083				125195							
GRAND TOTAL				38741											
				1000000				400000							

Note ac = acres      sq = square = 100 square feet  
 ss = acres      sq = square = 100 square feet  
 gal = gallons      ad = man days

Q & M COST STUDY - COMPARATIVE STATEMENT (IMD) - R.R.E., 1989

Annexure 4E

Note    ac = acres                         sq = square = 100 square feet  
             sq = acres                         sq = square = 100 square feet  
             gal = gallons                        ad = man days



**COMPARATIVE STATEMENT (IMD) - Gal Oya LB (Under IE Amparai), 1988**

**Annexure 5B**

SI Description No.		Full Estimate			Approved Unit Quantity	Estimate Headworks Amount(Rs)	Actual work done and expenditure incurred 1988					Total Quantity	TOTAL Amount(Rs)	
		Quantity	Amount(Rs)	Unit			Distribution System Amount(Rs)	Quantity	Amount(Rs)	Quantity	Amount(Rs)			
<b>Item I - OPERATION</b>														
1 Salaries & allow. of labour on Op. of Head works	ac	-	-											
1a Salaries & allow. of labour on Op. of Distrib. System	ac	-	-					21	34372	33	51559	54	85931	
2 Salaries & allowances of Watchers	sq	144	234720	item allow	156000	sq	24	37403	30	49943	21	33296	51	83239
3 Salaries & allowances of Operators & drivers	ac	31394	244873	item allow	160600	sq	21	32287	22	38318	23	38319	45	176637
4 Salaries & allowances of casual office employees	sq	36	44280	item allow	152000	sq	135	166723	24	27633	33	41450	57	69083
4a Salaries & allowance of work supervisors	sq	-	-					9	16645	15	24968	24	41613	
5 Travelling & Combined allowances of W.SS + Tech. Asst.	ac	31394	75345	item allow	73700	sq	-	540	32275	48	48414	81	80689	
6 O/T, Trav. & Comb. allowances of Turn out attendants	ac	31394	12557	item allow	23900	sq	-	21	2190	27	3284	48	5474	
7 O/T & Comb. allowances of operators + drivers	ac	31394	15697	item allow	34300	sq	30	20923	18	13240	18	13239	36	26479
8 Cost of fuel and lubricant	gal	3140	127170	item allow	85900	gal	1075	43556	937	37921	936	37921	1073	75842
9 Other misc expenses	item	allow	95358	item allow	28700	item	-	allow	47600	allow	71401	allow	119001	
10 Repairs to Vehicle	item	allow	50000	item allow	47800	item	-	12553	allow	12578	allow	12577	allow	25155
Total			900000		762900			313985		312715		376428		689143
<b>Item II MAINTENANCE (LABOUR)</b>														
11 Weeding	sq	627880	1255760	sq	313320	524493	sq	20885	38009	245694	451225	44672	90968	
12 Removal of Water plants	sq	62790	313950		28500	197625	sq	-	-	-	30301	201074	39301	
13 Desilting	cu	15700	942000	Cu	210	13200	Cu	-	-	-	201074	201074	30301	
14 E/W in filling scourrs etc.	ed	4710	268470	Cu	390	44000	Cu	74	7438	42	2535	109	8332	
15 Repairs to structures	md	3140	367380	item allow	16000	-	-	1500	-	-	49168	-	50668	
a) E/E in founds + backfill					Cu						130	10694	130	
b) Concrete					Cu						14.3	16569	14.3	
c) R.R. Masonry / bricklining					Cu						16569	14.3	16569	
d) ct. plastering					Cu						2.8	1500	32.8	
e) Laying H.P.P.					sq							19.9	2511	
f) Stop planks													19.9	
15a Other Items	item	allow	10000	item allow	-	17000	item	-	-	-	allow	4629	allow	
16 Spreading gravel	sq	6280	37680		-	-	-	-	-	-	4629	allow	4629	
Total			3195240		812318		45447		455260		354171		809431	
<b>Item III MATERIALS</b>														
17 Cement	bags	3140	423900	bags	375	50625	bags	-	15	1575	270	28350	285	
18 Sand	Cu	157	24335		15	2337	Cu	-	2	260	5	650	7	
19 Metal	Cu	157	102050	Cu	20	12650	Cu	-	-	1500	4	2500	4	
20 Rubble	Cu	157	75360	Cu	20	8800	Cu	3	-	-	17	8526	20	
21 Gravel	Cu	1570	392500	Cu	-	-	Cu	-	-	-	-	10026	20	
22 Paints	gal	157	76930	item allow	5000	gal	-	-	6	3155	6	3155	6	
23 Gunny bags	No.	4710	70650	item allow	5000	No.	-	-	300	4650	300	4650	300	
24 Cane baskets	No.	1570	31400	No.	-	-	No.	-	-	-	-	-	-	
25 Misc Materials	ac	31394	31394	item allow	61800	-	-	18360	-	-	allow	20807	allow	
a) Stop planks											9549	9549	9549	
B) H.P.P.											8825	8825	8825	
c) Steel											2433	2433	20793	
d) Other items														
26 Tools	ac	31394	31394			item allow		18360						
Total			1259913		146212		18360		3335		68638		71973	
27 Physical Contingencies	item	allow	44847	item allow	63570									
GRAND TOTAL			5400000		1785000		377792		771310		799237		1570547	
													1948339	

Note: ac = acres       sq = square = 100 square feet  
           sq = man months      cu = cube = 100 cubic feet  
           gal = gallons          md = man days





**COMPARATIVE STATEMENT (IND) - Ingininitiya 1988**

## Annexure 6

Note	ac = acres	sq = square = 100 square feet
	sq m = man months	cu = cube = 100 cubic feet
	gal = gallons	ad = man days

#### **COMPARATIVE STATEMENT (IND) - Indipinitiva (1989)**

Annexure 6C

Note    ac = acres                 sq = square = 100 square feet  
         mn = man months           cu = cube = 100 cubic feet  
         gal = gallons                ad = man days









**Summary and Analysis of O & M Expenditure (ID & IMD)  
RIDI BENDI ELA (2064 ha) and Comparison with Consultants Estimate (Rs)**

SI Description	1985				1986				1987				1988				1989				1985 to 1989				Consultant's Estimate "Adequate" Est: %	Estimate "Well" Est: %								
	Exp:	%	Exp:	%	Exp:	%	Exp:	%	Tot. Exp.	Av. Exp./Yr	%	Est:	%	Est:	%	Est:	%																	
<b>I OPERATION</b>																																		
1. Labour Cost (Sal.,allow,O/T,Comb.,allow) SUB-TOTAL OPERATION	187,665	27	207,083	28	177,786	24	185,498	31	190,499	28	948,531	189,706	27	121,500	6	197,500	6																	
<b>II MAINTENANCE (LABOUR)</b>																																		
2. Weeding & removal of water plants 3. Desilting 4. Earth Work in filling scours 5. Repairs to structures 6. Spreading gravel 7. Other Misc. items	173,136	25	109,414	15	75,395	10	44,945	8	74,368	11	477,258	95,451	4	138,000	6	218,000	6	68,250	10	103,307	14	36,977	5	17,272	3	21,783	3	247,587	49,518	7	297,000	13	450,000	15
SUB-TOTAL MAINTENANCE (LABOUR)	378,924	54	324,054	44	241,218	32	185,806	31	191,323	28	1,321,325	264,265	38	955,000	43	1,520,000	48																	
<b>III CONSTRUCTION MATERIALS</b>																																		
8. Cement 9. Aggregates(sand, metal,rubble) 10. Gravel 11. Other Misc. items (paint gunny bags, cane baskets,stop-planks, gates, hume pipes, steel, tools, etc.)	-	-	321	0+	25,366	3	3,762	1	24,150	4	53,599	10,720	2	58,800	3	84,000	3	-	-	983	0+	11,817	2	1,181	0+	-	-	13,981	2,796	0+	51,700	2	77,840	2
SUB-TOTAL MATERIALS	1,567	0+	2,342	0+	55,727	8	34,936	6	93,721	14	188,293	37,659	6	636,700	29	861,090	27																	
<b>IV GENERAL CHARGES</b>																																		
12. Supervision (sal.& allow.) 13. Watching (sal.& allow.) 14. Casual office employees (sal.& allow.) 15. Trav. & comb. allow. of W.SS & T.AA 16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.) 17. Other misc. items	24,944	4	60,720	8	77,513	11	55,514	10	41,714	6	260,405	52,081	8	90,000	4	120,000	4	52,662	7	74,470	10	51,955	7	24,637	4	27,410	4	231,134	46,227	7	21,600	1	32,400	1
SUB-TOTAL GENERAL CHARGES	41,815	6	54,789	7	106,472	14	71,508	12	90,290	14	364,874	72,975	11	159,900	8	213,600	6	2,418	0+	4,707	1	3,788	1	11,810	2	15,525	2	38,248	7,650	1	158,060	7	198,170	6
TOTAL	133,935	19	207,846	28	260,724	36	188,799	32	205,077	30	996,381	199,276	29	486,800	22	621,410	19	702,091	100	741,325	100	735,455	100	595,039	100	680,620	100	3,454,530	690,906	100	2,200,000	100	3,200,000	100



Summary and Analysis of O & M Expenditure (ID & IMD)  
INGINIMITIYA (2644 ha) and Comparison with Consultants Estimate (Rs)

SI Description	1987			1988			1989			1987 to 1989			Consultants "Adequate"	Estimate "Well"
	Exp:	%	Exp:	%	Exp:	%	Tot. Exp.	Av. Exp/Yr	%	Est:	%			
<b>I OPERATION</b>														
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)	233,433	17	229,031	19	192,405	19	654,869	218,290	18	312,000	14	312,000	6	
SUB-TOTAL OPERATION	233,433	17	229,031	19	192,405	19	654,869	218,290	18	312,000	14	312,000	6	
<b>II MAINTENANCE (LABOUR)</b>														
2. Weeding & removal of water plants	118,591	9	158,628	13	164,992	16	442,211	147,404	12	276,000	13	890,000	18	
3. Desilting	6,236	0+	14,797	1	1,475	0+	22,508	7,503	1	200,000	9	390,000	8	
4. Earth Work in filling scours	15,499	1	6,109	1	17,459	2	39,067	13,022	1	105,000	5	230,000	5	
5. Repairs to structures	14,150	1	7,018	1	1,061	0+	22,229	7,410	1	50,000	2	100,000	2	
6. Spreading gravel	-	-	1,675	0+	1,620	0+	3,295	1,098	0+	58,000	3	414,000	9	
7. Other Misc. items	68,567	5	22,664	2	21,589	2	112,830	37,610	3	7,000	0+	10,000	0+	
SUB-TOTAL MAINTENANCE (LABOUR)	223,043	16	210,891	18	208,206	20	642,140	214,047	18	696,000	32	2,034,000	42	
<b>III CONSTRUCTION MATERIALS</b>														
8. Cement	40,000	3	-	-	13,625	1	53,625	17,875	2	10,000	0+	20,000	0+	
9. Aggregates (sand, metal, rubble & bricks)	26,250	2	681	0+	-	-	26,931	8,977	1	16,000	1	40,000	1	
10. Gravel	-	-	23,450	2	17,363	2	40,813	13,604	1	217,000	10	1,507,000	31	
11. Other Misc. items (paints gunny bags, cane baskets, stop-planks gates, hume pipes, steel, tools, etc.)	33,873	3	3,000	0+	7,430	1	44,303	14,768	1	70,000	3	100,000	2	
SUB-TOTAL MATERIALS	100,123	8	27,131	2	38,418	4	165,672	55,224	5	313,000	14	1,667,000	34	
<b>IV GENERAL CHARGES</b>														
12. Supervision (sal.& allow.)	131,084	10	115,029	9	138,161	13	384,274	128,091	11	132,000	6	132,000	3	
13. Watching (sal., allow., & OT)	13,861	1	26,803	2	26,039	3	66,703	22,234	2	105,600	5	105,600	2	
14. Casual office employees (sal., allow., & OT)	18,208	1	44,511	4	21,659	2	84,378	28,126	2	120,000	6	120,000	2	
15. Trav. & comb. allow. of W.SS & T.AA	70,950	5	33,135	3	27,403	3	131,488	43,829	4	30,000	1	30,000	1	
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	320,812	24	359,566	30	237,199	23	917,577	305,859	25	365,400	17	365,400	8	
17. Other misc. items	240,391	18	153,806	13	137,807	13	532,004	177,335	15	110,000	5	131,000	2	
SUB-TOTAL GENERAL CHARGES	795,306	59	732,850	61	588,268	57	2,116,424	705,474	59	863,000	40	884,000	18	
TOTAL	1,351,905	100	1,199,903	100	1,027,297	100	3,579,105	1,193,035	100	2,184,000	100	4,897,000	100	

Summary and Analysis of O & M Expenditure (ID & IMD)  
MAHAKANDARAWA (2545 ha) and Comparison with Consultants Estimate (Rs)

SI Description	1987			1988			1989			1987 to 1989			Consultants "Adequate" Est:	Estimate "Well" Est:	Estimate "Well" %
	Exp:	%	Exp:	%	Exp:	%	Tot. Exp.	Av. Exp/Yr	%						
<b>I OPERATION</b>															
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)	82,189	12	110,568	14	62,408	8	255,165	85,055	11	280,000	13	280,000	5		
SUB-TOTAL OPERATION	82,189	12	110,568	14	62,408	8	255,165	85,055	11	280,000	13	280,000	5		
<b>II MAINTENANCE (LABOUR)</b>															
2. Weeding & removal of water plants	216,895	30	208,250	26	175,500	22	600,645	200,215	26	316,000	15	1,201,611	22		
3. Desilting	48,600	7	60,000	7	60,200	8	168,800	56,267	8	164,701	8	476,914	9		
4. Earth Work in filling scours	18,750	3	30,000	4	75,104	10	123,854	41,285	5	201,793	10	379,863	7		
5. Repairs to structures	2,400	0+	-	-	-	-	2,400	800	0+	35,990	2	77,800	1		
6. Spreading gravel	-	-	-	-	-	-	-	-	-	38,400	2	424,260	8		
7. Other Misc. items	-	-	-	-	-	-	-	-	-	32,321	1	87,345	2		
SUB-TOTAL MAINTENANCE (LABOUR)	286,645	40	298,250	37	310,804	40	895,699	298,567	39	789,205	38	2,647,893	49		
<b>III CONSTRUCTION MATERIALS</b>															
8. Cement	2,700	0+	-	-	-	-	2,700	900	0+	61,797	3	135,600	3		
9. Aggregates(sand, metal, rubble)	1,575	0+	-	-	-	-	1,575	525	0+	54,560	3	121,923	2		
10. Gravel	-	-	-	-	-	-	-	-	-	76,800	4	848,520	16		
11. Other Misc. items (paint gunny bags, cane baskets, stop-planks gates, hume pipes, steel, tools, etc.)	2,100	0+	12,800	2	-	-	14,900	4,966	1	65,904	3	235,214	4		
SUB-TOTAL MATERIALS	6,375	1	12,800	2	-	-	19,175	6,391	1	259,061	13	1,341,257	25		
<b>IV GENERAL CHARGES</b>															
12. Supervision (sal.& allow.)	41,298	6	53,244	7	15,508	2	110,050	36,684	5	79,200	4	79,200	1		
13. Watching (sal.& allow.)	132,192	18	171,936	21	183,600	24	487,728	162,576	22	237,600	12	237,600	4		
14. Casual office employees (sal.& allow.)	19,674	3	23,346	3	25,542	3	68,562	22,854	3	72,000	3	72,000	1		
15. Trav. & comb. allow. of W.SS & T.AA	24,000	3	24,000	3	24,000	3	72,000	24,000	3	24,000	1	24,000	0+		
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	116,348	16	92,497	11	139,084	18	347,929	115,976	15	188,400	9	188,400	4		
17. Other misc. items	5,000	1	14,000	2	12,000	2	31,000	10,333	1	140,534	7	584,650	11		
SUB-TOTAL GENERAL CHARGES	338,512	47	379,023	47	389,734	52	1,117,269	372,423	49	741,734	36	1,185,850	21		
TOTAL	713,721	100	800,641	100	772,946	100	2,287,308	762,436	100	2,070,000	100	5,455,000	100		

Summary and Analysis of O & M Expenditure (ID & IMD)  
 GIRITALE (2507 ha) and Comparison with Consultants Estimate (Rs)

SI Description	FARMERS COLLECTION (FC)						Average for 1985, 86&87 Exp./Yr	ID + IMD Average for 1985, 86&87 Exp./Yr	ID+IMD+FC Average for 1985, 86&87 Exp./Yr	CONSULTANT'S ESTIMATE						
	1985			1986						%	Adequate"	"Well"				
	Exp:	%	Exp:	%	Exp:	%				Est.	Est.	Est.				
<b>I OPERATION</b>																
1. Labour Cost (Sal.,allow,O/T,Comb.,allow) SUB-TOTAL OPERATION	32	-	-	-	-	-	11	0+	157,415	20	157,426	15	166,600	7	286,600	8
<b>II MAINTENANCE (LABOUR)</b>																
2. Weeding & removal of water plants	5,130	3	10,062	3	1,612	1	5,601	2	124,996	16	130,597	13	198,400	8	315,400	9
3. Desilting	36,400	21	29,280	8	38,320	20	34,667	15	47,385	6	82,052	8	427,500	17	615,600	17
4. Earth Work in filling scours	19,600	11	109,504	31	47,601	25	58,902	25	109,051	13	167,953	16	270,000	11	405,000	12
5. Repairs to structures	25,206	15	13,803	4	31,764	16	23,591	10	12,624	2	36,215	4	80,000	3	160,000	5
6. Spreading gravel	-	-	-	-	260	0+	87	0+	-	-	87	0+	140,700	6	194,250	6
7. Other Misc. items	1,834	1	15,975	5	18,581	10	12,130	5	18,194	2	30,327	3	6,700	0+	9,750	0+
SUB-TOTAL MAINTENANCE (LABOUR)	88,170	51	178,624	51	138,138	72	134,978	57	312,250	39	447,231	44	1,123,300	45	1,700,000	49
<b>III CONSTRUCTION MATERIALS</b>																
8. Cement	23,045	13	53,585	15	15,444	8	30,691	13	5,784	1	36,475	3	107,800	4	161,000	4
9. Aggregates(sand, metal,rubble)	9,089	5	58,648	17	5,288	3	24,342	10	6,973	1	31,315	3	50,908	2	76,368	2
10. Gravel	-	-	-	-	2,913	1	971	0+	-	-	971	0+	506,000	20	683,000	20
11. Other Misc. items (paint gunny bags, cane baskets,stop-planks, gates, hume pipes, steel, tools, etc.)	44,285	26	20,900	6	22,967	12	29,384	13	27,611	3	56,995	6	41,500	2	61,750	2
SUB-TOTAL MATERIALS	76,419	44	133,133	38	46,612	24	85,388	36	40,368	5	125,756	12	706,208	28	982,118	28
<b>IV GENERAL CHARGES</b>																
12. Supervision (sal.& allow.)	-	-	-	-	-	-	-	-	69,430	9	69,430	7	90,000	4	120,000	3
13. Watching (sal.& allow.)	-	-	-	-	-	-	-	-	76,935	10	76,935	7	72,000	3	72,000	2
14. Casual office employees (sal.& allow.)	-	-	-	-	-	-	-	-	22,263	3	22,263	2	27,000	1	27,000	1
15. Trav.& comb. allow. of W.SS & T.AA	6,593	4	12,725	4	3,500	2	7,606	3	17,785	2	25,391	2	50,400	2	50,400	1
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	2,322	1	13,684	4	3,221	2	6,409	3	81,510	10	87,919	9	166,380	7	181,880	5
17. Other misc. items	-	-	11,475	3	-	-	3,825	1	17,727	2	21,552	2	98,112	3	80,002	3
SUB-TOTAL GENERAL CHARGES	8,915	5	37,884	11	6,721	4	17,840	7	285,650	36	303,490	29	503,892	20	531,282	15
TOTAL	173,536	100	349,641	100	191,471	100	238,217	100	795,693	100	1,033,900	100	2,500,000	100	3,500,000	100

## Annexure 14

Summary and Analysis of O & M Expenditure (ID & IMD)  
RIDI BENDI ELA (2064 ha) and Comparison with Consultants Estimate (Rs)

SI Description	FARMERS COLLECTION (FC)												CONSULTANT'S ESTIMATE			
	1985		1986		1987		Average for 1985,86		ID + IMD Average for 1985,86&87		ID+IMD+FC Average for 1985,86&87		Adequate"	"Well"		
	Exp:	%	Exp:	%	Exp:	%	Exp:/Yr	%	Exp:/Yr	%	Exp:/Yr	%	Est.	Est.		
<b>I OPERATION</b>																
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)	-	-	-	-	-	-	-	-	197,374	27	197,374	26	121,500	6	197,500	6
SUB-TOTAL OPERATION	-	-	-	-	-	-	-	-	197,374	27	197,374	26	121,500	6	197,500	6
<b>II MAINTENANCE (LABOUR)</b>																
2. Weeding & removal of water plants	-	-	741	2			371	1	141,275	20	141,646	18	138,000	6	218,000	6
3. Desilting	-	-	-	-			-	-	85,778	12	85,778	11	297,000	13	450,000	15
4. Earth Work in filling scours	16,650	49	7,310	15			11,980	29	42,129	6	54,109	7	351,000	16	562,500	18
5. Repairs to structures	4,225	13	9,083	19			6,654	16	28,991	4	35,645	5	22,500	1	90,000	3
6. Spreading gravel	-	-	-	-			-	-	6,592	1	6,592	1	136,500	6	178,500	5
7. Other Misc. items	7,203	21	1,276	3			4,239	11	46,724	6	50,963	7	10,000	1	21,000	1
SUB-TOTAL MAINTENANCE (LABOUR)	28,078	83	18,410	39			23,244	57	351,489	49	374,733	49	955,000	43	1,520,000	48
<b>III CONSTRUCTION MATERIALS</b>																
8. Cement	5,000	15	10,795	23			7,898	20	160	0	8,058	1	58,800	3	84,000	3
9. Aggregates(sand, metal,rubble)	-	-	5,285	11			2,642	5	492	0	3,134	0	51,700	2	77,840	2
10. Gravel	-	-	-	-			-	-	-	-	-	-	480,700	22	632,500	20
11. Other Misc. items (paint gunny bags, cane baskets,stop-plank, gates, hume pipes, steel, tools, etc.)	-	-	12,631	26			6,316	16	1,302	0	7,618	1	45,500	2	66,750	2
SUB-TOTAL MATERIALS	5,000	15	28,711	60			16,856	41	1,954	0	18,810	2	636,700	29	861,090	27
<b>IV GENERAL CHARGES</b>																
12. Supervision (sal.& allow.)	-	-	-	-			-	-	42,832	6	42,832	7	90,000	4	120,000	4
13. Watching (sal.& allow.)	-	-	-	-			-	-	63,566	9	63,566	8	21,600	1	32,400	1
14. Casual office employees (sal.& allow.)	-	-	-	-			-	-	352	0	352	0	27,000	1	27,000	1
15. Trav. & comb. allow. of W.SS & T.AA	530	2	551	1			540	2	12,276	2	12,816	2	30,240	1	30,240	1
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	99	0+	-	-			50	0	48,301	7	48,351	6	159,900	8	213,600	6
17. Other misc. items	-	-	-	-			-	-	3,563	0	3,563	0	158,060	7	198,170	6
SUB-TOTAL GENERAL CHARGES	629	2	551	1			590	2	170,890	24	171,480	23	486,800	22	621,410	19
TOTAL	33,707	100	47,672	100			40,690	100	721,707	100	762,397	100	2,200,000	100	3,200,000	100

Summary and Analysis of O & M Expenditure (ID & IMD)  
GAL OYA LB (12170 ha) and Comparison with Consultants Estimate (Rs)

Annexure 15

SI Description	Farmer's Collection (FC)						ID + IMD Averge for 1987,88&89	ID + IMD + FC Averge for 1987,88&89	Consultant's Estimate					
	1987 Exp.	1987 %	1988 Exp.	1988 %	1989 Exp.	1989 %			Adequate	Well	Est.	Est.	%	
<b>I OPERATION</b>														
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)							1,002,304	32	1,002,304	29	1,173,000	10	1,326,800	7
1a. Servicing Computer							42,900	1	42,900	1	70,000	1	70,000	0+
SUB-TOTAL OPERATION							1,045,204	33	1,045,204	30	1,243,000	11	1,396,800	7
<b>II MAINTENANCE (LABOUR)</b>														
2. Weeding & removal of water plants/clearing wetted area							950,466	30	950,466	28	1,242,527	11	3,135,534	15
3. Desilting							23,895	1	23,895	1	926,613	8	1,330,624	6
4. Earth Work in filling scour							80,028	2	80,028	2	2,136,438	18	4,709,136	22
5. Repairs to structures/ Construction	29,090	26	50,420	12	53,700	21	44,403	17	57,089	2	101,492	3	864,310	8
6. Spreading gravel											381,058	3	933,305	4
7. Other Misc. items							24,865	1	24,865	1	972,296	8	1,254,430	6
SUB-TOTAL MAINTENANCE (LABOUR)	29,090	26	50,420	12	53,700	21	44,403	17	1,136,343	36	1,180,746	35	6,523,242	55
<b>III CONSTRUCTION MATERIALS</b>														
8. Cement	28,750	26	48,875	11	51,875	20	43,167	16	90,092	3	133,259	4	854,762	7
9. Aggregates(sand, metal,rubble)	15,515	14	26,890	6	28,640	11	23,682	9	42,667	1	66,349	2	484,273	4
10. Gravel											762,116	7	1,906,610	9
11. Other Misc. items (paint, gunny bags, cane baskets,stop-planks gates, hume pipes, steel, tools, etc.)	23,613	21	41,883	10	94,846	36	53,447	20	59,392	2	112,839	3	749,509	6
SUB-TOTAL CONSTRUCTION MATERIALS	67,878	61	117,648	27	175,361	67	120,296	45	192,151	6	312,447	9	2,850,660	24
<b>IV GENERAL CHARGES</b>														
12. Supervision (sal.& allow.)							120,592	4	120,592	4	150,000	1	150,000	1
13. Watching (sal.& allow.)	670	1	15,137	4	1,652	1	5,820	2	128,637	4	134,457	4	336,000	3
14. Casual office employees (sal, allow.)							152,754	5	152,754	5	86,400	1	384,000	2
15. Trav. & comb. allow. of W.SS & T.AA			2,160	1			720	0+	68,169	2	68,889	2	120,000	1
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	14,517	12	242,264	56	30,590	11	95,790	36	263,927	8	359,717	10	234,700	2
17. Other misc. items									48,395	2	48,395	1	155,998	2
SUB-TOTAL GENERAL CHARGES	15,187	13	259,561	61	32,242	12	102,330	38	782,474	25	884,800	26	1,083,098	10
TOTAL	112,155	100	427,629	100	261,303	100	267,029	100	3,156,172	100	3,423,201	100	11,700,000	100
											21,350,000		100	

Summary and Analysis of O & M Expenditure (ID & IMD)  
 INGINIMITIYA (2644 ha) and Comparison with Consultants Estimate (Rs)

Annexure 16

SI Description	Farmer's Collection (FC)								ID + IMD Averge for 1987,88&89	ID + IMD + FC Averge for 1987,88&89	Consultant's Estimate			
	1987		1988		1989		Average for 1987,88&89	Average for 1987,88&89			Adequate		Well	
	Exp:	%	Exp:	%	Exp:	%	Exp.	%			Exp.	%	Est.	%
<b>I OPERATION</b>														
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)									212,919	212,919		312,000	14	312,000 6
SUB-TOTAL (OPERATION)									212,919	212,919		312,000	14	312,000 6
<b>II MAINTENANCE (LABOUR)</b>														
2. Weeding & removal of water plants/clearing wetted area									141,791	141,791		276,000	13	890,000 18
3. Desilting									3,856	3,856		200,000	9	390,000 8
4. Earth Work in filling scours									16,479	16,479		105,000	5	230,000 5
5. Repairs to structures/ Construction	13,061	30			7,136	30	10,098	30	7,606	17,704		50,000	2	100,000 2
6. Spreading gravel									810	810		58,000	3	414,000 9
7. Other Misc. items									45,083	45,083		7,000	0+	10,000 0+
SUB-TOTAL MAINTENANCE (LABOUR)	13,061	30			7,136	30	10,098	30	215,625	225,723		696,000	32	2,034,000 42
<b>III CONSTRUCTION MATERIALS</b>														
8. Cement	12,625	29			6,875	29	9,750	29	26,812	36,562		10,000	0+	20,000 0+
9. Aggregates(sand, metal,rubble)	6,966	16			3,806	16	5,386	16	13,125	18,511		16,000	1	40,000 1
10. Gravel									8,682	8,682		217,000	10	1,507,000 31
11. Other Misc. items (paint, gunny bags, cane baskets,stop-planks gates, hume pipes, steel, tools, etc.)	10,885	25			5,970	25	8,428	25	20,652	29,080		70,000	3	100,000 2
SUB-TOTAL CONSTRUCTION MATERIALS	30,476	70			16,651	70	23,564	70	69,271	92,835		313,000	14	1,667,000 34
<b>IV GENERAL CHARGES</b>														
12. Supervision (sal.& allow.)									134,622	134,622		132,000	6	132,000 3
13. Watching (sal.& allow.)									19,950	19,950		105,600	5	105,600 2
14. Casual office employees (sal, allow)									19,934	19,934		120,000	6	120,000 2
15. Trav.& comb. allow. of W.SS & T.AA									49,177	49,177		30,000	1	30,000 1
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)									279,005	279,005		365,400	17	365,400 8
17. Other misc. items									189,099	189,099		110,000	5	131,000 2
SUB-TOTAL GENERAL CHARGES									691,787	691,787		863,000	40	884,000 18
TOTAL	43,537	100	Nil	-	23,787	100	33,662	100	1,189,602	1,223,264		2,184,000	100	4,897,000 100

Summary and Analysis of O & M Expenditure (ID & IMD)  
MAHAKANDARAWA (2545 ha) and Comparison with Consultants Estimate (Rs)

Annexure 17

SI Description	Farmer's Collection (FC)						ID + IMD Averge for 1987,88&89	ID + IMD + FC Averge for 1987,88&89	Consultant's Adequate Est.	Estimate Well Est.	
	1987 Exp:	1988 %	1989 Exp:	1989 %	Average for 1987,88&89 Exp.	Average for 1987,88&89 %					
<b>I OPERATION</b>											
1. Labour Cost (Sal.,allow,O/T,Comb.,allow)							62,408	8	62,408	7	280,000
SUB-TOTAL (OPERATIONS)							62,408	8	62,408	7	280,000
<b>II MAINTENANCE (LABOUR)</b>											
2. Weeding & removal of water plants/clearing wetted area							175,500	22	175,500	20	316,000
3. Desilting							60,200	8	60,200	7	164,701
4. Earth Work in filling scours							75,104	10	75,104	9	201,793
5. Repairs to structures/ Construction	26,062	33	26,062	33			26,062	3	26,062	3	35,990
6. Spreading gravel											38,400
7. Other Misc. items											32,321
SUB-TOTAL MAINTENANCE (LABOUR)	26,062	33	26,062	33	310,804	40	336,866	39	789,205	38	2,647,893
<b>III CONSTRUCTION MATERIALS</b>											
8. Cement	21,875	28	21,875	28	-		21,875	3	61,797	3	135,600
9. Aggregates(sand, metal,rubble)	25,250	32	25,250	32	-		25,250	3	54,560	3	121,923
10. Gravel									76,800	4	848,520
11. Other Misc. items (paint, gunny bags, cane baskets,stop-planks gates, hume pipes, steel, tools, etc.)									65,904	3	235,214
SUB-TOTAL CONSTRUCTION MATERIALS	47,125	60	47,125	60	-	-	47,125	6	259,061	13	1,341,257
<b>IV GENERAL CHARGES</b>											
12. Supervision (sal.& allow..)	829	1	829	1	15,508	2	16,337	2	79,200	4	79,200
13. Watching (sal.& allow.)					183,600	24	183,600	22	237,600	12	237,600
14. Casual office employees (sal, allow..)					25,542	3	25,542	3	72,000	3	72,000
15. Trav.& comb. allow. of W.SS & T.AA					24,000	3	24,000	3	24,000	1	24,000
16. Transport(sal.allow.O/T and comb.allow. of operators and drivers, fuel and lubricant, repairs to vehicles etc.)	5,022	6	5,022	6	139,084	18	144,106	17	188,400	9	188,400
17. Other misc. items					12,000	2	12,000	1	140,534	7	584,650
SUB-TOTAL GENERAL CHARGES	5,851	7	5,851	7	399,734	52	405,585	48	741,734	36	754,020
TOTAL	79,038	100	79,038	100	772,946	100	851,984	100	2,070,000	100	5,455,000

## Annexure - 18A

## Water Issue Data - Giritale (6192 ac)

Season	Reservoir Storage Start of Season Ac.ft	Reservoir Storage End of Season Ac.ft	Main Sluices Ac.ft Ac.ft/Acre	Date of Opening	Date of Closing	Rainfall (mm)	Spilling Records	Area Cultivated Ac	Water Duty at Main Sluice Ac,ft/Acre Ac,ft/Acre
Maha 84/85	16,375	17,490	32,726	15/10/84	15/03/85	957	NIL	7465	4.38
Yala 85	15,580	7,590	42,672	30/04/85	20/08/85	126	NIL	6819	6.26
Maha 85/86	12,880	17,270	32,788	20/10/85	20/03/86	940	NIL	7527	4.36
Yala 1986	16,625	560	46,332	20/04/86	31/08/86	157	NIL	7500	6.18
Maha 86/87	7,775	9,305	32,726	25/10/86	25/03/87	520	NIL	7727	4.24
Yala 1987	10,325	842	35,988	25/04/87	25/08/87	107	NIL	7000	5.14
Maha 87/88	7,155	7,590	36,410	15/11/87	31/03/88	312	NIL	7527	4.84
Yala 1988	14,585	5,230	21,410	01/05/88	31/08/88	200	NIL	4526	4.73
Maha 88/89	4,600	5,100	30,710	25/10/88	31/03/89	672	NIL	8023	3.83
Yala 1989	11,075	6,000	27,668	05/05/89	31/08/89	247	No Spilling	7500	3.69

## Annexure - 18B

## CULTIVATION DATA - Giritale (6192 ac)

Season	Total Area		Crops		Yield Bushels per acre	Remarks
	Under Spe. area	Cultivated area	Paddy	Highland Crops		
Maha 1984/85	6192	7440	7440	25	98	
Yala 1985	6192	6733	6733	NIL	86	
Maha 1985/86	6192	7527	7527	NIL	90	
Yala 1986	6192	7522	7522	NILL	90	
Maha 1986/87	6192	7527	7527	200	110	
Yala 1987	6192	7000	7000	NIL	60	
Maha 1987/88	6192	7527	7527	NIL	105	
Yala 1988	6192	4526	4526	NIL	100	
Maha 1988/89	6192	7527	7527	496	105	

## Annexure - 19A

## Water Issue Data - Ridi bendi Ela (5097 ac)

Season	Reservoir Storage Start of Season Ac.ft	Reservoir Storage End of Season Ac.ft	Main Sluices	Date of Opening Disch.	Date of Closing	Rainfall (mm)	Spilling Records	Area Cultivated Ac.	Water Duty Ac.ft/Acre
Maha 84/85	4,108	1,725	29,560	11/10/84	08/03/85	477	NIL	5900	5.00
Yala 85	7,290	4,850	28,042	25/03/85	31/07/85	85	2" - 8 days	5882	4.77
Maha 85/86	6,200	6,042	31,052	11/10/85	26/02/86	284	2" - 5 days	5952	5.22
Yala 86	7,290	705	30,116	10/04/86	10/08/86	25	1" - 4 days	5039	5.98
Maha 86/87	4,943	227	25,990	14/10/86	16/02/87	143	NIL	5952	4.37
Yala 87	4,983	235	13,440	15.05.87	22/08/87	460	NIL	3497	3.84
Maha 87/88	5,940	4,021	21,488	15/10/87	15/02/88	596	1" / 18" - 59 days	5947	3.61
Yala 88	6,192	7,242	17,252	20/03/88	25/07/88	553	1" / 3" - 40 days	3968	4.35
Maha 88/89	6,588	3,035	29,802	10/10/88	27/02/89	622	1" / 12" - 50 days	5952	5.00
Yala 89	6,588	5,688	35,428	15/05/89	14/09/89	267	2" - 3 days	5650	6.50

## Annexure - 19B

## CULTIVATION DATA - Ridi bendi Ela (5097 ac)

Season	Total Area		Crops		Yield Bushels per acre	Remarks
	Under Spe. area Ac	Cultivated area Ac	Paddy	Highland		
Maha 1984/85	5097		NIL		98	
Yala 1985	5097	5882	5882	NIL	85	
Maha 1985/86	5097	5952	5952	NIL	70	
Yala 1986	5097	5039	5039	NIL	70	sufficient water not obtained
Maha 1986/87	5097	5952	5952	NIL	50	Sufficient water not obtained during period
Yala 1987	5097	3497	3497	NIL	48	sufficient water not obtained for cultivation
Maha 1987/88	5097	5949	5947	160	15	
Yala 1988	5097	3968	3968	NIL	70	
Maha 1988/89	5097	5952	5952	NIL	70	
Yala 1989	5097	5650	5650	NIL	70	

## Annexure - 20A

## Water Issue Data - Gal Oya LB (31,394 ac)

Season	Reservoir Storage Start of Season Ac.ft	Reservoir Storage End of Season Ac.ft	Main Sluices Ac.ft	Date of Opening Disch.	Date of Closing	Rainfall (mm)	Spilling Records	Area Cultivated Ac.	Water Duty Ac.ft/ Acre.
Yala 87	t	t	202,552+	1/4/87	31/7/87	225	t	31,394	6.5
Maha 87/88	t	t	140,712+	13/12/87	15/2/88	622	t	31,394	4.4
Yala 88	t	t	163,489+	15/3/88	15/7/88	425	t	28,291	5.7
Maha 88/89	t	t	91,142+	21/5/88	28/2/89	1018	t	31,394	2.9
Yala 89	t	t	114,257+	15/4/89	5/8/89	302	t	23,554	4.9

\* The figures given under the column are the measured flows releated to the study area only.

t The figures to be presented in these columns are irrelevent as the study area is only a part of the full reservoir scheme.

## Annexure 20B

## CULTIVATION DATA - Gal Oya LB (31,394 ac)

Season	Total Area		Crops		Yield Bushels per acre	Remarks		
	-----		Paddy Highland					
	Under Spe. area Ac	Cultivated area Ac	Ac.	Ac.				
Yala 1987	31,394	31,394	31,394	NIL	80			
Maha 1987/1988	31,394	31,394	31,394	NIL	75			
Yala 1988	31,394	28,271	28,271	NIL	85			
Maha 1988/89	31,394	31,394	31,394	NIL	80			
Yala 1989	31,394	23,554	23,554	NIL	85			

## Annexure 21A

## Water Issue Data - Inginimitiya (6530 ac)

Season	Reservoir Storage	Reservoir Storage	Main Sluices	Date of Opening	Date of Closing	Rainfall (mm)	Area Cultivated Ac.	Water Duty Ac.ft/Acre.
	Start of Season	End of Season	Disch.					
	Ac.ft	Ac.ft	Ac.ft					
Maha 86/87	22,375	4,595	18,309	15/10/86	15/3/89	289	3890	4.7
Yala 87				No Cultivation				
Maha 87/88				Net Cultivated				
Yala 88	57,200	34,605	29,224	1/4/85	28/5/88	223	4680	6.24
Maha 88/89	36,040	10,805	32,208	15/10/88	12/2/89	206	6856	4.69

## Annexure 21B

## CULTIVATION DATA - Inginimitiya (6530 ac)

Season	Total Area		Crops		Yield Bushels per acre	Remarks
	Under Spe. area	Cultivated area Ac	Paddy	Highland		
Maha 1989/87	6530	3890	3890	NJ1	95	
Yala 1989		No Cultivation				
Maha 1987/88		No Cultivation				
Yala 1988	6530	4680	4393	287	100	
Maha 1988/89	6530	6856	6600	256	100	



## Annexure 22B

## CULTIVATION DATA - Mahakanadarawa (6287 ac)

Season	Total Area		Crops		Yield Bushels per acre	Remarks
	Under Spe. area		Cultivated area	Paddy		
	Ac.	Ac.		Ac.		
Maha 1986/87	No Cultivation					
Yala 1987	No Cultivation					
Maha 1987/88	6287	6120		6120	200	60
Yala 1988	No Cultivation					
Maha 1988/89	No Cultivation					

Maha 1986/87 No Cultivation

Yala 1987 No Cultivation

Maha 1987/88 6287 6120 6120 200 60

Yala 1988 No Cultivation

Maha 1988/89 No Cultivation

Fig. 1.

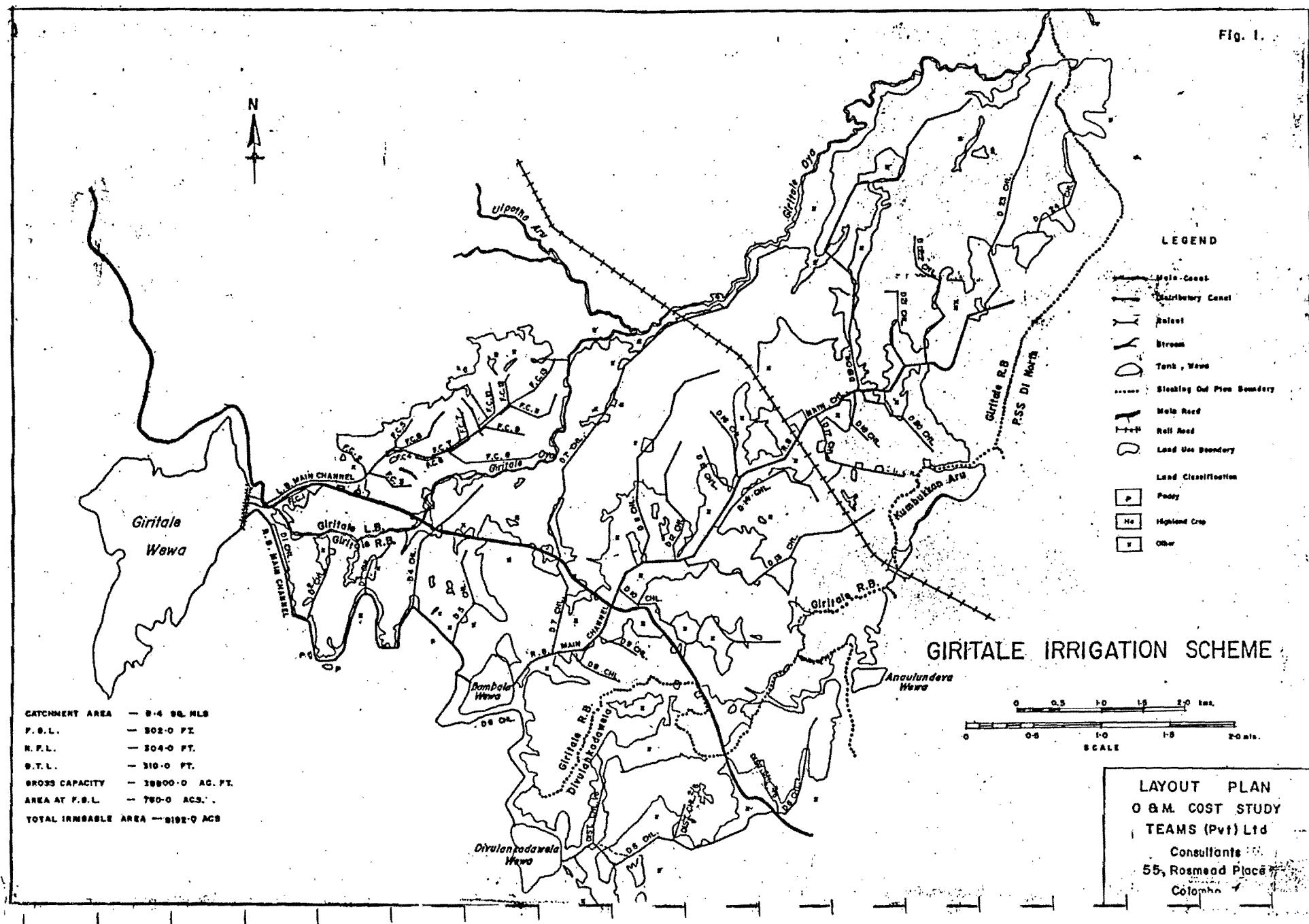


Fig. 1.

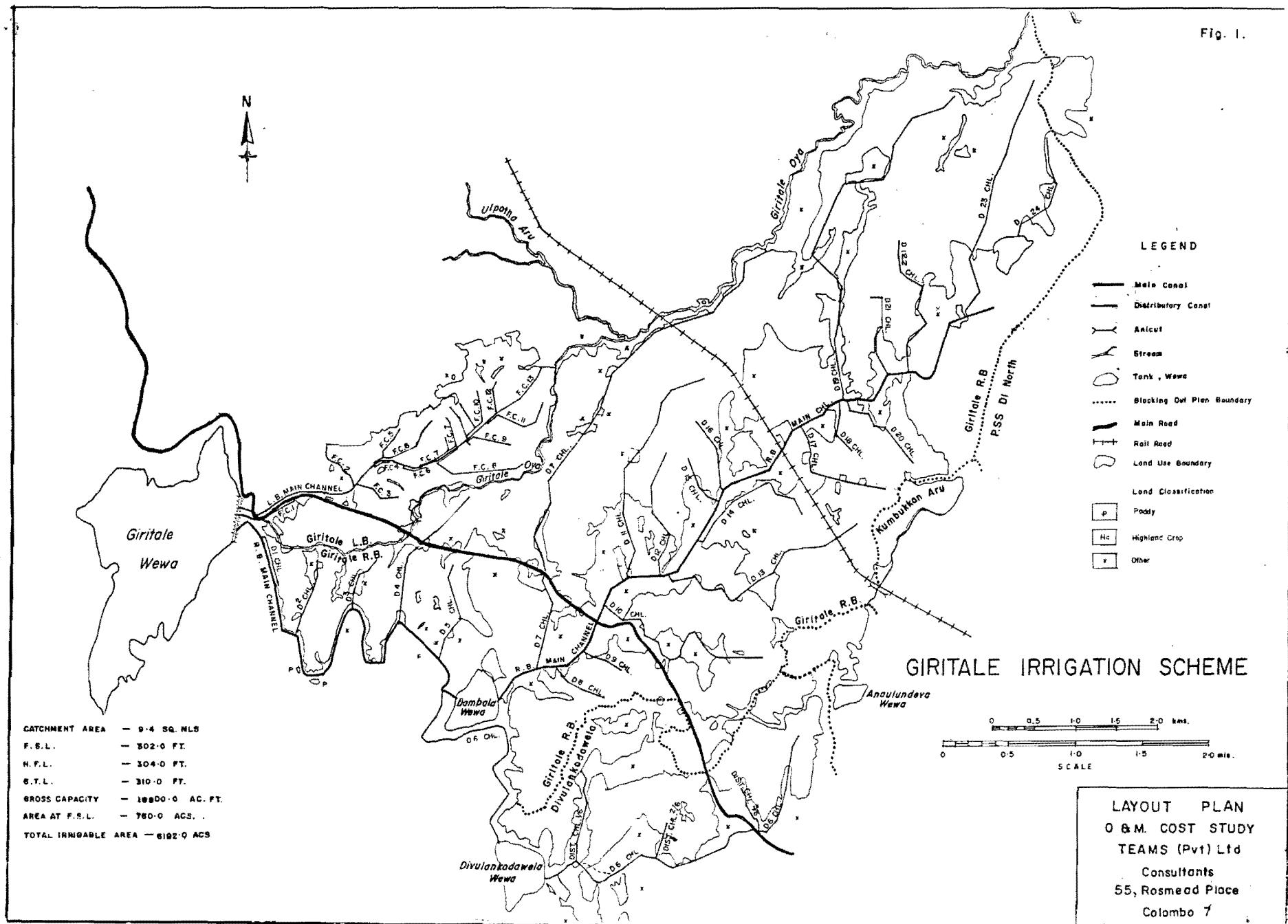


Fig. 2

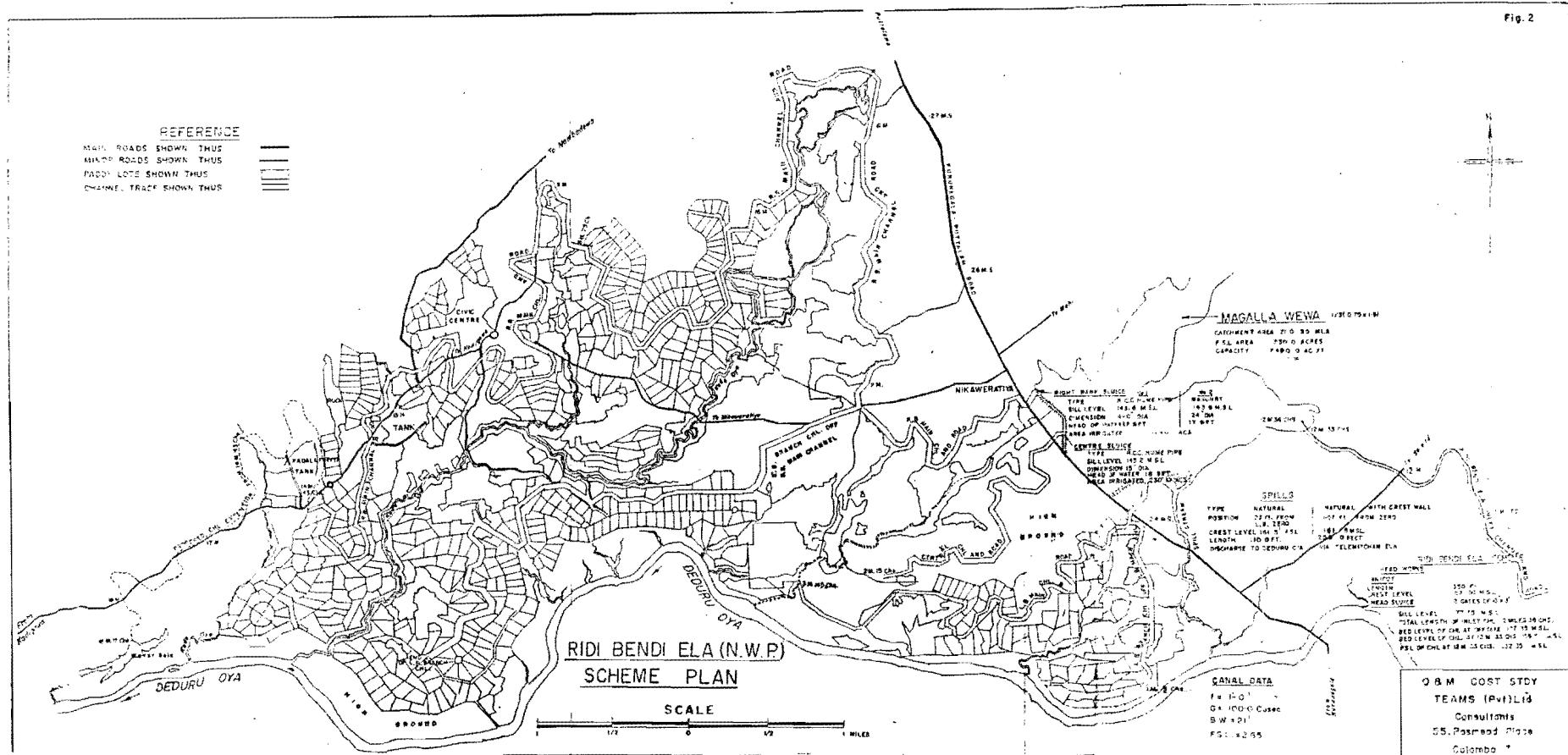
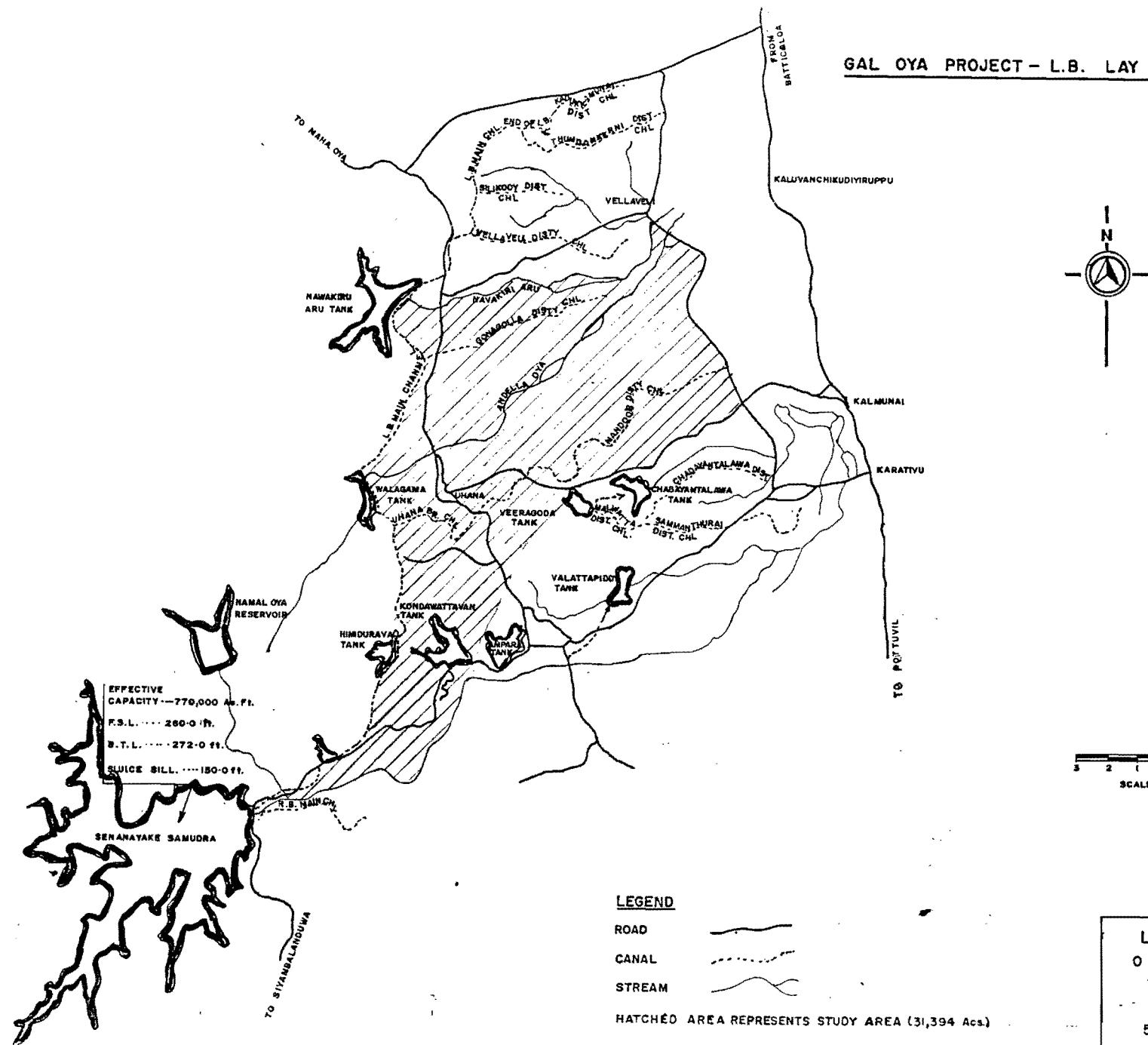


Fig. 3

GAL OYA PROJECT - L.B. LAY OUT



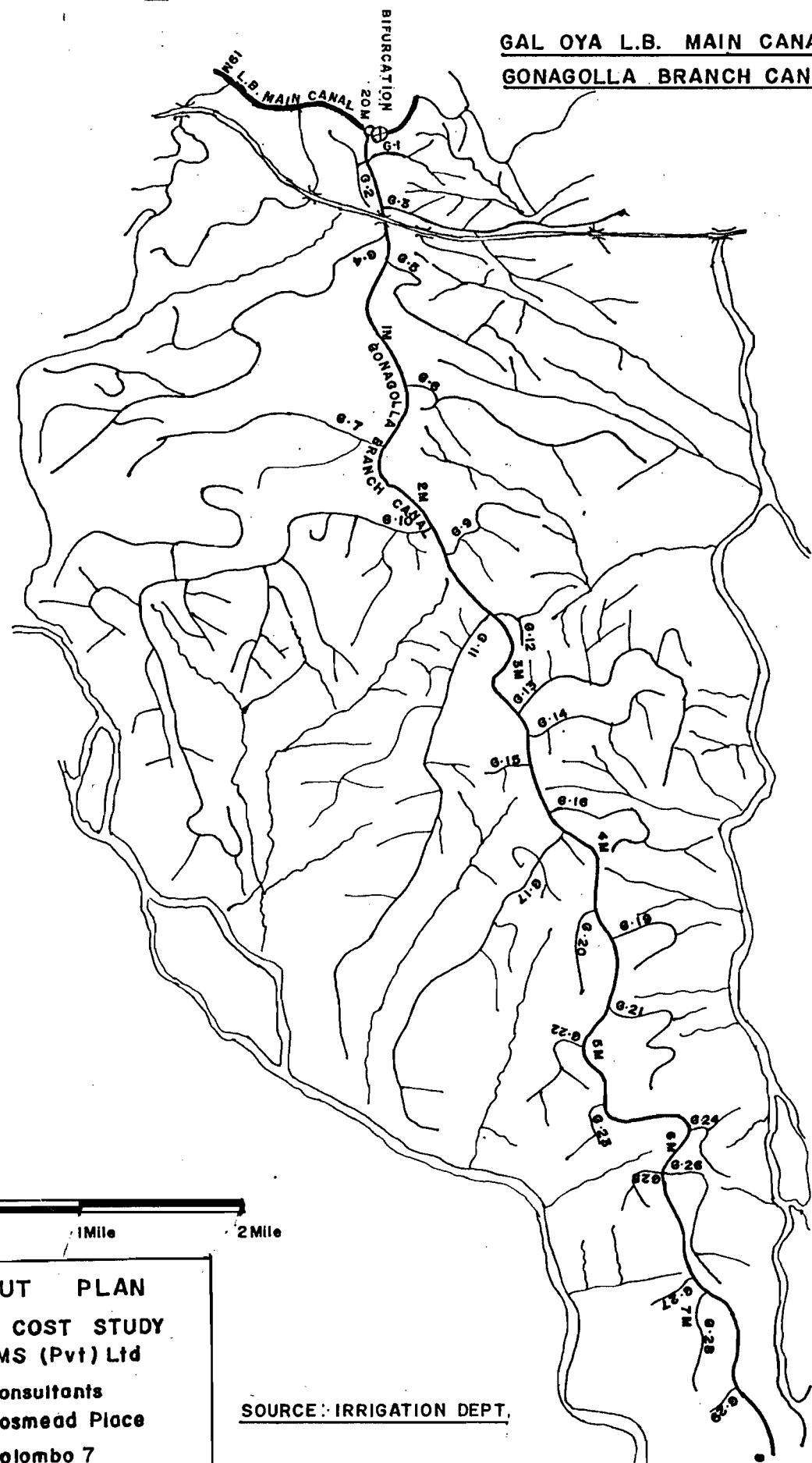
3 2 1 0 3  
SCALE IN MILES

LAYOUT PLAN  
O & M COST STUDY  
TEAMS (Pvt) Ltd  
Consultants  
55, Rosmead Place  
Colombo 7

LAY OUT PLAN OF SAMPLE AREA

Fig 3A.

GAL OYA L.B. MAIN CANAL  
GONAGOLLA BRANCH CANAL

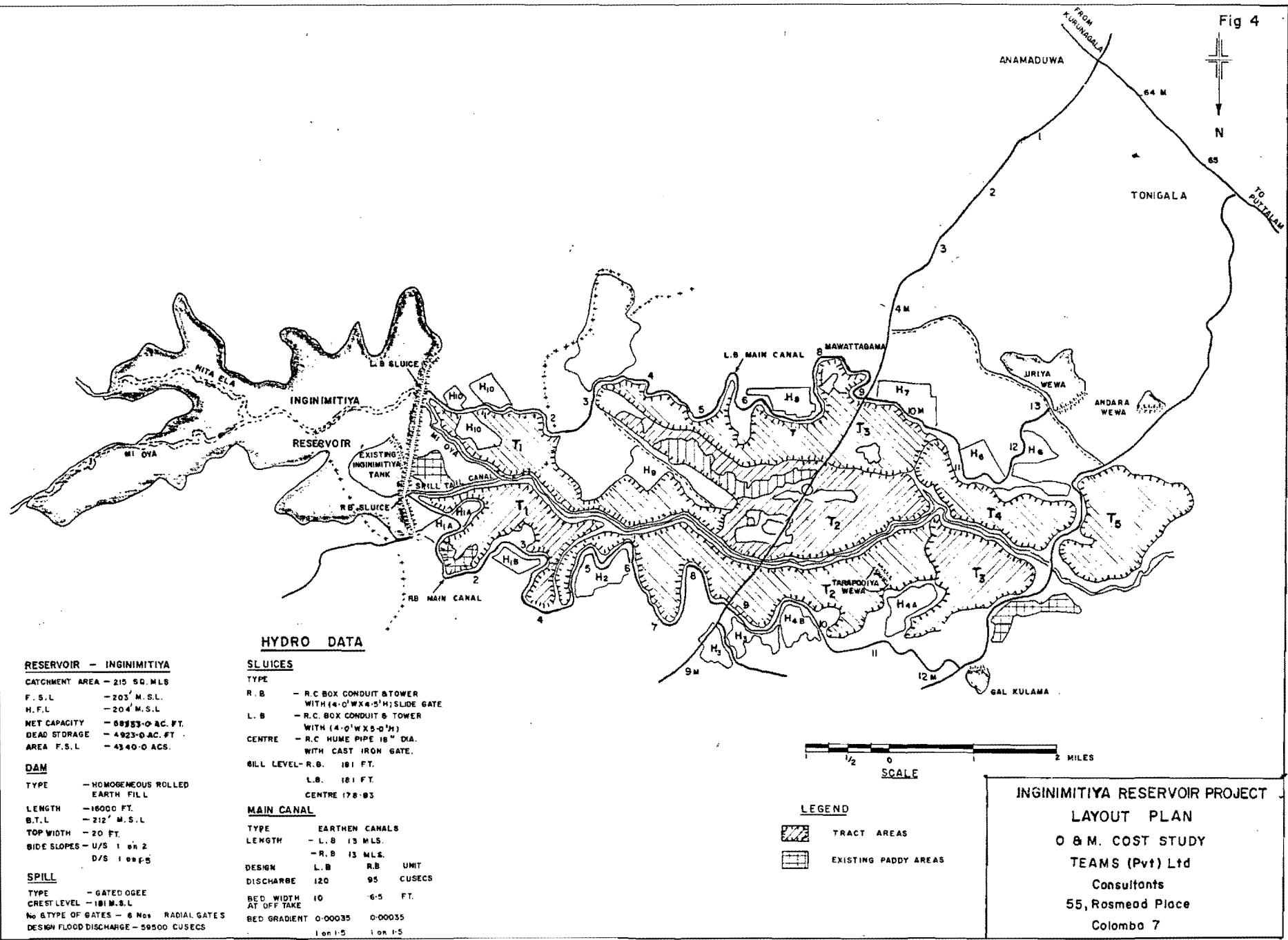


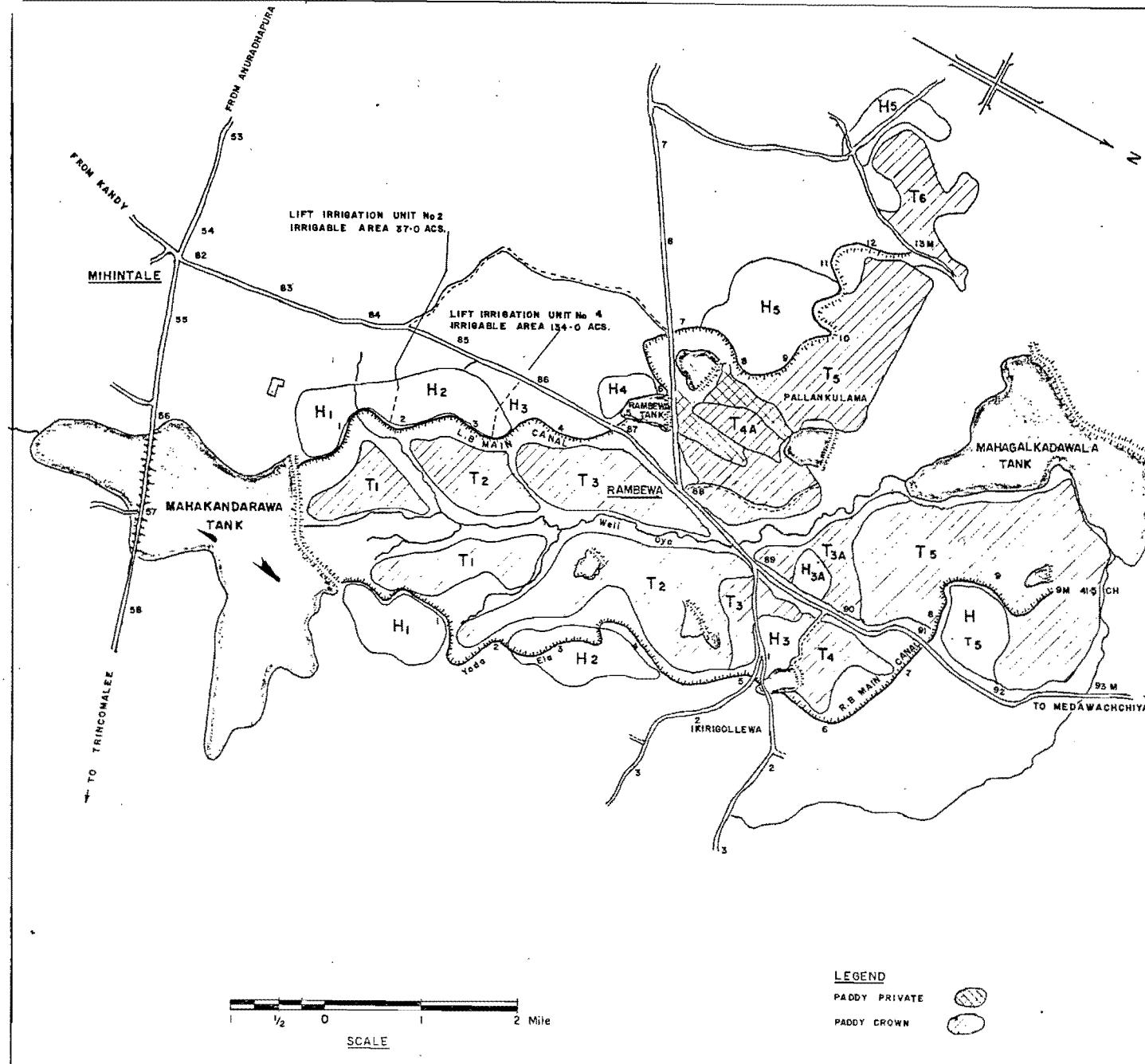
SCALE:-

0 Mile      1 Mile      2 Miles

LAYOUT PLAN  
O & M. COST STUDY  
TEAMS (Pvt) Ltd  
Consultants  
55, Rosmead Place  
Colombo 7

SOURCE: IRRIGATION DEPT.





### MAHAKANDARAWA TANK DATA

CATCHMENT AREA	- 126.0 SQ. MILES
CAPACITY GROSS	- 36250 AC.FT.
DEAD STORAGE	- 3800 AC.FT.
NET CAPACITY	- 32450 AC.FT.
AREA AT F.S.L.	- 3600 ACS.

### TANK BUND

LENGTH OF BUND	- 2 M. 17.0 CHS.
BUND TOP LEVEL	- 320.0 FT.
BUND TOP WIDTH	- 18.0 FT.
FULL SUPPLY LEVEL	- 311.0 FT.
HIGH FLOOD LEVEL	- 315.5 FT
FREE BOARD	- 4.5 FT.
SIDE SLOPES	- U/S 1 ON 3 D/S 1 ON 2.5

### SPILL

CENTRE SPILL LENGTH	- CREST 311.0 FT 630 FT. C.O. MASONRY
R.B. SPILL LENGTH	- CREST 311.0 FT 320 FT. C.O. WITH 2 IN RADIAL GATES 20' x

### SLUICE

L.B. SLUICE	- 3'-6" x 4'-6" SILL AT 2'
R.B. SLUICE	- 3'-6" x 3'-6" SILL AT 2'
FULL SUPPLY DEPTH	- 19'-0"

### MAHAKANDARAWA TANK SCHEME LAYOUT PLAN

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