Appendix 5.6 Detailed Plan for Staged Construction of Intake Facilities

A entire portion of the intake facilities, which is composed of inflow chamber, grit chambers, and pump sump, is proposed to be constructed in the first phase, taking consideration into the following issues:

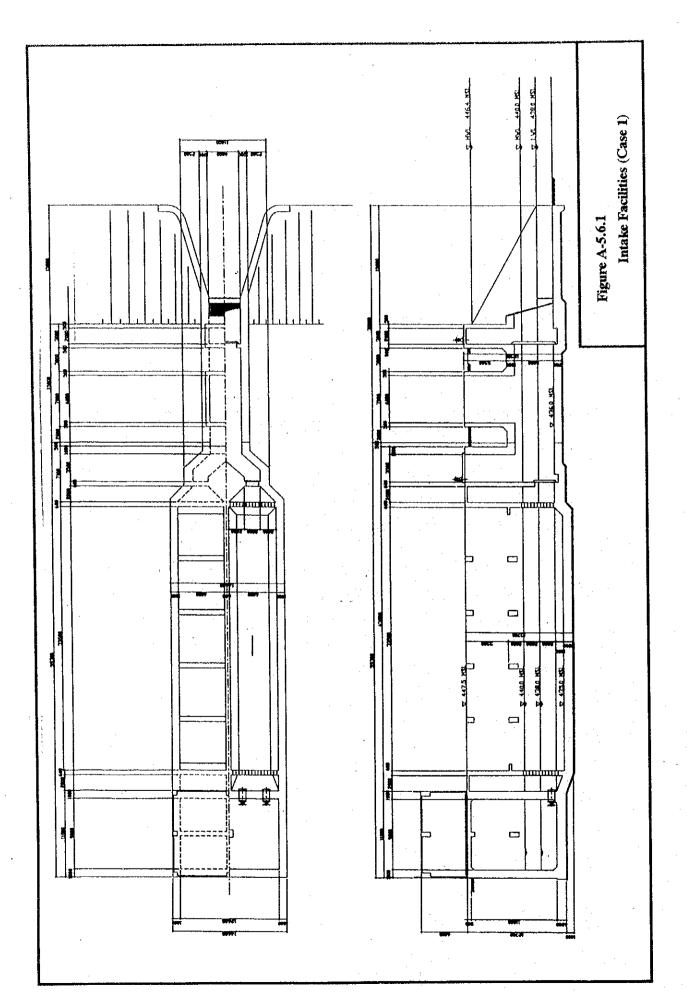
- · Minimisation of interruption of river flow during construction
- Minimisation of construction cost for temporary facilities such as de-watering and its necessary structures

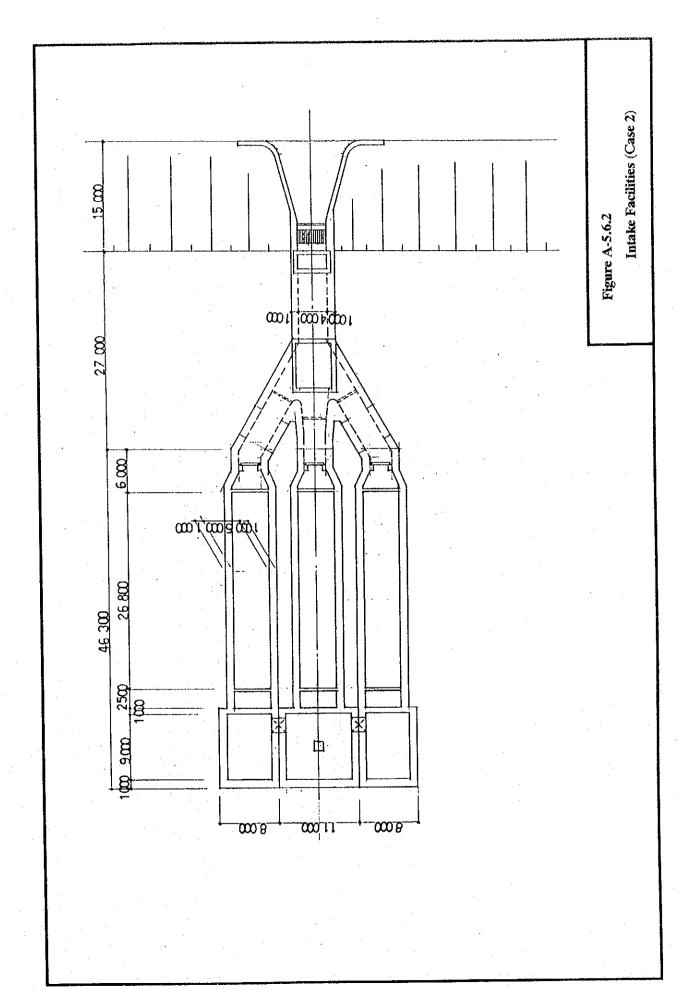
The following three cases for construction of are discussed hereunder to come up with the optimum construction schedule.

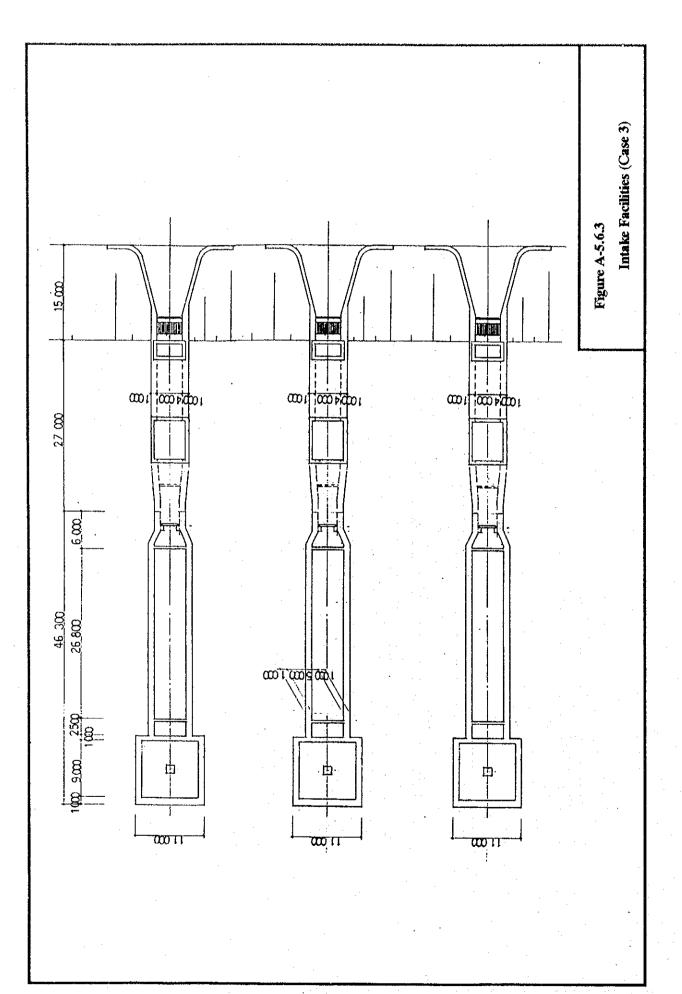
Table A-5.6.1 Construction Alternatives

Alternative	Descriptions
Case 1	To construct entire portion for year 2015 of intake facilities in phase 1
Case 2	To construct entire portion of inflow chamber in phase 1 and to construct grit chamber separately into three phases
Case 3	To construct 1/3 of intake facilities separately in three phases

According to the geographic survey for the prospective construction site conducted by the Study Team, N-value at four to five meter below underground is higher than 40. The basement of structure is then supposed to be a hard rock. Therefore, in Case 2 excavation will be necessary for base construction in each stage. In Case 3, intake structures is to be constructed separately to avoid the effect of blasting during excavation works. Detailed drawings are referred to Figure A-5.6.1, 5.6.2 and 5.6.3.







(1)

Table A-5.6.2 Construction Cost

		1.Intake Mouth /Sluice Way	2.Grit Chamber	3.Pump House	4.Pro	ovisional	Total
					Coffering	Unwatering	
Case1		29,500	68,000	26,200	16,800	6,500	147,000
Case2	Stage1	32,600	28,700	22,700	16800	6,500	107,300
	Stage2	2,700	2,700 28,700 18,		~	4,900	54,400
	Stage3	2,700	28,700	18,100	•	4,900	54,400
	Total	38,000	86,100	58,900	16,800	16,300	216,100
Case3	Stage1	28,300	28,700	18,100	16,800	6,500	98,400
	Stage2	28,300	28,700	18,100	16,800	6,500	98,400
	Stage3	28,300	28,700	18,100	16,800	6,500	98,400
	Total	84,900	86,100	54,300	50,400	19,500	295,200

Table A-5.6.2 summarises a comparison of construction cost. Case 1 costs 147 million Rupees. Case 2 costs 216 million Rupees or 50 percent higher than that of Case 1. Case 3 costs 295 million Rupees or two times as much as Case 1 cost.

Considering the maintenance works, minimum width of intake mouth and sluice way is set by 4 m regardless the intake amount and thus, Case 1 is cheapest in Category 1. As to grit chamber construction, since phased construction is adopted to Case 2 and 3, total cost is higher than Case 1. Further, unwatering work is needed for Case 2 and 3 in almost every construction stage.

Table A-5.6.3 Calculation by N.P.V.

	Case 1		Case 2		Case 3	The state of the s
Year		Construction	Investment	Construction	Investment	Construction
	Year	Cost	Year	Cost	Year	Cost
2005Year	2002Year	147,000	2002Year	107300	2002Year	98,400
2010Year			2007Year	1	2007Year	98,400
2015 Y ear			2012Year	54400	2012Year	98,400
	Total	147,000	Total	216100	Total	295,200
1999	0		0		0	
2000	. 0		0	· · · · · · · · · · · · · · · · · · ·	0	
2001	0		0		0	
2002	147,000		107,300	·	98,400	
2003	0		0		0	
2004	0		0		0	
2005	0		0		0	
2006	0		0		0	
2007	0		54,400		98,400	
2008	0		0		0	
2009	0		0		.0	-
2010	0		0		0	İ
2011	0		0		0	
2012	0	-	54,400		98,400	
2013	0		0		0	
2014	0		0		. 0	
2015	0		0		0	4.5
Rate 8%	108.049		124.603		155.053	
Rate 10%	100.403		110.683		134.852	
Rate 12%	93.421		98.940		118.154	

Table A-5.6.3 shows a comparison of present values, applying 8 percent to 12 percent discount rate, provided that entire investment of Case 1 will be implemented in 2002, investment for Case 2 will be implemented in 2002, 2007, and 2012, and investment for Case 3 will be implemented in 2002, 2007, and 2012. As a result of analysis, Case 1 is concluded to be the lowest investment cost, followed by Case 2 and Case 3.

In comparison of cost for Stage 1, Case 1 costs 147 million Rupees or the highest among alternatives, and Case 2 and Case 3 cost 107 million Rupees or 73 percent of Case 1 and 98 million Rupees or 67 percent of Case 1, respectively.

However, additional excavation will be needed for Case 2 and 3 to secure intake water way. Accounting this additional cost, Case 1 is most economical in every construction stage. Accordingly, Case 1, which construct whole intake facility in stage 1 years, shall be adopted.

Appendix 5.7 Summary of Project Cost				Š	ļ	ŗ	100000	۴	Total
Phase		£.	Phase 1	4	Phase 2	ı	asc 3		1
Pacilities		Qtty	Amount	Orby	Amount	Orry	Amount	ei i	Amount
1 Intake Facility									
Interestation Chamber/Pump House	L.S.	1	147.000	-	0	•	0	-	147.000
Disen	units	2	142.000	Ī	71.000	1	71.000	4	284.000
Llactrical Equipment	LS	1	24.600	1	24.500	1	24.500	3	73.600
Domer County	S		670	1	029	1	999	t)	2.000
Consessing Pine (& 800 - 900 mm)	B	2.200	94.879	009	30.365		0	2.800	125.244
Delending Tank	LS	1	7.780	,	0	٠	0	1	7.780
Sub Total			416.929		126.535		96.160		639.624
7 Treatment Dient	p/sm	(36,670)		(73,330)		(110,000)		(110,000)	
ŀ	Ľ.S.	1	14.062		10.124	1	10.129	1	34.315
Receiving Well	LS	1	4.928		. 0	-	0	1	4.928
Sedimentation Basin	LS	7	52.336	1	52.336	1	52.336	et .	157.008
Ranid Sand Fifter	I.S.		53.543	I	53.543	1	53.542	1	160.628
Clear Water Reservoir	LS	1	33.384	1	33.384	1	33.385	1	100.153
Backwash Return Pump	L.S.		9.756		0	•	0	I	9.756
Shidoe I agron	LS	-	11.964	1	5.982	1	5.982	1	23.928
Office	1.5	-	6.280		0	•	0	1	6.280
Pump House	LS	-	6.000		0	-	0	1	6.000
Chemical House	LS	-	8.000	,	0	-	0	1	8.000
Chlorination House	LS		066		0	,	0		066
Warehouse	L.S.	17	4.000	,	0	•	0	-	4.000
Mechaical/Electrical Equipment	L.S.	-1	514.300	1	514.100	17	514.100		1.54
Power Supply	L.S.	1	1.400	1	1.300	1	1.300		
Inplant Piping	ĽŠ	1	19.100	1	14.500	,,,			
Miscellaneous	L.S.	1	37.000	1	34.300	1	34.300	-1	 l.
Sub Total			777.043		719.569		719.574		2.216.186

Phase		Ph	Phase 1	Ph	Phase 2	чď	Phase 3		Totaí
الأماناني		Ottv	Amount	Otty	Amount	Otty	Amount	Otty	Amount
recitions									
Conjument	units	20	12.000	12	7.200	46	27.600	78	46.800
Charles Dance	ıı nits	20	000.6	12	5.400	46	20.700	78	35.100
CHOI HAUDI LYOUSO			21.000		12.600		48.300		81.900
TATOL TOTAL									
4 Transmission Pipeline									
Pipeline									
PVC (75 - 225 mm)	B	23.745	94.735	26.610	99.590	52.050	191.120	102,405	385.445
DCIP (250 - 900 mm)	æ	18.400	326.368	27.879	393.982	37.795	358.932	84.074	1.079.282
Aqueduct									,
\$350-120m	L.S.	•	0	-1	101.000	-	٥		101.000
(\$600, \$600)-120m	L.S.	1(¢ 600*1)	170.000	,	0	1(\$600*1)	100.000	1(\$600*2)	270.000
(# 700	LS.	1(\$ 700*1)	189.000		0	1(\$600*1)	100.000	4(% / 00 ' 4, \$\phi 600*1)	289.000
4110-4600.20m	1	5	25.000	2	10.000	2	10.000	6	45.000
Sub Total			805.103		613.012		760.052		2.178.167
4 Pumping Station									
	LS.	1	3.298	1	0	•	٥,	⊣	3.298
(0.7 m³/min x 168 m x 33 kW x 3 units : 1 unit stand by)									
Enyagama R. to Daulagaia R.	LS.	<u> </u>	0		10.644		0	—	10.044
(2.6 m³/min x 52 m x 38 kW x 3 units: 1 unit stand by)								,	i i
Eriyagama R. to Sooriyagoda R.	LS.		O	1	0		6.051	- -	6.051
(0.7 m³/min x 100 m x 20 kW x 3 units: 1 unit stand by)									,
I.B. to Mahakanda R.	L.S.	7-	0	-	0	F=4	2.816		2.810
$(0.7 \text{ m}^3/\text{min } \times 40 \text{ m } \times 8 \text{ kW } \times 1 \text{ unit})$					-				
Udu to Peradeniya to Bowalawatta R.	L.S.	•	0	1	0		5.191	, - 1	5.191
(2.1 m³/min x 56 m x 33 kW x 2 units : 1 unit stand by)									
Bowalawatta R. to Augustawatta R.	L.S.	•	0		0		5.240	← 1	5.240
(0.7 m³/min x 82 m x 16 kW x 3 units: 1 unit stand by)									
Augustawatta R. to SpringHill Estate R.	L.S.	1	0		0		3.324	H	3.324
(3.7 m/min x 62 m x 12 kw x 2 mins 1 min stand by)									

Phase		Ph	Phase 1	id.	Phase 2	P	Phase 3	1	Total
Facilities	!	Qtty	Amount	Qtty	Amount	Qthy	Amount	Orty	Amount
4 Pumping Station									
Heerasagala Low R. to Heerasagala Mid R.	Ľ.S.	П.	3.902	, ,	1.962		0	p=4	5.864
(0.7 m³/min x 63 m x 12 kW x 3 units : 1 unit stand by)									
Heerasagala Mid R. to Heerasagala Upper R.	LS.	П	3.517	•	0	·	0		3.517
(0.7 m³/min x 73 m x 14 kW x 2 units : 1 unit stand by)									
R2 to Hantana Place R.	LS.		0		7.649	1	0	₩	7.649
(1.1 m³/min x 94 m x 29 kW x 3 units: 1 unit stand by)									
Hantana Low R. to Hantana Upper R.	L.S.	1.	0	7	4.113	ı	0	+	4.113
(0.35m³/min x 100 m x 10 kW x 3 units : 1 unit stand by)									
Ampitiya R. to Elhena R.	LS.	1	3.200	,	0	•	0	red	3.200
(0.7 m³/min x 55 m x 11 kW x 2 units : 1 unit stand by)		-							
Ampitiya R. to Mullpihila Low R.	LS.	1	3.193	•	0	•	0		3.193
(0.5 m³/min x 78 m x 11 kW x 2 units : 1 unit stand by)									
Ampitiya R. to Meekanuwa R.	rs.	1	3.162	•	0	-	0		3.162
(0.5 m³/min x 66 m x 10 kW x 2 units: 1 unit stand by)									
Katugastota W.T.P. to Kahawatta R.	L.S.	1	64.000	1	32.000	,	0	н	000'96
(14.3 m³/min x 103 m x 411 kW x 3 units: 1 unit stand by)						Ì			
Balanagara R. to Udatalawina R	LS.	-	0	_	0	1	5.630		5.630
(0.9 m³/min x 93 m x 23 kW x 2 units: 1 unit stand by)									
Balanagara R. to Pityegendara R	rs.	-	0	•	0		4.328	F-1	4.328
(0.6 m ³ /min x 66 m x 11 kW x 3 units: 1 unit stand by)									
Kahawatta R. to Godahana Branch	L.S.		0	7	0	7	15.317	 1	15.317
(2.2 m³/min x 106 m x 64 kW x 3 units: 1 unit stand by)									
Godahana Branch to Godahana R.	LS.		0		0	t-H	4.264		4.264
(1.8 m³/min x 47 m x 24 kW x 1 unit)									
Godahana R. to I.B.	LS.		0	•	0		5.145	ч	5.145
(0.9 m³/min x 61 m x 15 kW x 3 units: 1 unit stand by)									
LB. to Galhinna R.	L.S.		0		0		4.402	H	4.402
(1.8 m ³ /min x 50 m x 25 kW x 1 unit)									
Kahawatta R. to Kurugoda R.	LS	Y-4	7.611	•	0	 -	3.476	₽4	11.087
(1.9 m³/min x 75 m x 41 kW x 3 units : 1 unit stand by)									
Kurugoda R. to Heepitiya R.	LS		0		0	-	5.522	 1	5.522
(1.0 m³/min x 60 m x 17 kW x 3 units : 1 unit stand by)									

Phase		ď	Phase 1	P	Phase 2	Ph	Phase 3	L	Total
Facilities		Otty	Amount	Qthy	Amount	Qt'ty	Amount	Otty	Amount
4 Pumping Station									
Katugastota W.T.P. to Rajapihilla R.	L.S.		0	1	9.252	· ·	0	H	9.252
(6.1 m³/min x 147 m x 251 kW x 2 units: 1 unit stand by)									
Rajapihilla R. to Madadeniya R.	LS.	•	0	,	0		3.704		3.704
(0.6 m³/min x 48 m x 7 kW x 3 units: 1 unit stand by)									
Katugastota W.T.P. to Kondadeniya Sump	LS.	1	1.331	·	0		0	;=4	1.331
(2.7 m³/min x 5 m x 4 kW x 2 units: 1 unit stand by)									
Kondadeniya Sump to Kondadeniya R.	.S.1	1	13.561		0		0	r-4	13.561
(2.7 m³/min x 145 m x 110 kW x 2 units: 1 unit stand by)									
Katugastota W.T.P. to Upland R.	LS.	1	136.800	1	45.600	t-1	45.600	П	228.000
(8.5 m ³ /min x 160 m x 378 kW x 5 units: 1 unit stand by)									
Asginya R. to Bahirawakanda R.	L.S.	1	8.852	1	0	•••	0		8.852
(4.7 m³/min x 45 m x 59 kW x 2 units : 1 unit stand by)									
Balanagara R. to Sirimaruwatta R.	rs.		0	1	8.775		0		8.775
(10.6 m³/min x 20 m x 59 kW x 1 unit)				-					
Sirimaruwatta R. to Dambaraya R.	LS.		0	1	7,067	1	0	; 4	7.067
(2.0 m³/min x 33 m x 19 kW x 3 units: 1 unit stand by)									
Katugastota W.T.P. to Gohagoda R.	LS.	1	4.761	'	0	1	0	***	4.761
(1.8 m³/min x 112 m x 55 kW x 3 units : 1 unit stand by)									
Bogahakabda Tank to Bogahakanda R.	LS.		0	1	2.366	1	0	=4	2.366
(0.1 m³/min x 38 m x 1 kW x 3 units: 1 unit stand by)									
Sub Total		6	257.188	8	129.428	15	120.010	32	506.626
5 Distribution Reservoirs									
Buluwemuduna Low (47 m³)	LS.		0		0		4.273	1	4.273
Buluwemuduna Upper (118 m³)	LS.	•	0	•	0	1	7.284	1	7.284
Ambakote (216 m³)	LS.	•	0	•	0	1	10.638	Ţ	10.638
Kolongaswatta (243 m³)	rs.	-	0	-,	0	1	11.514	Ψſ	11.514
Kundasale (630 m³)	rs.	-	0	1	22.401	-	0	1	22.401
Menikhina (775 m³)	L.S.		0	1	26.127		0	τ	26.127

	Phase	_	Dhace 1	Ā	Phase 2	Ph	Phase 3		Total
		ALIO	Amount	Offy	Amount	Otty	Amount	Otty	Amount
rachines									
5 Distribution Reservoirs	0,			-	10.384		0	F-1	10.384
Sirinalwatta (208 m)	(C-1)				0	1	4.273		4.273
Rajawella (47 m)	7.0				0		43.758	1	43.758
BOI (1,511 m)	L.3.			1	5 441		0		5.441
Gum Udawa (72 m)	LS			7	5 258		C		5.358
Dambarawa (70 m²)	L.S.				0.330	•	2000	-	0 004
Jambugahapitiya (167 m ³)	L.S.		0		0	T	9.004		100.5
Udatalawinna (167 m³)	T.S.		0	•	0	1	9.004		4.004
Kaballa (323 m ³)	L.S.		1 54.470	•	0	-	0	-	54.470
Denostations (708 m ³)	1.S.		13.191		0		0		13.191
Withhead (470 m)	1.5			,	0	1	16.790		16.790
Wallegalia (724 At)	S I		0		0	1	15.031	1	15.031
Fillyegendata (500 m.)	LS		11.643	'	0		0		11.643
Dathering (A70 m)	1.8		0		0	7	18.383	11	18.383
n : :::: // // 23	\$ 1		0		0	ī	12.605		12.605
Fujapiuya (±70 m.)	SI		35.884		0	<u> </u>	0	1	35.884
Witnested (434 m)	S 1		19.888	'	0	•	0	Ţ	19.888
Tatamburente (104 m ³)	SI		7.494		0	<u>'</u>	0	1	7.494
Useritin (865 m ³)	1.5		0		0	Ţ	28.388	1	28.388
Gelhima (400 m²)	LS		0		0	1	1	1	18.673
Madadenius (111 m ³)	T.S.	_	0		0	1	6.994	1	6.994
Nigawela (1.150 m ³)	L.S.		0	·	0	1	35.300	1	35.300
Kulugammana (111 m ³)	L.S.		1 6.994		0 -		0	1	
IIdawawala (520 m ³)	L.S.	 	0		19.472		0		_
Kondadeniva (384 m)	L.S.		1 15.703		0		0	T	15.703
IIIndocate (202 m)	S 1		0		0		10.885	F-1	10.885
Thursdain (Less. III.)	8.1		0		1 18.295		0	1	18.295
Volume mines (211 m.)	\$ 1		0		0 ·		13.569	1	13.569
Society of the Contract of the	ST		0		0	ţ=-(12.396	1	12.396
Scoulyagous (#124.44)	0 1		0		0		1 9.545	F1	9.545

Phase		id.	Phase 1	Ρł	Phase 2	Ph	Phase 3	Ţ	Total
Ta district		Otto Otto	Amount	Qtty	Amount	Otty	Amount	Qtty	Amount
s actualism. Desertablism									
1	L.S.		0	77	12.396	1	0	1	12.396
Gobasoda (207 m ³)	L.S.	1	10.384		0	•	0	1	10.384
Bogahakanda (41 m ³)	L.S.		0	1	3.979	-	0	1	3.979
Varihalagala (206 m³)	L.S.		0	. 1	10.303	-	0	1	10.303
Rahirawakanda (1.595 m ³)	L.S.	1	45.684		0	-	0	F-1	45.684
Primrose (315 m ³)	LS.	1	13.693		0	٠	0	1	13.693
Hecrasagala Low (198 m ³)	L.S.	1	10.052	-	0	-	0	1	10.052
Heerasagala Middle (248 m ³)	L.S.	1	11.643	•	0		0	7	11.643
Heerasagala Umer (248 m.)	L.S.	1	11.643		0	•	0	1	11.643
Rogalawatta (248 m)	L.S.		0		0	ī	11.643	1	11.643
Augustawatte (248 m.)	LS.	,	0	•	0	1,	11.643	1	11.643
Spring Hill Estate (248 m ³)	LS.		0	•	0	1	11.643	1	11.643
Dangola (254 m ³)	L.S.	1	11.849	-	0		0	1	11.849
Mahakanda (260 m ³)	I.S.		0	-	0	1	12.021	. 1	12.021
Gurudeniva (248 m²)	L.S.		0	-	0	. 1	11.643	1	11.643
Hantana Place (248 m ³)	L.S.	1	11.643	•	0	•	0	7	11.643
Hantana Call Link (236 m ³)	LS.		0	1	11.267	-	0	1	11.267
Aspiriva (3.059 m³)	L.S.	1	77.924	-	0	•	0	1	77.924
Upland (2,728 m ³)	L.S.	1	70.806	-	0	•	0	# -4	70.806
Talwatta (248 m³)	L.S.		0	1	11.643	ì	0	1	11.643
Elhena (248 m³)	L.S.	1	11.643		0	-	0	1	11.643
Mujupihilla (79 m ³)	L.S.	1	5.735	٠	0	-	0	1	5.735
Talathu Oya (247 m ³)	L.S.		0		0	1	11.638	1	11.638
Halagama (247 m³)	L.S.		0		0	1	11.638	1	11.638
						-			
Sub Total		20	457.966	12	157.066	27	380.176	59	995.208
Direct Construction Cost Total	1.8.		2.735.229		1.758.210		2.124.272		6.617.711

Appendix 5.8 Transmission Route to Kundasale Area

A small scale water supply system exists in Kundasale area being located at eastern area of Greater Kandy. NWSDB has a plan of bulk water supply (13,000 cu.m/day) to the Kundasale WSS in this particular area and is about to start its implementation.

Kundasale WSS has following feature of facility plan:

1) Water treatment plant situates at north of the outskirt of Greater Kandy area. Deinking water is transmitted to the eastern end of Kundasale area and diverted to Silimalwatta area and Kundasale area, both of which pass through western part of Kundasale area.

Owing to this physical configuration, transmission line in the eastern area has relatively large diameter, while that in the western area has smaller diameter.

- 2) Within Kundasale area, Menikhina, Silimalwatta, Kundasale, BOI has large water demand and Silimalwatta and Kundasale are located at western edge of Kundasale area.
- 3) The planned supply amount to Kundasale WSS can only cope with water demand in the eastern area of Kundasale and a part of BOI in the year 2015.

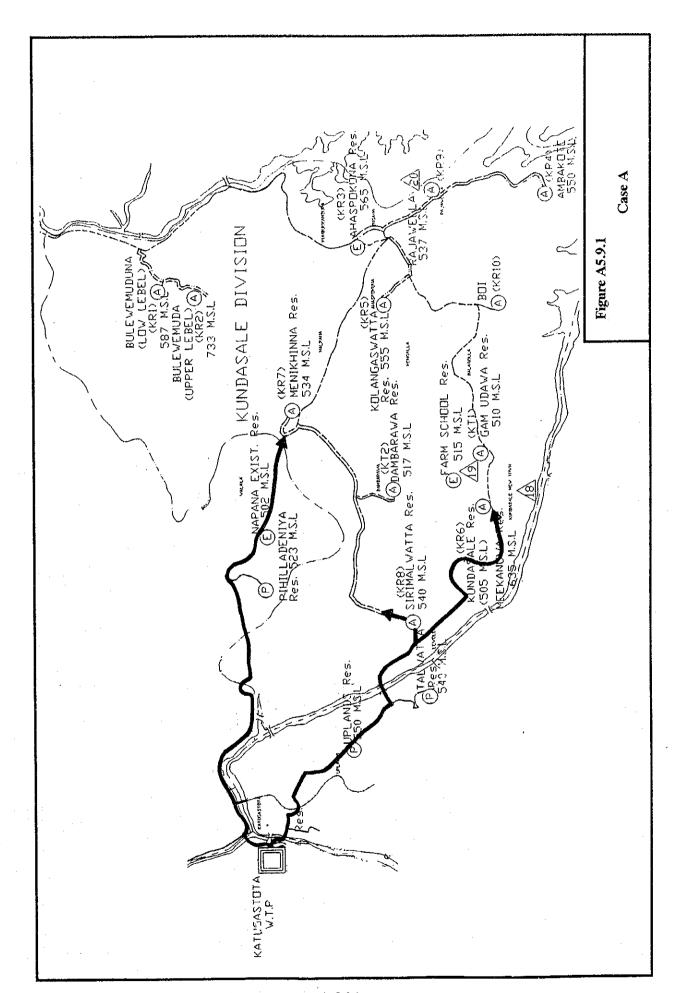
The current bulk water supply plan is not considered for future expansion and the future water demand beyond its target year shall therefore depend on the transmission from Katugastota Water Treatment Plant. Water demand increase in Kundasale area by 2015 is estimated at 28,900 cu.m/day, while the above mentioned Kundasale WSS can cater for 13,000 cu.m/day and the future use of the existing water source has 700 cu.m/day. In this regard, the water gap at 15,200 cu.m/day will rely on the transmission from Katugastota Water Treatment Plant.

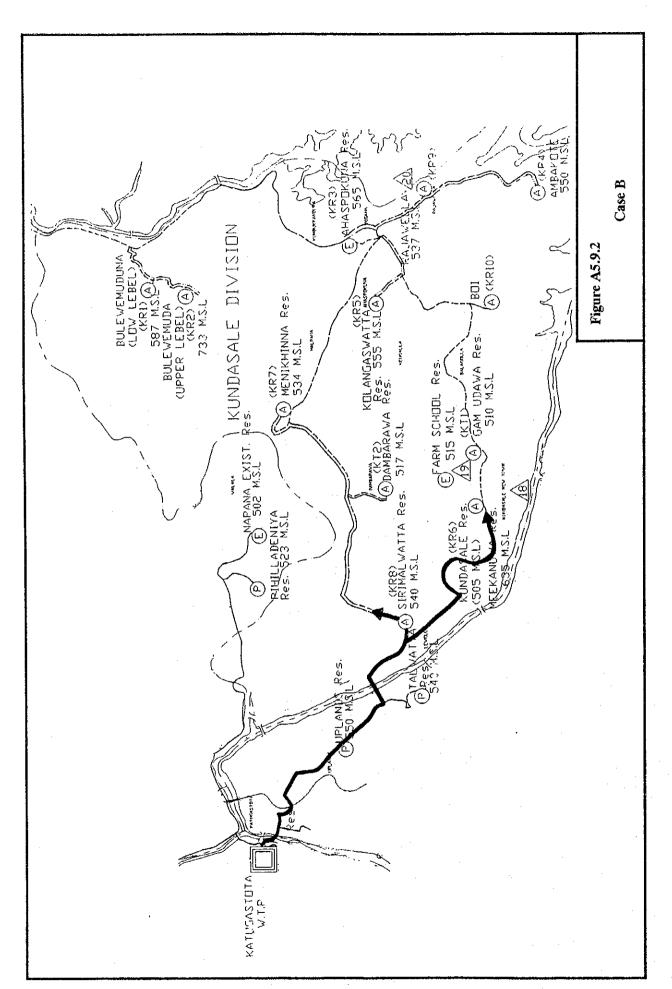
For water transmission to Kundasale area, there are two possible routing as shown in Figure A5.12.1 to A5.12.4; (1) passing at north-side of the Mahaweli River and (2) crossing at the Mahaweli River in Buwelikada after passing through the Upland Reservoir in KMC area. For branching water to distribution reservoirs at Silimalwatta, Dangarawa, Menikhina and Kundasale in the Kundasale area, there are also two alternatives as mentioned on the above. Thus, A total of 4 cases would be considered as alternatives.

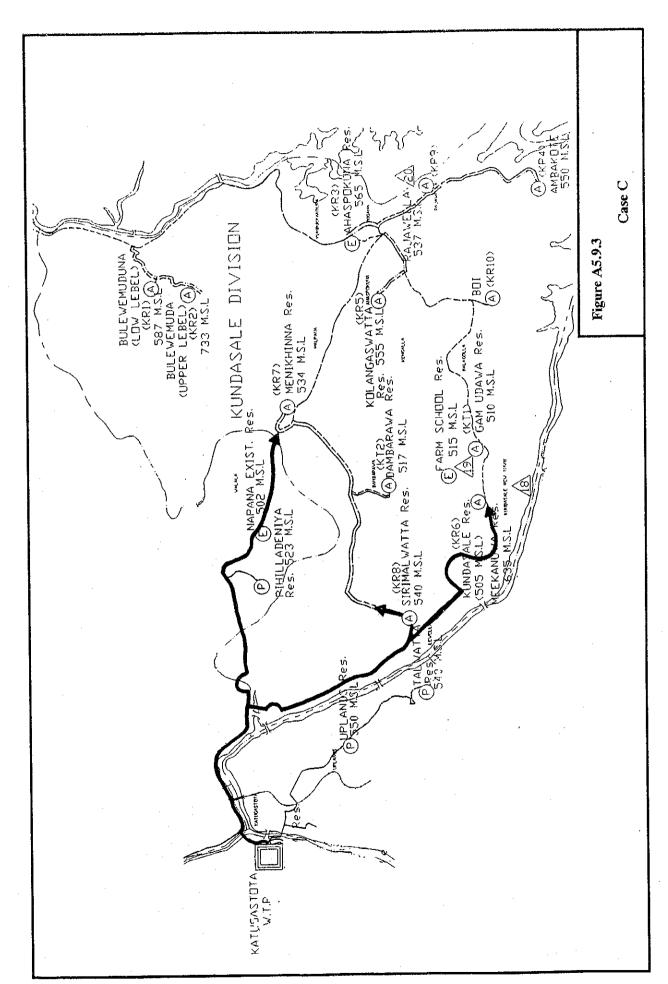
Comparative evaluation of the above four alteratives was carried out from the viewpoints of pump station construction cost, transmission line installation cost, pump operation cost taking into account of elevation and receiving water volume at each distribution reservoir from Katugastota Water Treatment Plant and of transmission routes. This evaluation concluded that Case D was the most economical plan.

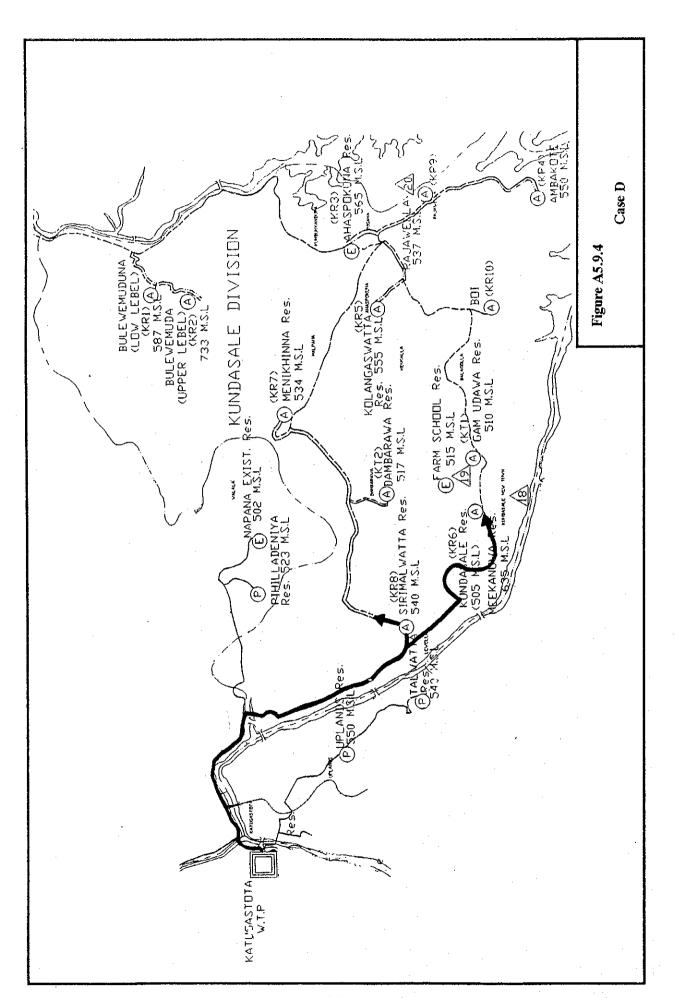
Cost Categoty	Alternative	Case A		Case B		Case C		Case D	
	Transmission Line	546.671	2	484.291	1	585.410	4	569.283	3
Construction	Aqueduct	525.000	4	500.000	3	386.000	1	386,000	1
Cost	Transmission Pump	306.997	4	203.436	1	206.908	3	204.788	2
	Total	1.378.668	4	1.187.727	3	1.178.318	2	1.160.071	1
Power Consur	mption	84.722	4	83.144	2	83.581	3	80.659	1

Note: Number in circle shows ranking in cost comparison.









Romark		
Output (kw/set)	373,5 1 119,0 4 413,8	
Pup Head set	B 117,0 2 B 149,9	
Dynaic Pressure He(m)	116,994 115,981 102,854 102,854 88,971 60,678 60,678 60,678 68,500 10,967 10,967 149,922 149,922 149,922 149,922 149,922 149,922 149,604 24,604 24,604 24,604 16,116	
ine (Kundasale Area) Dynamic Pressure GL Hd(NSL) Hd(NSL) (Kundasale)	546,994 430,000 546,981 430,000 544,317 445,000 538,971 450,000 538,971 450,000 528,000 523,000 528,000 523,000 528,500 460,000 528,500 460,000 512,367 502,000 512,367 502,000 513,007 502,000 579,278 480,000 575,000 570,000 575,000 570,000 569,604 545,000 569,604 545,000 564,011 520,000 564,011 520,000	- I
Sion Pipel (frd Loss (fg) h(n) 2015	1,446 1,012 1,850 1,665 1,573 1,463 3,106 3,883 3,106 8,293 2,435 2,678 2,435 2,178 0,912 1,185 0,912 1,185 14,121 15,533 57,393 2,870 2,414 16,900 1,528 3,668 1,109 0,610 1,109 0,610 1,3870 9,674 1,984 2,976 1,984 2,976 1,984 2,976 1,984 2,976	
for Transais Velocity Hy Va/sec) I	700 0,389 900 0,914 930 0,837 1.250 1,050 2.670 1,050 1.100 0,884 1.300 0,376 50 1,744 50 1,035 2.400 1,035 2.500 1,362 2.500 1,362 2.500 0,888 1.500 0,888 2.750 0,597 900 1,278	
Hydraulic Calculation in Diameter Diame	700 500 500 400 2 400 2 400 2 350 350 350 65 65 65 65 65 65 700 700 700 700 700 700 700 70	
	(B) 12.200 700 (B) 14.200 500 (B) 14.200 500 (B) 11.400 400 (B) 11.400 400 (B) 2.900 250 (B) 2.900 250 (B) 500 65 (B) 500 65 (B) 56.900 900 (B) 33.900 700 (B) 19.000 600 (B) 19.000 600 (B) 33.900 700 (B) 33.900 700 (B) 33.900 700 (B) 33.900 700 (B) 33.900 700 (B) 33.900 700	
Appendix 5.8 Node B/G Flow B Node-Node Q(#3) Transmission Me.	Katugastota: Kadugastota: Kadu	KR8
	A-5.8.7	

) Remark			Percet Pine 6900	בעופר וואכ	Exist Pipe Ø250	t re-	Prist Dine 6300		Exist Pipe &300		Exist Pipe Ø300		Exist Pipe \$400	Exist Pipe Ø400	Exist Pipe Ø350	Exist Pipe Ø300	Exist Pipe #250	Exist Pipe ϕ 50		Exist Pipe \$250			Exist Pipe \$200	Exist Pipe \$250		10 - 10 - 10 - 10 - 10 - 10 - 10 - 10 -	1 1	O TO T	EXIST Fibe 0.250
set Output Excluding (kw/set)			0 0																										_
Head Se			8	0.00															X 200										
Purp	011	52,471	50,630		73,700	83,070	73,700	44,893	60,892	72,893	17,877	000	104 396	43.778	61 499	777,700	- 00	65, 962		85,982	93,705	52,471	F9 187	101	52,184	52,471	5,617	62,184	21,746
Jynamic Pressure He(m) 10.631	44,011	52,	20,	90,	73,	83,	73,	44,	60,	72,	17.	c	104	03	10	9	DO.	8 8		85,	93,	52,	58	04,9	52,	52,	5,	62,	21,
6L 540.000	520,000	480,000	540,000	500,000	510,000	200,000	510,000	538,000	522,000	510,000	565,000	000 662	503 000	501 000	200 000	202,000	000.520	555 000		490,000	480,000	480,000	470 000	410,000	480,000	480,000	505,000	470,000	510,000
Oynamic Pressure Hd(MSL)	564,011	532,471	590,630	590,630	583,700	583,070	583,700	582,893	582,892	582, 893	582,877	000 600	807 308	504 778	505 490	77%, 900	382,801	575,982	2015	575,982	573,705	532, 471	529 194	507,700	532, 184	532, 471	510,617	532, 184	531,746
Loss h(m) 15,997		31,540	000	0,000	0.630	200	0 0014	0,80	0,001		0,015		15,604	12,618	8,356	3,554	6,885	14,625		876 g	0 7		0,287	0,000		, , ,	41,004		0,438
Hyd. Grd I (%) 11,850		6,184	400	0,000	0 903	200	691.0	0,101	0,039		0,054		3,960	2,907	5,571	4,836	4,590	14,625		15 184	tor (n)		0,575	0,000		900	43,100		0,225
Velocity v(m/sec) 1,504		1,132		0,000	950 U	007 (0	0	0,180	0,082		0,098		1,197	1,013	1,323	1,249	1,295	1,274		1 220	7,900		0,295	0,000		7 2.0	Pec 17		0,189
Length L(m) 1.350		5.100		3.000	9 150		0,0	4.843	25		285		3.940	4.340	1.500	735	1.500	1.000		150	OCT.		200	150			nne		1.950
Kixed Dia Exist. Dat(mm) 198		250		200 Atten	950 A++on	שרוביוו	4.4	300 K	300 K		300 K		400 K	400 K	350 K	360 Atten	399 Atten	127 Atten		A 036	\perp		200 K	250 K		\perp	190 W	61 +	250 K
Dia. kixed Dia D(mm) Dm(mm) 198 198		250		0		0		300	300		300		400	400	350	250	350	123		036	067		200	250			ner		250
Flow Rate Q(m3/d) 4.000		4.800		0	91s	1,000		1.100	200		009		13.000	11.000	11.000	11.000	14.000	1.400		000	1.000		800	0			3.900		800
B/G 18 (B)		K601 (B)		K702 B	S24 — ⊢	V (8)	: 	K301 (B)	K105 (B)		KR3 (B)	e	K102 6	K103 (G)	K104 (G)	K105 (G)	K501 (G)	KB5 (C)		1 +	(n) 70e¥		K503 (G)	K502 (G)		1	K#6 (G)		KT1 (6)
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	18		KR8	K702	Katuga K701	K702	K701	K301	K105	130	, CO.	Kundasale		K102	K103 -	K104	K105 -	K201	G A	K501	K502	K601		K503 -	K502	K 601	KR6	K503	K503 - KT1

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A-5.8.9

Remark																											1000						st Pipe Ø200
set Output Excluding (kw/set)			2 287,8		-													4 466,0															1 35,9 Exist Pipe
Dynamic Pressure Pump Head B. Head Type H(m) E.		114,538	113,161 B 114,5	96,536	171	86.463	80 678	5.000		60,678	69,462	5,277	40 AR9	707, 407	18,476	15,606	150.079	B 150,1	99,278	55,610	5,000	99,278	10 400	18,492	18,492	76,605	28,410	5 728	07.10	76,605	10,647	31,329	B 31,3
10	sale)	544.538 430.000	1 -	╂╌┼╾	11	╌╢╌	++		- 100	┝═┼┈╏	529,462 460,000	528,277 523,000	500 460 460 000	++	520,476 502,000	517,606 502,000	580.079 430.000	4-1	579, 278 480, 000	575,610 520,000	575,000 570,000	575.278 480,000	₩		563,492 545,000	556,605 480,000	548,410 520,000	- -	-	556,605 480,000	550,647 540,000	571,329 540,000	+
Loss h(m)	15 (Kundasale	544	1,377	1,624	2,365	2,708	5,785	2,678 528	200	1,216 530		528	063	8,986	0.8 6	6,010	580	0,801	3.668		0,610	575	15,786	563	563		8,195	2,682	2	5.959		571	11,984
12/96	Year 201		1,060 1,968	0,783 1,805	0,866 2,543	0,720 2,167	0,720 2,167	0,684 2,435		0,564 1,930		0,3fb 0,31£		0,783 8,169	\sqcup	1, (44 0(, 383		1,164 1,456	1.020		0,778 1,109		1,774 6,314		1 207 4 501	\perp	1,106 2,980	1,106 2,980		0 943 4 414			0,994 3,995
xisi. Length L(m)	(Case B)		900 700	400 900	350 930	300 1.250	300 2.670	250 1.100		198 630		198 1.300		97 1,100		nc c9		900 550	200 9 400	1	600 550		500 2.500				450 2.750	450 900		950 1 350			296 Atten 3.000
B/G Flow Rate Dia. Wixed Q(m3/d) D(mm) Dm(Main Analysis	53	55.900 600	8.500 400 4	7.200 350	4.400 300	4.400 300	2.900 250 2		1.500 198		1.000 198		500 97	11	500 65		64.000 900	004	001	19,000 600		30.100 500		42	450	15.200 450	15.200 450		A 000 950	200	116	900 250
Node Node 8/6 F	Transmision	Katugastota-Madawala	1 1	++		11			97		25,	, 25 (B)	2	25, 258 (8)	253	8 - 25N (B)	Katugastota-KFG, R2		172	AG*	-	Ē	+	1702	1702) (36)	H	╁╌┼	N. K.	18,		Katugastota-Kundasale	- 1 - 1
			PG	601	301	2001	2005	26,	8°	186	3	S		156	┸	ਫ਼ਿੰ -5.8	.10) E		1	98		17,			1702	18	K801	·	٦			KB8

Output Renark	(PM/SCC)	Exist Pipe &250	Exist Pipe Ø300			Exist Pipe Ø400	Point Dine A400		Exist Pipe Ø350	Exist Pipe Ø300	Exist Pipe Ø250	1 5	, ,		Exist Pipe Ø300			Exist Pipe Ø300			Exist Fipe @Zou				Exist Pipe \$200	Exist Pipe Ø250			Exist Pipe Ø150			Exist Pipe 6250		7 489,7
Head	•																																	
ssure	He(m) Type	44 000	44,000	16,000	0.000	200	104,396	93,778	01 400	01,444	60,867	85,982	6,357		60,867	44,866	72.866		17,851	85,982	000	94,263	28,410	59 436	120 00	01,011	57,871	50 436	005.620	12,582	67,871	97 439	404,110	
GI Dy	500.000	000	210,000	538,000	202 000	000,000	503,000	501.000	200	202,000	522,000	490,000	555.000		522,000	538,000	510 000	200	565,000	490,000		480,000	520,000	480 000	200 500	470,000	480,000	000 000	400,000	505,000	470,000	210 000	010,000	
Dynamic Pressure	Hd(MSL) 559, 345	2000	554,000	554,000	000 000	000,620	607,396	R24 A62	200	586,422	582, 867	575,982	561.357		582,867	582,866	587 886	200120	582,851	575,982		574,263	548,410	590 498	004,450	537,871	537,871	267 963	203,430	517,582	537,871	204 A99	531,432	
Loss	_	5,345	000	0000		15 604	10001	12,618	8,356	3 554	700	6,885	14,625		100	0,001		0.015			1,719			8,974	1,565	000	-		21 854			0,438		-
Hyd. Grd	1(%)	2,486	000	0,000		2 060	2000	2,907	5,571	A 836		4,590	14,625		, ,	0,054		0.054			11,461			1,760	3,130	000	0,00		43 708	40) 100		0,225		
<u> </u>	V(E/Sec)	0,831	000	0,000		1 107	12121	1,013	1,323	1 940	72.7	1,295	1,274	-		0,098		0.098	200		1,580			0,710	0,737	000 0	0,000		9 557	±000 (J		0,189		
	L(B)	2,150	4,	4.843		070	0.340	4.340	1.500	364	20	1.500	1.000	- 80		25		286	207		150			5.100	500	4	net		000	nne		1.950	- 800	
Dia F	(Q)	295 Atten		300 K		_	400 P	400 K	350 K	111	2000 4000	399 Atten	127 Atten			300 K		7 006	-		250 K	-		350	200 K		W 000		4	¥ 001		250 K		
N. C.	D(mm) Dm(mm)	198		300			400	400	350			350	123			300		. 006	2000		250			350	200		729 0		9	150		250		
Date Date	Q(#3/d) D	4.900	-	0			13.000	11.000	11,000		77.000	14,000	1.400			009		000	000		6 700			5.900	2.000		9		000	3.900		800	000000000000000000000000000000000000000	
[a] 2/a	0/0	(B)	1	(e)			3	(9)	9		(4)	(9)	9			1 (B)		\neg †	Ê		(3)			(3)	(B)	┵╌	(B)		}	(B)		(0)		
No.	Node-Node	K702 K701	1	K301	A301	BPT	K102	- K103	K103 K104	K104	K105 K105	- K501	ROUL KR5	KR5	K105	- K301	E3U1	K301	KR3 KR3		K501	K502	7007	- K601	K601 K503	K503	- K502	70CV	K601	KR6		K503	KT1	Sub Total
A	Node	K709 K7		K701	TIME TO SERVICE SERVIC	1 1	BPT	K102		-11	K1.04	K105	K501		1	K105	1	· T	K301		VC01			X801			K503	7 0000000000000000000000000000000000000	1-1	K601		K503	1-1	Sut

																							Line of			and the second s								4250	000
kw/set)			455.1							19 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1										4	119,0		354.7											aviet Pine	1 1
Ixeluding (KW/Set)			6	1							0.0000000000000000000000000000000000000								-	,			4												
He(m) Type H(m)			114,139 B 114 1	+-	08 839	2000	100,440	88,971	80.878		5,000	60,678	68.500		4,314	68,500	10,967	2000	8,09(1-1	73 700 18 87,6		150,135 R 150 1	1 1	55,610	5.000	020 00	24,270	29,980	29,980	88 350	20000	12,362	73,700	83,070
Hd(MSL)	(Kundasale)	- -	544,139 430,000	543.342 430.000			540,440 440,000	538,971 450,000			528,000 523,000	530,678 470,000		┵	527,314 523,000	528,500 460,000		-	510,097 502,000	600,600 502,000	583 700 510 000	-	580, 135 430, 000	579,278 480,000	575,610 520,000		1 1	579,278 480,000	574,980 545,000	574,980 545,000	568 250 480 000	-	552,362 540,000	583,700 510,000	583.070 500.000
h(m)	2015 (Kun		tot	0, (31	1,503	1,399		1,469	8, 293	2,678			2,178	1,912 1,185			15,533	2,870			16,900		0 007	-	3,668	0,109 0,610		719 4.298			6,621	15,997		1	93 0,630
v(m/sec) I(%)	Year			0,946 1,139	0,970 1,670	0.917 1.504		0,802 1,175	1,050 3,106	0,684 2,435			1,023 3,458	0,376 0,9		<u></u>	1,768 14,121	1,744 57,393			0,842 2,414			17,12	1,020 1,528	0,778 1,1		0.878			0,943 4,414	1,504 11,850			0,236 0,293
L(m) V	(3)			700	006	930		1.250	2.670	1,100			630	1.300			1.100	20			7.000			066	2.400	550		2 500	000:3		1.500	1.350			tten 2.150
D(mm) Dm(mm)	Analysis (Case (800 800	009 009	800		009 009	400 400	250 250			350 350	198 198			250 250	65 65	-		350 350			800 800	700 700	009 009		200			250 250	198			0 Z50 Atten
Q(m3/d)	Main			41.100 8	23.700	29 400	200	19.600	11.400	9 900	000.7		8.500	1 000			7.500	200			7.000	8		48.700	33.900	19.000		000	14.300		4.000	7 000		asare) 1.000
Node-Node	Transmision	Katusestota-Madawa a	PG I	- 601 B	- 301 (B)	301 5001 (8)	-	- 5002 (B)	2002 - 26' (B)	26° 96 (T)		30,	- 25 (B)	25' 9E (R)	Ħ	95,	- 25B (B)	25B - 25N (B)	1-1	95R	- K701 IB	K701	\vdash	17, B	_ AG' (B)	AG (B)	A6	1.000	- 1702 (B)	1709	- 18' (B)	18' (B)	18		- K702 (B)
Node		7. ⊗ 1. %	ď	PG	601	3	†	2001	2005	136			.92	íy,	+		25,	858 \. -5			25B	A	3	PG	17,	AG,		į	1		1702	10,			K701

t Remark	Exist Pipe \$300	Exist Pipe Ø300		- 1	Exist Pipe 6300			Exist Pipe Ø400	Exist Pipe \$400	The April	1 1	Exist Pipe Ø300	Exist Pipe \$250		exist ripe @ou			Exist Fipe & Zou								0 Exist Pipe \$200					Axist Pins 6200	1	Exist Pipe \$250		Exist Pipe Ø150	1 1:		Exist Pipe Ø250
Head set Output H(m) Excluding (kw/set)																				25 1 1 40.0						50,6 2 0,0												
Bynamic Pressure Pump He(m) Type 73.700			0 60,892	0 72,893		17,877	0,000	104 396		93,778	0 81,422	738 08		0 85,982	A 257		3 85,982	93,705		0 114,117 rg	27,941			000′5 0	50,630	B B	3.0	0 27,941	54.962		54,962	0 64,674	0 54.674			8,108	0 64,674	
Dynamic Pressure GL Hd(MSL) 583,700 510.000	1-1		582,892 522,000	582,893 510,000	\vdash	582,877 565,000	623,000 623,000	607 398 503 000	11	594,778 501,000	586,422 505,000	589 887 599 000	-	575,982 490,000	581 357 555 000	ļ	575,982 490,000	573,705 480,000	ļ	564,117 450,000	547,941 520,000			545,000 540,000	590,630 540,000	200 630 200	- -	547,941 520,000	534,962 480,000	Н	534,962 480,000	534,674 470,000	534.674 480.000	14		513,108 505,000	534,674 470,000	
Loss h(m)	0,807	0,001			0,015			15,604	12,618	926 0	6, 000	3,554	6,885	100	14,079		010	2,2,0		18 176	2		2,941			0,000		0.00	12, 379		0 987	0,501	0,000		21,854		907	0,438
Hyd. 6rd I (%)	0,167	0,039			0,054			3,960	2,907	122	7,00	4,836	4,590	100	14,625			15,184		3 935			3,268	300000000000000000000000000000000000000		0,000		2,2	2,545		0.575	2,010	0,000		43,708			0,225
Velocity v(m/sec)	0,180	0,082			0,098			1,197	1,013	999	1,9040	1,249	1,295	740	1,2/4			1,839		986 0			0,802	200000000000000000000000000000000000000		0,000		0	0,786		0 295	0,550	0,000		2,554			0,189
Length V L(m) v	4.843	25			285			3.940	4.340	- V	~~~~	735	1.500		1.000			120		A 000		N	906			3.000			5.100		005	200	150		200			1.950
Dia. Nixed Dia Brist. D(mn) Dn(mn)	300 K	300 K			300 K			400 K	400 K	V 050	000 P	360 Atten	399 Atten	L	NT ALLED		\dashv	Z20 K		250			250		-	200 Atten	-		300		X 006	-	250 X		150 K		\perp	250 K
Dia.	300	300		8	300		<u> </u>	400	400	036		250	350	-	2 27	- 3	-	250		350	\mathbb{H}		250	0		0			300		200	-	250		150		11	250
Flow Rate Q(m3/d)	1,100	200			009	200000000000000000000000000000000000000		13.000	11,000	1.1		11.000	14.000		1.400			7.800		006 x	Ś		3.400			0		Ш	4.800		008		C		3.900			800
B/6	K301 (B)	K105 (B)	╅╾╅		KR3 (B)		-	K102 G	K103 (G)	707		K105 (G)	K501 (G)	 -	(L)		├ ├	K502 (G)		Z 1087	+		KRS (B)	H		K702 B		11	X601 (B)		V503 (6)		K502 (G)		KR6 (G)		1	KT1 (G)
Node Node	1-1	K301 - 1	K105	K301	H	KR3	BPT	BPT - R102	-{	က္	K104	} -		X501	- 10cA	CWW	K501	K501 - K502	:	5002	K801		K801 -	KRS	KB8	KR8 -	70 V	K801	K801 -		K601	K503	K503 - K502			KR6	K503	K503 - 1

10000	Remark									1			
	Output	KW/Set)		_		- 1		-	-		0 000	2002	
	set	1 25 11 1 4 2 2	4					_			0	2	
	Head	E(H)	11/11				1						
	Dynamic Pressure Pump	Ho(m)		24 736						-			
	19			710 000	070,000								J
	Dunamia Drocesta	21,0001	HQ(HPF)	200 803	304,400								The state of the s
	1000	1000	n(m)										
	11.13 Cm2	חום.חום	(%) 		_		*						
	145-1-14	veroci cy	v(m/sec)						_			X1 4 00 00 00 1X	
	177	rengru	(E)										
		Zxist.							_		_		
		Mixed Dia	T m (mm)	i i									· 建筑水平 1000 1000 1000 1000 1000 1000 1000 10
		e Dia.	(##)	1					_		_		· · · · · · · · · · · · · · · · · · ·
		Flow Rate	(P/6=) ()	(T) (Cm) (T)									
		B/6	-		_							7	
		Node	Vada Vada	one	1,1,1	Nit							1 2 to 1 to 1

Renark																												35.50 × 500	- 1
set Output Excluding (KW/Set)			2 445,1														4 354,7									1 56,2		0.00	1 35,9 EXIST FIDE
Bynamic Pressure Pump Head He(m) 1790c H(m) 23		111.631	110 892	10,000	47,932	86.463	66.678	5,000	80.878	20 580	10,030	6,405	70,590	19,604	16,734		99.278 B 150,1	55.610	5,000	99,278	29,980	29,980	88,359	12,362		26.584 IB 19,0	5,000		B 31,3
13	11e)	430.000	430 000	430,000	440 000	450 000	470.000	523,000	740 000	000	400,000	405 523,000	590 460,000	604 502,000		430,000	480 000	┼┼			 	 	- -		450,000	520.000	╿╼┤ ╌╏	571,329 540,000	
Loss	ZU15 (Kundasale	541.633	0,797	1,503	1,399	1,469	5,785	2,678	590 679	0,088	1,185	529,405		_ _	2,870	580.135	0,857	3,668	0,610	579,278	4,298		6, 621	15,997		8,920	1,584		95 11,984
Velocity Hyd.G	Year 2		0 0,946 1,139	0 0,970 1,670	0 0,917 1,504	0 0,802 1,175	0 0,720 2,167	0 0,684 2,435		0,180 0,140	0,376 0,912			0,783	50 1,744 57,393		550 1,121 1,559	00 1,020 1,528	550 0,778 1,109		00 0,878 1,719		00 0,943 4,414	50 1,504 11,850		00 0,896 1,784	900 0,710 1,760		00 0,994 3,995
	sis (Case D)		800 700	006 009	600 930	600 1.250	300 2.670	250 1.100		350 630	1,300			97 1,100	65		800	700 2.400	009		500 2.500		250 1.500	198 1.350		200 2 2000	350		3.000 [Atten]
B/G Flow Rate Dia.	Transmision Main Analysis (Case	Hadawa: a	B 41.100 800	(B) 23,700 600	(B) 22.400 600	(8) 19.600 600	(B) 4.400 300	(B) 2.900 250		(B) 1.500 350	(B) 1.000 198			(B) 500 97	(B) 500 65	KPG, HZ	B 48.700 800	(8) 33,900 700	(B) 19.000 600		(B) 14.900 500		(B) 4.000 250	(B) 4,000 198	Kundasale	1 IB 15.200 500	(B) 5.900 350		2 B 5.900 250
Node-Node	Tran	Katugastota-Madawa.s	P6 - 601	601 - 301	301 - 5001	5001 - 5002	5002 - 26	26, - 26	97	26' - 25'	25, 25	25	٦L	.8.1	25B	Katugastota-KFG, HZ	PG - 177	17' - AG'	AG' - AG	1 2	17, - 1702	1902	1702 - 18	18, - 18	Katugastota-Kundasale	5002 - K801	K801 - KR8	KR8	KR8 - K702
		-			1										•										•	•			

Remark	Exist Pipe ø250		Exist Pipe \$400	Exist Pipe ø400	Exist Pipe &350	Exist Pipe Ø300	Exist Pipe Ø250	Exist Pipe 050			Exist Pipe $\phi 300$	Exist Pipe \$300			EXIST Pipe Ø25U			Exist Pipe 6200		EXIST FIRE GAND		Dwic+ Dine A150			Prist Pipe 6250					and America America	
Output (kw/set)	<u> </u>		B		<u> </u>	<u> </u>	8	- E			<u> </u>	3			<u> </u>			183		23		É	à .		Ċ		20 CO	p 108	0.6700		+-
Set O														-				_ _				+			_			ď			+-
1						-																									$\frac{1}{1}$
und Head				$\frac{1}{1}$	-	-							- 1									-									+
Dynamic Pressure Pump He(m) Type	59,345	,	0,000	020	93,110	81,422	60,867	85,982	6,357	60,867	388 44	3	17,851	85, 982	94,263	104	1,004	57,609	67,322	57,322		57,609	10,755		67,322	26,884			-		
Pranie Pr He(m	ő	•			ñ	80	9	80		90			.	80	ග්	Č	3	io]	9	عنا		2			9	2					
	500,000	010,000	000,620	203,000	2017, 000	505,000	522,000	490,000	555,000	522,000	200 000	2000	565,000	490,000	480,000	000	0,000	480,000	470,000	480,000		480,000	505,000		470,000	510,000					
		-			-		↓ ↓-	+	++	-	\vdash	-				-		+	╁┼		Н	+	-		_ -						+
Dynamic Pressure Hd(MSL)	559,345	554,000	923,000	607, 390	594,778	586,422	582,867	575,982	561,357	582.867	220 002	006,0	582,851	575,982	574,263	100	340,	537,609	537,322	537.322		537,609	515,755		537, 322	536,884					
1 1 1	5,345	8	304	318	8,356	3,554	888	200	270		0,001	0,015			1,719		8,974	0.287		0,000		7.10	\$5 - -		738	2					
Loss h(m)	- -	36	0 15,604	7 12,618				- -						Ц			\downarrow	4		_		[-	41,834		-	1-1					
Hyd. Grd I (%)	2,486		3,960	2,907	5,571	4.836	1 500 k	14 29	079 (41		0,054	0,054			11,461		1,760	0.575	0.0	0,000		02.	43,708		366 0	22.0					
Velocity v(m/sec)	0,831		1,197	1,013	1,323	1.249	1 905	1,630	1,2/4		0,098	0,098			1,580		0,710	208	2016	0,000		, ,,,,	2,554		100	75 703					
[]					\perp						25	285			150			500		150			200		_						-
. Length L(m)	1		3.940	4.340	1.500		-		1.000	ं -		- 2			1		5.100	T.	3	-1		ľ	1		110	7			_	-	_
Nixed Dia Exist. Dm(mm)	295 Atten		400 K	400 K	350 K	360 Attan	1	day Acten	127 Atten		300 K	300 K			250 K		350	A 006	+	250 K			150 K		4	8					+
n Kixed Bi																-	_									-				-	-
te Dia.	0 198		0 400	0 400	0 350		4.4	- -	0 123		0 300	0 300			0 250		0 350		- -	0 250		Н	0 150		0						-
8/6 Flow Rate Q(m3/d)	4.900		13.000	11.000	11,000	11 000	00.13	14.000	1.400	183,5000	600	009			6.700		5.900	100	000		200000000000000000000000000000000000000		3.900			900					.
3/6	1-1-		2 6	3 (6)	(6)				9		(B)	3 (B)	H		(6)		<u>(a)</u>			(6)		1	9		1	(<u>a</u>)					
	K701	Kundasale	K102		K104	+	++	\dashv	E C	2014	K301	I KB3	H		K502		K601	 -	-+	K502		K601	9 <u>8</u>		K503				Sub Total		
Node Node	K702	K701 unda	BPT.	K102	K103	X104	K105	<u>K501</u>	KBS	· le	> . ·	K301	KR3	K501	l le	P.004	(88)	K601	K503	1 20	3 :		1 84.8	김 : :	0	· 🖫	300	- L. B	의	1	1

	Output Remark	by		2 32.4 Exist Pipe \$200			3 95.7				Exist Pipe 6450	1 15		2 40.7 Exist Pipe 6200	Delat Dine 4150		Exist Pipe Ø250	Daint Ding April			Tyiet Dine 6400			2 20.4		:						Exist Pipe Ø500		EXISC FIDE Ø400			
	Dynamic Pressure State Found Head Set He(m) Excluding	1 1:	167.065	1 B 167.1	5,000	107 960	K B 108.0	100,016	5.000		100.016	20.269		2 B 55.2	85.543	96.743		96.630	5 000		99.630	99.565	* * * * * * * * * * * * * * * * * * * *	3 3 100 1		0.000	8.634		0.00	48.884	0000		81.053	79,448	0 584	3,004	49.932
Year 2015 (Integrated)	Dyazmic Pressure GL Dyna: Hd(MSL)		642.065 475.000		640.500 635.500	282 980 A75 000	206.300	580.016 480.000	565 000 560 000		580.016 480.000	565.269 545.000	800 90C 545 000	202.000	595.543 510.000	586, 743 490, 000		579.630 480.000	270 000 585 000	- 00	579,630 480,000	579.565 480.000	\vdash	645.110 545.000	630,000 625,000	625.000 625.000	583 634	80	625.000 625.000	593,884 545,000	 	302.000	581.053 500.000	579.448 500.000	782 082		609.932 560.000
Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P)	Dia, Miret Dia Mist. Length Velocity Hyd. Grd Loss	7 (EIII) J (EVITED) 1 (EVITED) 1 (EVITED) 1 (AUG) 1		200 200 K 500 0.737 3.130 1.565			500 500 2.000 0.808 1.472 2.944		140 140 3,700 0.677 4.058 15.016		000	2,000		300 336 Atten 1,354 0.994 3,443 4.662		300 318 Atten 1,950 1.110 4.513 8.800	300 360 Atten 2,915 0.863 2.440 7.112		350 350 K 4,575 0.782 2.105 9.530		070 V	400 400 K 1,350 0.111 0.048 U.W55		300 7			79 79 1,000 1.653 41.366 41.366		000			500 531 0.577 0.947	2000	400 K 800 0.829 2.006	140 140 2,000 0.752 4.932 9.864		
Appendix 5.9 Hydra	B/G Flow Rate	none-non	KMC-Printose	KMC - 63 B 2,000	63	KMC-Eliyagama	VWC - 36' R 13 700	36, 36	36' - 36H (B) 900	30.1	36,	36 (B) 12,800		36 - 3602 B 7.600	3602	3602 - 3601 (B) 7,600	3601 - 22' (8) 7.600	22,	22' - 22 (B) 6,500	22	22,	22' - 24' (B) 1,200		36	36 - 37 B 2,100	37	37 - 39 6 700	25	.37	37 - 38 6 300	Nillanbe Oya	NO 912 G 9 000	21,	21, - 23, 6 9,000	23, - 2301 (6) 1,000	2301	2301

(Integrated)
Year 2015
Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P)

ge Pund Type	5.000	79.448 Exist Pipe 6400	1 I	1 1		1.14.904	07 00 K B 114.9 1 89.2	300	5.000	6		01 574	3 B 81.6 2 15.8 Exist Pipe Ø225		61.905	3 8 61.9 1 12.0	5.000	93.983 K R 94.0 3 83.9 Exist Pipe Ø 500			1 1	Exist Pipe Ø500	202.2	88.237	15.584	82.393	2.309	27.00	1 B 62.8 2 12.2
Dynamic Pressure GL Ed(MSL)	605.000 600.000	579.448 500.000	577.992 480.000	573,268 500,000	568.816 560.000	475 000	000.001	587.905 490.000	585.000 580.000	635.801 580.000	635.000 630.000	000 000	000.05d \$15.11)	705.000 700.000	761.905 700.000 6	C C C C C C C C C C C C C C C C C C C	750.000	568.983 475.000	568.237 480.000	567.393 485.000	566.047 500.000	000 333	000.000	568.237 480.000	550,584 535,000	567.393 485.000	84 562 304 560 000	000.000	077.000 000.000
Hyd. Grd I (%)	0.752 4.932 4.932		1.613	6.298	1.533 8.905 4.453		0.655 1.816 1.998	0.655 1.816 2.906			0.370 0.534 0.801		A 759 9 987 6 574	107.0		0.752 4.932 6.905			1.432	+	0.560 0.748 1.346	0.560 0.748 1.047		1 461 19 615 17 653	20.61		1.053 6.125 5.084		0.752 3.287 4.766
Mixed Dia Baisi. Length Du(mm) L(m)	140 140 1,000		400 K	300 318 Atten 750	250 296 Atten 500		300 300 1,100	300 300 1,600			346 K 1,500		100	198 198 A 6,000		140 140 1,400		22	500 K	500 500 K 700	500 500 K 1,800	500 500 K 1,400		100 000			198 830 830		198 198 1,450
Node Node B/G Flow Bate Dia.	23 IB 1,000 14		(6) 8,000	2401 (6) 9,100	24 (6) 9,100	MC-Udaperdeniya	66' B 4,000	67 (B) 4,000		67	68 B 3,000		6	- 69 8 2,000 15 69		- 70 B 1,000 14			8 13,800	- 54 B 12,300 50	57' (8) 9,500	582 (B) 9,500	582	1 00 (8) 1 500	- -	54"	54 (B) 2,800	54	54 - 55 B 2,000 19

Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P) | Year 2015 (Integrated)

Remark				Exist Pipe Ø250×2					st Pipe &ZZo								Fylet Pine 6350	1 1	Exist Pipe \$300	Exist Pipe \$150								Daiot Dina A75	2	- Additional and the second se	Exist Pipe Ø160	Exist Pipe 6150	}
Output &W/set)		14.2		55.1 Exi		6.06	7.67		11.2 Sxist Pipe					0,0	18.0		7.7		EX	EX			10.6			10.6		~U 3 6			10.2 Ex	Ä	
Set Output Excluding (kw/Set		1		2		C	a		671	M.				-												-		-	1				
Head H(m)		73.1		68.4		0.00	0.45		52.5					1	0.#S								54.8			78.4		i.	60.6		66.0		
Staff Pump		1 B		R R		1-1	a		2 8		-			+	N3					-			1 1	82		1 83		-	γ γ		1 B		
Dynamic Pressure He(m)	73.059	5.000	20 416	00:410	5.000	93.961	5.000	52.529	000 2	0.00	0.000	12.101		99.502	5.000		0 000	56.557	400	44.297	8.636	54. 789	000	000.0	78.354	000 3	200	65.922	5,000	F00 00	00.02	41.131	5,000
Dynamic	9		2 5	2	2	00	00	8		00	00	00		00	00		00	. 00		00	00	J.		000	000	000	200	000	000		000	000	000
19	613 000	++			617.000	555.000	635.000	635.000		-	679.000	660,000		679.000	770,800	-	617.000	560.000	\vdash		\$ 580.000	1 580 000	╁┼	0 014.500	4 580.000	├ -}-	-	2 648.000	0 700,000		280.000	1 600.000	0 635.000
Oynamic Pressure Hd(MSL)	686 059	870 500	000.810	023.410	622.000	648.961	640.000	687,529	000	684.UUU	679.000	672, 101		778.502	775 000		617.000	616.557		614, 297	588.636	834 789		619.500	658.354	00.000	000.000	713.922	705,000		646.027	641.131	640.000
Loss by		6.559		1.416			8.961	-	3,529			6.839			3.502			0.443	2.260	25.661			15.289			5.354			8.922		4.896		1:131
Hyd. Grd I (%)		4.932		4.719			7.467		3.921			4.058			4.932			0.818	1.733	14. 217	17.7.		4.932			2.549			5.248		3 264		2. 332
Velocity I		0.752		1.155			1.179		0.827			0.677		-	0.752			0.469	0.639	1 611	1.0.1		0.752			0.526			0.524		0.601		0.524
Length Ve		1,330		300			1,200		900			1,700			710	-		541	1,304	200	7,000		3,100			2,100			1,700		1 500	200 (1	480
<u> </u>				×					м									м	M		Arcen								×		λ	+	×
Mixed Dia Bxisi.		140		325			200		198			140			140			320	300				140			140			75		140		150
Rate Dia.		0 140		325	1-1		0 200		0 198			0 140		8	0 140			320	300	Н	061		00 140			700 140			200 75		140	-	800 150
B/6 Flow Rate Q(m3/d)		1,000		8 300	0,00		3,200		2,200			006			1,000			3,900	3,900		3,900		1,000									_	
8/6		a	-	2	+		61S B		8			61H G		2000	HT B			6001 G	6002 (B)	┢╌┼	(1)		60E B	H		60° B			60° B			-	(B)
Node Node		. 26 - 36	56 MC-E2 KF(582	583	582	1		- 61	91	ic.		61H	14	+	HL	583		5001 - 60	2009	9		09	60E		-	.09	90,	† <u> </u>	.09	09	6002	- H09
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Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P) Year 2015 (Integrated)

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(Integrated) Appendix 5.9 Hydraulic Calcuration for Transmission Pipeline (M/P) Year 2015

GL Dynemic	438.000	430.000	233.331 440.000 34.331	440.000		000.014	745 000	464 300	000	537.932 440.000 97.932	530.581 513.000 17.581		588 000 575 000 5 000 5 000	000	575.000	567.479 565.000 2.479	1. 1.	585.294 470.000 115.294 3 b 03.5 2 10.8	5 000 5 000	200	385.234 470.000 113.234	561.124 550.000 11.124	530.678 470.000 60.678	529.462 460.000 69.462	404 404	323.000	460.000	520.067 502.000 18.067
ode B/G Flow Rate Dia. kixed bis Exist. Length Velocity Hyd. Grd Loss ode Q(m3/d) D(nm) Dm(nm) L(m) v(m/sec) 1 (%) h(m) asstota-Madawala	PG - 601 B 41,100 800 700 0.946 1.139 0.797	601 - 301 (B) 23,700 600 600 900 0.970 1.670 1.503	301 - 5001 (8) 22,400 600 600 330 0.917 1.504 1.399	5001 - 5002 (8) 19,600 600 600 1,250 0.802 1.175 1.469	5002 - 26' (8) 4,400 300 300 2,670 0.720 2.167 5.785	26' - 26 (B) 2,900 250 250 1,100 0.684 2.435 2.678	97	301 _ 3 (B) 1,300 97 97 750 2.036 47,849 35.887			000 (E) 4,000 130 1,000 1,000 0,1000	500	500 - 4J B 1,300 140 140 3,300 0.977 8.013 26.444	40	41 - 4 6 700 140 140 2,950 0.526 2.549 7.521	4		27° B 1,700 198 198 1,300 0.639 2.433	27 - 27 (B) 300 79 79 2,700 0.708 8.628 23.294		977 277 1.400 1.364 17.265 24.170	28		26' - 25' (B) 1,500 198 198 630 0.564 1.930 1.216	25 - 25 (B) 1,000 198 198 1,300 0.376 0.912 1.185	25	25 25 50 q7 q7 q7 1.150 0.783 8.169 9.394	(1)

Renark																										
Output (kw/set)					0 00	03.3					53.9		15.4		25.3		40.0					17.4		254.6		
Set Excluding Stand-by						7					,-		2		1		2					2		-1		
Type H(m)						B 106.2					IB 47.4		8 61.0		IB 50.2		B 73.6					В 59.7		8 149.1	-	
Dynamic Pressure Stage Pump He(m) Type	110,833	6.286	0.000	4.950	106.233	44.371	5.000	44.371	34.826	91.764	5,000 3	60.968	5,000	55.172	5,000	73.618	121.263	2.000	121.263	3.094	59.747	5 000	149 111	2	135.764	113.455
75	430 000	520.000	520.000	514.000	520.000	570.000	590.000	570.000	570.000	570.000	650.000	650.000	700.000	700 000	745 000	520.000	460 000	570.000	460.000	570.000	570 000	000	438 000	*30.000	450.000	470.000
Dyarmic Pressure Hd(MSL)	540 R33		₩ <u></u>	-		614.371	595.000	614.371	604.826	661 764	655.000	710 968	705.000	955 179	750 000	593 618	630 103	575,000	581, 263	573.094	690 747	000 000	000.000	101.100	585.764	583, 455
Loss (n)		14.547		1.050		11.862	19.371		9.545		6.764		5.968		5.172		12.355	6.263		8.169		9.747		1.347	Ц.	2.309
Hyd. Grd I (%)		2.291		0.750		1.929	4.967		95.453		1.989		1.989		1.989		3.385	2.847		8.169		2.592		1.924	790	1.924
Velocity v(m/sec)		1.026		0.338		0.746	0.940		2.597		0.613		0.613		0.613		0.917	0.835		0.783		0.707		0.811		0.811
Length L(m)		6,350		1,400		6,150	3,900		100		3,400		3,000		2,600		3,650	2,200		1,000		3,760		700	201	1,200
B/G Flow Rate Dia. Mixed Dis Rrist. Length Velocity Hyd. Grd. e		200	-	198		350	198		79		250		250		250		300	300		97		250		90,	004v	400
Dia. Kix D(mm) Di		500		198		350	198		7.9		250		250		250		300	300		97		250		90,	400	400
B/G Flow Bate Q(m3/d) I	3.	17,400		900		6,200	2,500		1,100		2,600		2,600		2,600		5,600	5,100		200		3,000	871	000	3,800	8,800
B/G F1	Katugastota-Kahawatta	(8)		5		- B	(8)		(B)		S IB		8 5		G I3		A			(8)		64			2	1301 (B)
Node Node Node	tugastots	601 - 6	9	9 70	10	- 11	11' - 12	12	- 11	11	11, 118	118	11S - 11G	116	116° - 116	116	9	7	7	ري -	8	7	9 atmento	PG	2	Η;
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Appendix 5.9and12and13.xlsKandyTra.Pipe (Master Plan)

N L C BEST K						444										V	t Pipe Øl60×2		Exist Pipe 6160	1 (144)	***************************************							
set Output Excluding (kw/set)											2 7.5			1 4-2			1 110.0 Exist Pipe		1 4 9 Exis		44	4 388,1							1 59.2		
Head H(m)											3 B 48.3			1 B 5.5			I B 145.4		T	a		1 8 161.0							1 8 45.6		17 00 00 00 00 00 00 00 00 00 00 00 00 00
Dynamic Pressure Stage Pump He(m) Type		15.410	5.000	113.455			19.830	50.111	38.491		48.312	5.000	5.520		5.000	145.415			63.821	5.000	160.982	118 481			2.000	74.610	2777		4	0 2.000	0 118.481
J.B.	+	0 560.000	000 285.000	55 470.000	- -		36 532.000	11 510.000	91 510.000	1	12 532.000	00 564.000	20 438.000	1	00 438.000	15 438.000	i− ⊦	100	21 533.000	00 578,000	82 438.000	81 A80 000	+-+	-	000 589.000	510 520.000	277 555 000	-	-4-	000 628.000	481 480.000
Dynamic Pressure Hd(MSL)		575,410	570.000	583.455	111 035	2000	551.836	560.111	548 491		580.312	569.000	443 520		443.000	583.415	000 003	0.000	596.821	583.000	598.982			594.610	594.000	594,610	560 777	200	634.558	633,000	598.481
Loss h(m)	8.045		5.410		23.344	8.274			11.619		11 959	+		0.520			45.415		1-1	13.821		0.502	3.871	0.610	\sqcup	<u>- </u>	33.833		1.558	1-1	
Hyd. Grd I (%)	2.352		2.352		12.969	3.598			116.194		24.5	0)1.7		1,733			16.946			6.910		0.912	1.613	1,109			23.333		37.22		
Velocity v(m/sec)	0.753		0.753		1.579	0.789			3.289		,00	100.0		0.639			1.731			0.902		0.904	1,050	0.778			2.603		0 806	200	
Length L(m)	3.420	2	2,300		1,800	2,300			100			2,200		300			K 2,680			K 2,000		550	2,400	550	200		1,450		. 400	001	
Dia. Nined Die Ixist. D (an) De(nn)	300		300		198	198			97			198		300			182			140		900	700	800	2000		300		350	Ann	
Dia. N	300	- -	300		198	198			97			861	lugamene.	300	+		182		8	140		006	700	003	1		300		020		
B/6 Flow Rate (Q(m3/d)	7 800	4,000	4,600		4,200	2,100			2,100			1,600	leniya, Ku	000 6	0) 00		3,900			1,200	2	49,700	34,900	Ш.			15,900		002.0	0, (0	
	3	14 (D)	17N (B)		1302 (B)	(8) 51			13 (8)			16 B	Katugastota-Kondadeniya, Kulugamana	i i	+		RI S			14 B	Katugastota-KFG, 82	17° B	(B) (B)	1 1	AG (B)		582 (8)		1-1-	2/, 2	
Node Node		1301	3.4		1301 -	1302	15	000	302 -	13	15	15 -	Katuga	PG.			2, 2	2	L.		Katuga	PG -	177		AG' -	2	AG*	582		AG 57	

(Integrated) Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P) Year 2015

Remark																		in the state of th			Prist Dine A200	24 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7 7	- 1	Exist Pipe Ø100		1 1	Exist Pipe O'5				Exist Pipe @200	
Output (kw/set)								2000									6 63	2			0 01											
Set Excluding Stand-by					2000			2000									٠	4			6	1										
Head H(m)							1										91.3	7.77			99.9	4.00										
tege Pump																	a k				0	\forall	_									
Dynamic Pressure Stage Pump He(m) 1798	87.963	11.966	40.738	20.918		0.000	58.853	42.849	58.853	66.405	3.669		66.405	23.669	14 405	14.400	107.595	28.675	000	0.00	33.232	53.509	31,596	1	5.000	53,509	3,939		28.675	59.701	68.136	
61	480.000	540.000	545 000	582 000		540.000	470.000	470.000	470.000	460,000	520 000	200	460.000	200.000	000	200.000	450.000	520.000	000	540.000	540.000	500.000	510.000		534.000	500.000	517,000		520.000	480.000	470.000	:
Dynamic Pressure Hd(MSL)	567.963	$\vdash \vdash$	₩-	+- -	14	540.000	528.853	512.849	528.853		++	200 - 127	526.405	523.669	107	514.405	557, 595	548.675	1	545.000	573.232	553.509	541 596		539.000	553.509	520 434		548.675	539.701	538,136	
Loss h(m)	17.775	15.997		2.820		11.147	16 004	2		2,449	2.735			2.735	9.264			8.920	3.675		000	19.723	11.912	2.596			32, 569		0 074	8.9.4	1.565	
1 (%)	11.850	11.850		28.199		2.592				1.224	0.912			0.912	9.264			1.784	4 084				5.541	12.982			25.053		000	7. (00	3.130	
Velocity v(m/sec)	1.504	1.504		2.570		707	136 6	100.4		0.472	0.376	- 139		0.376	0.974			0.896	1.119			1.296	1.155	1.639			1.466		0.00	0.710	0.737	
Length Ve	1,500	1,350		100		4 300	3,000	007		2,000	3,000			3,000	1,000			5,000	006			3,000	2,150	200			1,300			5,100	200	
<u> </u>																						259 Atten	250 Atten	210 Atten			100 Atten				М	
Mixed Dia Exist. Dm(mm)	198	198		250		950	000	2		250	198			198	123			200	350			259	250	210			100			320	200	
Dia.	198	198		250		050	44	8		250	198			198	123			200	350	1 100		138	0	198		-	62			320	200	
B/G Flow Rate Q(m3/d)	4,000	4,000		10,900		000 6	00000	1,000		2,000	1,000			1,000	1,000		38.16	15,200	9,300			2,900	4,900	4,900			1,000			5,900	2,000	
B/6	(g)	(B)		(8)		4	11	(3)		(g)	(5) H		4	(g)	(9)		ea~kunda.	Ol IB	88 (IB)			02 B	(8)	87 (B)	1 1		KT2 (B)	~~		K601 (1B)	K503 (1B)	-
Node Node	183	13	X	1702	17		1901	19		1901	19.	E61	19,	- 20,	- 20	20	Katugastota-kundasate 5002	K801	KBUI KR8	KR8	KI8	- K702	- K701	K701	KB7	870	41	KTZ	K801	- K6	+	200
Node	1702	18,		1702				1901	:	1901	19,	•		19,	20,		*	5002	X801	1 8	6 . 3 .	KR8 V	K702	K701	╁╧╂	^	K702		1	K801 K	K601 F	

(Integrated) Year 2015 Appendix 5.9 Hydraulic Calcuration for Transmision Pipeline (M/P)

Remark		Exist Pipe \$250	1 1:		Exist Pipe \$150			Exist Pipe \$250	1.0		Exist Pipe $\phi 400$	Prist Pipe 6400	1 1	Exist Pipe \$350	Exist Pipe Ø300		Exist Pipe \$250	2	- 1			Exist Pipe Ø150	Exist Pipe Ø100			Exist Pipe 6300		Exist Pipe \$300			EXIST Fine Ø150	Exist Pipe Ø150	1 1		Exist Pipe &50			Exist Pipe \$250	
Output	(KW/Set)			50 SS SS SS SS SS SS SS SS SS SS SS SS SS					000000	0.0000000000000000000000000000000000000															1 2 2 2 2 2 2				75 - 76 AR										
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	Type	+						ļ							+			+	-	80.								- - -	33		+						-		
			7.5	[0]		747	98		27.698	0.00		396	. 822	9	77	367		5	6.475		396		900	5.027		700	791	200	17.77	867	000	52.323	9.269	203	272	170	191		90.570
Dynamic Pressure	He(B)		58.075	59.701		12.847	68.136		27.(O		104.396	93.778		275.10	60.867		\$6.101	9		104.396		80.900	5.1		90.867	44.791		11.	60.867	č	52.	9.	52 323)	22.170	86.101		90
G. T.			480.000	480.000		505.000	470 000		510.000	623 000		503.000	501.000	000	000.000	522.000		490.000	555,000		503.000	0.00	519.000	587.000		000 779	538.000		265.000	522.000	000	522.000	550,000	522 000	200.00	537.000	490.000		480.000
Dynamic Pressure	Hd(MSL)		538.075	539,701		517.847	538 136		537.698	623 000		607.396	594.778	007	226.086	582.867		576.101	561. 475		607.396		599.900	592.027		582.867	582.791	601	382.776	582.867	000 144	574.323	559.269	574.323	27.	559.170	576.101	: : : : : : : : : : : : : : : : : : : :	570.570
Loss	h(m)	0 061			21.854			0.438			15.604	19 610	010.31	8.356	2 554		6.767		14.625			7.496	7,873	2		0.076		0.015			8.544	15.054		1000 1000 1000 1000 1000 1000 1000 100	15,153			5.531	
Hyd, Grd	1(%)	0.405	0.400		43.708			0.225			3.960	2004	106.7	5.571	A 928	200.	4.511		14.625			12.706	14.315	2000		2 057		0.054			10.680	€ 273			37.882			36.871	
Velocity	v(m/sec)	0 950	0.4.0		2.554			0.189			1.197	1010	1.013	1.323	1 240	7.7	1.127		1.274			1.310	1.376	2		0 98 0	200	0.098			1.274	956 0			1.536			2.971	
Length	(W) 1	150	201		200			1.950			3,940	0,0	4, 540	1,500	725	Sp.	1,500		1,000			590	550	200		36	77	285			800	2 400	202 67		400			150	
	1	^	u u		Ж		**-	×			×		4	K	350 1++cm	Urrent V	325 Atten		12% Atten	000000000000000000000000000000000000000		Ж	TAR Atton	1		,	4	Х			167 Atten	167 4++an	10000		76 Atten			M	
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Dia.	D(mm)	_	neg		150			250	3		400	Ц	400	350	4	720	250	_	123			150	193	_		006	-	300	_		97	44	ļ.,		9			250	Н
low Rate	Q(m3/d) 1	001	1,100		3,900			SO0	8		13,000		11,000	11,000	11	11,000	8,100		1,400			2,000	000	1,000		000	0,000	900			2,400	1 800	7,000		009			12,600	
B/6 F		, a k	(dl)		(IB)			(118)			ی	- }-	(6)	(9)		(ii)	(9)	Н	9	-		(9)	(3)	-1		É	+-	(B)		4	9	(5)	+		(9)	H		(9) 2	
ره ا	lode	0000	70ey 2		XR6	-		- LJ		Kundasale	K102	1	X103	K104		CD 14	K501		X35		2	K101	11 1701			5	+-	KR3	6		K401	11 // 1/2/	-		XX3			X502	Н
Node	Node-Node	-	U3 K502	10801	+	KR6	202	ACUS -		Kunda	BPT -	K102	K10Z -	K103 -	K104	. K105	K105 -	K501	K501 -	V	K102	K102 -	K101			K105	K301	K301 -	KB3	K105	K105 -	K401	KR4	074	K401 -	KR9	VENS	K501 -	K502
			ROCY		K601	<u>.</u>		N.S.	2	N (0 V (0 V (0 V (0	188		=	KI		4	⊒ 5.9	L i	Д.	Į.	1_	X	14	4			4	×			=	2	٤]		K4			KS	Ц

Remark			TO STATE STATE OF THE STATE OF				用お領律部 チ150ンの名	- 1	- 1	既設資無税 ゆ225	City and a	蜕酸 医無視		2	- Dine 6.200	2		- 1	Exist Pipe Ø200		1 1	既設管無視 め160	000 1000 000 000 000 000 000 000 000 00		野野繁雄類 あ180. あ110	1 1		- 1	歌歌の素色 0.225			Exist Pipe Ø110							
Output	(kw/set)				5.1		876 TH:	Xeax	4 175 175	北极,		斑驳			Pyich				Exis	No. 3 (C. 200 per)		既設			線基		3	100	既談	_	-	1.5 Exis	1	* * * * * * * * * * * * * * * * * * *	30.107.7	2012 TO 10	62 1,803,4		
set	Exeluding (Kr			_	6	3	-	1		-			- 200							0.0000000000000000000000000000000000000																700	62	37	
Head	H(m) ix	1			110 4	10.4	+	-					-			-				2000					+					-	-	37.5	-		N. 200 200 200 200 200 200 200 200 200 20				-
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