7. Conclusions and recommendations

The main objectives of this research were

1. To assess the water availability at Uda walawe reservoir with regulation at Samanalawewa

   and

2. To estimate the extent of new area that could be developed under the left bank irrigation extension project

7.1 Limitations of the Study

Computations, conclusions and recommendations of the study are subject to following limitations of the available data.

- The catchment down stream of Samanalawewa which covers around 75% of the catchment up to Uda Walawe has only one rainfall station. The data for this station was also not available after 1996. This limits the accuracy of specific runoff of the catchment between Samanalawewa and Uda Walawe reservoir.
- No gauging stations for discharge measurements were available in the main Walawe Ganga. This limits the accuracy of the catchment parameters.
- The Hulanda oya catchment which is a tributary of Walawe Ganga where the gauging station was available has no rainfall stations in it. The closest rainfall stations used do not exactly represent the same topography.
- Inability to check the reliability of the available flow data as there was only one gauging station.
- For the MIKE BASIN model input of Irrigation requirements for Left Bank extension area was obtained from the computations made in the Feasibility Study for Walawe Irrigation Upgrading and Extension Project.
- The inflows into the reservoir were computed using the reservoir rating curve and the recorded water releases. Such an estimate is necessarily approximate and would tend to eliminate all sharp peaks in the hydrograph.

Nevertheless it is my view that the results discussed in paragraph 7.3 are the best results that can be obtained with the MIKE BASIN model using the available data subject to the limitations described above. The methodology developed in the study can be used directly in the future for operational purposes if the data quality and coverage could be improved.

7.2 Model simulations

To achieve the objectives of the research, simulations were carried out using the Rainfall – Runoff model (NAM) and the river network model MIKE BASIN. The data used for the models are described below.

Rainfall data of 13 precipitation stations in the Walawe Ganga basin for 1991 – 2000 have been used in calculating mean area rainfall in each sub catctment. This is an input data to NAM model. Since the observed runoff data for Walawe Ganga were not available, the inflow at Samanalawewa calculated by reservoir operating data and the flow records of Hulanda oya at Panamure which is a tributary of Walawe Ganga down stream of Uda Walawe reservoir were used in estimating NAM model parameters for Samanalawewa and Hulanda oya basins.

The basic input the to the MIKE BASIN consists of time series data of catchment runoff for each branch of the river network and since the observed flow records are not available in sub basins, following assumptions were made in obtaining specific runoff values.

a) The NAM model parameters for Samanalawewa basin are applicable to adjoining sub basins of Weli oya and intermediate catchment between Samanalawewa and Uda Walawe reservoir.
b) The NAM model parameters for Hulanda oya basin at Panamure are applicable to similar sub basins of Timbolketiya, Mau ara and Chandrikawewa.

The simulated annual average runoff values for each sub basin were compared with available records (refer Table 7.1)

Table 7.1 : Comparison of observed runoff with simulated runoff from Rainfall - Runoff modeling(NAM)

Year	Samanalawewa		Uda Walawe		Hulanda oya at Panamure	
	Observed	Simulated	Observed	Simulated	Observed	Simulated
1991	-	363	-	-	23	8
1992	-	366	-	-	12	6
1993	-	604	-	-	31	36
1994	-	502	-	-	24	43
1995	528	541	1152	1121	28	49
1996	339	320	520	649	20	22
1997	598	645	1609	1693	42	54
1998	450	411	1014	787	17	57
1999	472	521	870	1002	23	52
2000	407	382	851	683	-	40

It could be seen that the observed flow records of Samnalawewa and Uda Walawe were fairly compatible with simulated flow records. But the simulated runoff data for Hulanda oya sub basin at Panamure itself was not so good. Since the rainfall and observed runoff data were available on 24 hour time steps in both basins, it was not possible to get a good agreement with peak flows and only the overall water balance error and overall agreement of the shape of the hydrograph were applied in obtaining model parameters. For general hydrological studies these two objective functions are normally applied as recommended by NAM reference manual.

Although the Rainfall-Runoff modelling for Hulanda oya was not in full agreement, the simulated runoff data were used as input time series for specific runoff for Timbolketiya, Hulanda oya and Mau ara sub basins. As these sub basins were below the Uda Walawe reservoir, there will not be an impact on this research as the study is centered on the water balance of the Uda Walawe reservoir.

7.3 Model results

1. Regarding objective (1)

Inflow to Uda Walawe reservoir has been assessed using the river basin network model MIKE BASIN and the Rainfall – Runoff model NAM. With basic input to the model, the specific runoff time series and additional input files defining reservoir characteristics, operating rule curve and data pertinent to each water user simulation of MIKE BASIN was carried out for 1993 – 2000. The results show that it is fairly compatible with the observed inflow data which has been calculated by water balance of Uda Walawe reservoir. An operation rule curve for Samanalawewa was established to represent the reservoir operating levels during the simulation period and inflow to Uda Walawe was subjected to the regulation at Samanalawewa. The observed and simulated annual average inflows during 1995 – 2000 were 1003 MCM and 1014 MCM respectively. Therefore it was concluded that the inflow time series computed by MIKE BASIN at Uda Walawe could be used for further studies.

2. Regarding objective (2)

At present, the irrigable area of Uda Walawe is 12,000 ha in the right bank and 6110 ha in the left bank. It is expected to develop a further 5151 ha on the left bank. In order to arrive at a decision whether sufficient water resources are available for the development of full extent, model runs were used for several scenarios using following assumptions.

a) The rainfall for the period 1992 – 2000 will occur for the period 2005 – 2013.
b) The irrigation requirements for the existing areas as obtained from the field for the period 1992 – 2000 will be same for 2005 – 2013.
c) Irrigation requirements for the new area of 5151 ha on left bank were the estimated data for Feasibility Study on Walawe Irrigation Upgrading and Extension Project by Japan International Cooperation Agency (JICA), January 1993.
d) For operating rule curve of Uda Walawe reservoir, reduced operating zones were introduced at 78.6 and 77 m asl and reduction factors 0.75 and 0.5 were assigned to each level.
e) Samanalawewa power plant will function as a base plant.

Following scenarios were modeled using above assumptions.

A Present scenario
A.1 Verification of the model – Simulation 1
A.2 Present scenario – Simulation 2
B Future scenario
B.1 Simulation 1
B.2 Simulation 2
B.3 Simulation 3
C Present scenario with out Samanalawewa

A Present scenario

A.1 Verification of MIKE BASIN – Simulation 1 (with observed inflow)

This scenario was set up to check whether the MIKE BASIN is working correctly. For this purpose, the inflow at Samanalawewa calculated by reservoir operation data was applied as a input time series of specific runoff for Samanalawewa basin and a rule curve was developed using actual operation data for 1995 – 2000. The results were compared with actual water level, storage and power flow. While the coefficient of determination for comparison of simulated and observed water levels was 0.99 it was 0.7 for Storage and 0.8 for power flow. Hence it was assumed that the model is working correctly.

A.2 Present scenario – Simulation 2 (with simulated inflow)

This scenario was modeled using runoff data developed by Rainfall – Runoff simulation as an input time series for specific runoff in each sub basin. The present data available in the basin in respect of reservoir operations and water users for the period of 1993 – 2000 were also applied as an additional input data required by the model. The simulation for 1993 -2000 was carried out and results of irrigation water usage at Uda Walawe project were as follows.

Table 7.2 : Irrigation deficits in Uda Walawe project

Year	Irrigable area in Yala (Ha)	Total deficits in Yala %	Irrigable area in Maha (Ha)	Total deficits in Maha %
1991	11843	-		
1991/1992			12276	-
1992	4065	-		
1992/1993			12727	-
1993	12228	-		
1993/1994			14059	-
1994	13100	1		
1994/1995			13514	-
1995	13655	-		
1995/1996			13631	-
1996	12406	1		
1996/1997			12956	-
1997	13250	-		
1997/1998			13848	-
1998	11569	-		
1998/1999			13908	-
1999	12312	-		
1999/2000			14355	-
2000	13616	7		

Examination of results indicate that there are irrigation deficits in Yala season. Comparing with the assumptions made during the simulation process, the deficits in the range of 1 – 5% could be considered as negligible. For year 2000, though there is a deficit of 7%, still there was an active storage of 18.5 MCM in the reservoir which was not used due to curtailing the irrigation usage as the reservoir was at its reduced operating level. In actual practice this storage will have used for irrigation purpose thereby reducing the deficits. In addition to this simulated inflow during the year 2000 was below the observed inflow to the reservoir which may have also attributed to increase deficits.

B ***Future scenario***

B.1 *Simulation 1 – (present irrigation use for existing areas and design requirement for new area)*

The model was set up assuming the same rainfall pattern for 1992 -2000 will occur during 2005 – 2013. Irrigation water usage for existing areas will be similar to the present usage and design requirements were used for new areas. The summary of deficits is in the Table 7.3.

Table 7.3 : Irrigation deficits in Uda Walawe project – Simulation 1

Year	Total deficits in Yala %	Total deficits in Maha %
2005	22%	
2005/2006		-
2006	-	
2006/2007		-
2007	8%	
2007/2008		-
2008	-	
2008/2009		24%
2009	33%	
2009/2010		2%
2010	2%	
2010/2011		-
2011	-	
2011/2012		25%
2012	1%	
2012/2013		8%
2013	20%	

The following are observed on irrigation water usage in Uda Walawe project.

(1) The deficits in the range of 1-5 % could be considered as negligible when compared with the assumptions made during the simulation process.

(2) There will be irrigation deficits in 2005, 2009 and 2013 since they are being dry years.

(3) A pattern could be observed that there will be a dry year once in 4 years.

(4) A dry year commenced with less rainfall in beginning of Maha season and in such year there will be irrigation deficits in Maha as well as next Yala season. Therefore, if the monsoon is delayed in Maha season, anticipating a drought water saving methods such as change in cropping pattern, shifting the cultivation period and cultivation of short term varieties of paddy should be adopted.

(5) In year 2007 Yala season, the reservoir has fallen into the reduced operating zone in the month of July creating deficits. Though there are deficits, still there will be an active storage of 60.7 MCM in the reservoir. Since the irrigation requirements towards the end of the season will be less, by practicing efficient water management methods it would be able to save till the end of the season.

(6) Except for 2008/2009 Maha season, other deficits will have occurred due to delayed monsoon. The Uda Walawe project area gets more rainfall in Maha season than Yala. By controlling the irrigation issues in Maha farmers must be encouraged to use the rainfall in the area to commence land preparation for the Maha cultivation.

B.2 Simulation 2 – (design irrigation requirement for the whole project)

The model was set up using same specific runoff time series as for simulation 1 with estimated irrigation data for existing as well as for new area in Uda Walawe project. Following observations are made with respect to irrigation deficits in the Uda Walawe project.

Table 7.4 : Irrigation deficits in Uda walawe project – Simulation 2

Year	Total deficits in Yala %	Total deficits in Maha %
2005	44%	
2005/2006		7%
2006	-	
2006/2007		-
2007	-	
2007/2008		-
2008	-	
2008/2009		15%
2009	48%	
2009/2010		9%
2010	5%	
2010/2011		-
2011	-	
2011/2012		-
2012	-	
2012/2013		-
2013	3%	

(1) There will be deficits in 2005, 2009 and 2013 for which ever usage patterns are adopted since they are dry years.

(2) Most of the deficits in Maha season will be due to the application of the rule.

(3) Deficits will be occurred in 2009/2010 Maha season during the months of October in 2009 and February and March in 2010. But it can be observed, in October 2009, the reservoir had an active storage capacity of 54.5 MCM which could have been used if the operating levels set by the rule curve were further reduced. Similarly deficits are indicated in February and March 2010 though there will be average 31.1 MCM of active storage in the reservoir during the month of March which has been curtailed by the rule curve.

B.3 Simulation 3 – (reduced extent of new area by 1/3)

The model has been set up similar to the conditions in simulation 1 except the new development area was curtailed by 1551 ha and only 3600 ha of new lands were considered for development.

Table 7.5 : Irrigation deficits in Uda walawe project – Simulation 3

Year	Total deficits in Yala %	Total deficits in Maha %
2005	13%	
2005/2006		-
2006	-	
2006/2007		-
2007	5%	
2007/2008		-
2008	-	
2008/2009		15%
2009	26%	
2009/2010		1%
2010	-	
2010/2011		-
2011		
2011/2012		13%
2012	-	
2012/2013		4%
2013	16%	

The results indicated that

(1) Irrigation deficits could not be completely avoided by curtailing the development area.

(2) There will be Yala season failures during dry periods and effective measures should be adopted in improving the situation.

(3) Maha failure in 2008/2009 was due to the severe drought in 2009 and 2011/2012 was due to delay in monsoon.

C Present scenario with out Samanalawewa

This model was set up to observe the impact on Uda Walawe irrigation project if the regulation at Samanalawewa was not available. It was observed that

(1) Though there was an increase in usable water at Uda Walawe, substantial amount of water is spilled from Uda Walawe reservoir during Maha season and spillage was more in Present than Future scenario.

(2) Although there were no spillage at Samanalawewa in Future scenario, large amount is spilled at Uda Walawe as Samanalwewa was generating more power since more water was available during Maha season.

(3) Average annual spillage during 2006 -2013 will be around 265 MCM and will go waste unless the option of raising the Uda Walawe dam was not considered or the power generation patterns was not changed.

7.4 Observations on the assumptions and present practices

(1) At present, the farmers in the project area practice the traditional continuous irrigation and field inlet pipes of 3 inch diameter provides water throughout the day. Water consumption has been excessive due to cultivation of paddy in well drained soils and inefficient water management. To avoid this certain cropping pattern has been adopted and the success of the project will mainly depend on these actions.

- 40 % of other field crops (OFC) will be cultivated in the existing areas of the left bank
- 62 % OFC will be cultivated in extension area
- Introduction of rotation irrigation
- Introduction of tank cascade system to capture and reuse of irrigation drainage

(2) In addition to the above, a double canal system was planned for the extension area for paddy and upland fields. While farm ponds for upland irrigation were planned at the beginning of distributory canal to regulate canal flow at night, low tanks were planned at the bottom of the valley to capture irrigation drainage.

(3) The project intends to introduce OFC to 40% of the total cropping area in order to reduce the total water consumption and increase the irrigated area and agriculture income.

(4) It has been observed that there is an increasing trend for OFC in the project area (SAPI report, March 2000).

(5) At the moment extension and other related supported activities for the farmers have been provided by the Mahaweli Authority of Sri Lanka and without that it will not be possible to achieve this target. However, some are still reluctant to go for OFC due to high risk of OFC in marketability and price fluctuations.

(6) Since the farmers in the project area are familiar to the traditional continuous irrigation, introduction of the rotation irrigation and controls in tank cascade systems would be initially difficult.

(7) The rotation irrigation has been planned to save irrigation water and increase the irrigation efficiency. During the project 3 inch diameter field inlet pipes will be replaced by 6 inch diameter pipes allowing internal rotation in the field canal.

According to the analysis it can be seen that most of the irrigation deficits occur at the end of Yala season though the reservoir was at its full supply level in the beginning of the season. During this period Samanalawewa reservoir was also at its lowest and unable to provide any solace to the downstream users. The main objective of the Samanalawewa reservoir is generation of power and it will be high during the Maha season with more rainfall to the basin. The Uda walawe project area also get substantial rain during this period and most of the water spilled from Uda Walawe reservoir due to limited capacity of the reservoir. Even with full development in the basin average annual 265 MCM of water during 2006-2013 will spill from Uda Walawe reservoir. This situation can be avoided by regulating the Samanalawewa reservoir for irrigation and generating only limited power when the Uda Walawe is at spill level or by increasing the storage capacity of the Uda Walawe reservoir by raising the dam.

7.5 Water Resources Modelling

Although Sri Lanka has been ranked as a country with no water scarcity by world standards there would be scarcities unless proper water allocation strategy is adopted for Surface and Ground water and demand management. Water scarcity occurs when the amount of water drawn by various users from the source exceeds the availability within the basin. Hence, timely action has been taken by the Government to reform the water sector by introducing integrated water resources management involving the management, conservation and development of resources. By introducing the National

Water Resources Policy, the Government has expressed its commitment to water resources management.

Therefore, planning at river basin level is an important aspect in integrated water resources management and it will have to take into account of Surface and Ground water allocation and water quality management. The MIKE BASIN which is a river basin network model is an ideal soft ware for this purpose as it is capable of assessing the Surface and Ground water quantity and the water quality.

The water users in the basin, the data pertaining to each user and simulated results can be easily viewed from the Mike Basin View. The MIKE BASIN is a user friendly model unlike a model built up in a excel sheet with several work sheets which does not give a proper picture of the basin to the unfamiliar user.

Since the Mahaweli Authority of Sri Lanka has been managing several river basins and it is intended to change in to a river basin management authority, models such as MIKE BASIN will be very useful in planning water allocations in each basin.

7.6 Recommendation

Based on the above following actions are recommended.

1. To develop the full extent of (5151 ha) extension area under the Uda Walawe left bank irrigation extension project.
2. To practice efficient water management in order to save irrigation water and increase the irrigable area.
3. To consider the option of increasing the storage capacity of Uda Walawe reservoir.
4. To make some adjustments to the operating rule curve of Samanalawewa reservoir to minimize the spill at Uda Walawe reservoir.
5. To develop a most suitable rule curve for Uda Walawe reservoir in minimizing irrigation deficits and spillage.
6. Train farmers to adhere to the cropping patterns envisaged in beginning of the season

7. To have an operation and maintenance manual indicating guide lines for inspection and reporting of maintenance work and reservoir operations for Uda Walawe project.
8. Introduce the use of River Basin Models such as MIKE BASIN for planning and implementation of water allocation.
9. Training of Staff in using Models.
10. Establish good Hydro meteorological (rainfall & river flow) data collection stations for processing and dissemination of data and use in planning and implementation.

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Appendix

Results of MIKE BASIN simulations

Inflow at Samanalawewa reservoir
Present scenario

Simulation 2

m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean (MCM)
1992						8.944	10.018	5.427	5.151	12.689	38.806	17.608	14.092	5.151	38.806	
1993	7.562	4.554	7.385	14.342	32.332	30.778	15.367	6.32	3.265	25.4	44.412	38.48	19.183	3.265	44.412	604.955
1994	18.862	21.53	12.576	17.792	11.015	6.811	2.928	3.872	7.319	35.66	32.782	21.292	16.037	2.928	35.66	505.743
1995	21.539	9.599	8.105	48.809	39.541	21.41	9.574	5.542	6.172	13.594	15.816	7.189	17.241	5.542	48.809	543.712
1996	5.022	5.828	4.148	22.107	5.434	8.573	7.534	2.967	10.029	20.914	17.578	11.998	10.178	2.967	22.107	320.973
1997	4.779	2.482	1.657	24.698	38.548	9.869	8.374	3.693	22.972	46.366	52.85	29.348	20.47	1.657	52.85	645.542
1998	12.563	9.401	5.625	14.307	22.974	9.743	6.813	10.717	8.581	9.418	14.505	31.771	13.035	5.625	31.771	411.072
1999	23.062	24.219	17.242	19.33	15.814	23.922	6.379	5.916	5.817	16.232	22.018	20.079	16.669	5.817	24.219	525.674
2000	18.422	23.944	15.635	14.557	5.145	9.676	4.373	13.83	8.38	9.09	14.046	9.122	12.185	4.373	23.944	384.266
Mean	13.976	12.695	9.047	21.993	21.35	14.414	7.929	6.476	8.632	21.041	28.09	20.765	15.534			
Min	4.779	2.482	1.657	14.307	5.145	6.811	2.928	2.967	3.265	9.09	14.046	7.189		1.657		
Max	23.062	24.219	17.242	48.809	39.541	30.778	15.367	13.83	22.972	46.366	52.85	38.48			52.85	

Water levels at Samanalawewa reservoir
Present scenario

Simulation 2 **Meters**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
1992						420.81	420.8	420.8	421.54	428.79	432.7	432.84	425.47	420.8	432.837
1993	426.99	426.07	427.24	427.19	430.6	431.03	430.94	431.94	428.43	427.46	431.82	433.06	429.4	426.07	433.057
1994	430.12	430.76	429.83	428.55	427.31	426.76	424.86	425.48	426.07	427.86	428.21	426.46	427.69	424.86	430.76
1995	428.94	429.98	428.66	430.93	433.15	432.75	433.86	432.17	431.15	429.1	428.41	427.71	430.57	427.71	433.855
1996	427.22	426.93	427.69	428.99	426.32	426.43	427.85	428.49	429.1	434.71	435.65	438.06	429.79	426.32	438.055
1997	436.94	435.06	430.88	431.79	441.89	443.41	440.33	438.29	438.75	447.2	456.4	458.45	441.61	430.88	458.446
1998	454.6	446.44	443.22	443.44	443.13	440.96	441.45	442.05	442.66	443.09	442.64	448.39	444.34	440.96	454.598
1999	454.48	457.03	458.05	459.06	459.44	459.5	455.31	449.56	446.28	443.99	443.74	447.59	452.83	443.74	459.502
2000	446.29	444.67	442.14	438.96	433.7	431.67	431.79	432.97	434.48	433.56	434.81	432.9	436.5	431.67	446.287
Mean	438.2	437.12	435.96	436.11	436.94	434.81	434.13	433.53	433.16	435.08	437.15	438.38	435.88		
Min	426.99	426.07	427.24	427.19	426.32	420.81	420.8	420.8	421.54	427.46	428.21	426.46		420.8	
Max	454.6	457.03	458.05	459.06	459.44	459.5	455.31	449.56	446.28	447.2	456.4	458.45			459.502

Inflow at Uda Walawe reservoir
Present scenario

Simulation 2 — m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean (MCM)
1992						12.562	13.098	7.09	4.242	8.206	102.31	45.012	27.503	4.242	102.311	
1993	24.204	10.917	14.017	25.654	61.434	58.58	21.157	11.554	10.746	48.07	110.02	117.37	42.81	10.746	117.371	1350.1
1994	54.349	62.916	30.428	51.832	25.536	15.332	7.079	5.507	10.232	79.071	84.689	52.394	39.947	5.507	84.689	1259.8
1995	49.937	20.907	15.11	115.27	99.063	34.843	17.772	13.45	9.548	19.885	27.828	15.203	36.568	9.548	115.266	1153.2
1996	7.732	8.289	5.414	52.6	16.044	12.333	7.849	3.851	9.104	32.987	46.184	36.71	19.925	3.851	52.6	628.35
1997	16.413	11.137	9.56	64.866	99.888	31.92	23.466	11.72	49.892	81.569	129.66	70.297	50.032	9.56	129.655	1577.8
1998	54.286	38.937	12.869	23.627	58.821	16.654	10.962	11.34	10.925	10.815	22.147	57.761	27.429	10.815	58.821	865
1999	43.522	33.857	40.254	39.795	25.086	45.202	29.304	20.942	16.18	24.037	45.988	44.225	34.033	16.18	45.988	1073.3
2000	41.82	58.32	47.53	33.162	21.299	14.313	5.968	12.979	14.998	11.527	16.291	21.103	24.943	5.968	58.32	786.6
Mean	36.533	30.66	21.898	50.85	50.896	26.86	15.184	10.937	15.096	35.13	65.012	51.119	34.181			
Min	7.732	8.289	5.414	23.627	16.044	12.333	5.968	3.851	4.242	8.206	16.291	15.203		3.851		
Max	54.349	62.916	47.53	115.27	99.888	58.58	29.304	20.942	49.892	81.569	129.66	117.37			129	

Water level at Uda Walawe reservoir
Present scenario

Simulation 2 — Meters

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
1992						81.7	82.469	82.476	82.331	82.822	86.451	88.298	83.792	81.7	88.298
1993	87.666	85.626	84.177	84.935	86.791	88.291	88.106	86.394	84.717	85.479	88.285	88.3	86.564	84.177	88.3
1994	88.3	88.3	88.3	88.277	87.735	86.495	83.456	79.983	78.408	83.381	88.299	88.261	85.766	78.408	88.3
1995	88.196	87.932	87.501	88.179	88.3	88.243	87.55	85.237	84.018	84.789	84.784	84.354	86.59	84.018	88.3
1996	83.025	81.985	81.174	83.361	86.072	84.092	82.518	80.006	78.348	81.408	85.416	88.274	82.973	78.348	88.274
1997	88.014	86.638	84.776	85.468	88.3	88.231	87.77	86.403	86.192	88.3	88.3	88.3	87.224	84.776	88.3
1998	88.297	88.228	88.053	87.546	88.088	87.639	86.093	85.192	85.11	83.86	80.798	84.049	86.08	80.798	88.297
1999	88.051	88.281	88.3	88.295	87.598	88.018	87.928	87.144	86.537	87.222	87.521	88.294	87.766	86.537	88.3
2000	88.24	88.282	88.3	88.292	87.676	85.661	82.02	77.304	77.127	78.705	80.058	82.385	83.671	77.127	88.3
Mean	87.474	86.909	86.323	86.794	87.57	86.486	85.323	83.349	82.532	83.996	85.546	86.724	85.752		
Min	83.025	81.985	81.174	83.361	86.072	81.7	82.02	77.304	77.127	78.705	80.058	82.385		77.127	
Max	88.3	88.3	88.3	88.295	88.3	88.291	88.106	87.144	86.537	88.3	88.3	88.3			88.3

Spill at Uda Walawe reservoir
Present scenario

Simulation 2 m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean (MCM)
1992						0	0	0	0	0	29.025	23.072	7.442	0	29.025	
1993	5.57	0	0	0	8.237	31.763	1.652	0	0	0	83.999	103.18	19.533	0	103.18	615.99
1994	31.856	46.68	24.768	32.461	0	0	0	0	0	3.034	63.911	25.529	19.02	0	63.911	599.81
1995	24.612	0	0	97.503	69.654	5.038	0	0	0	0	0	0	16.4	0	97.503	517.19
1996	0	0	0	0	0	0	0	0	0	0	0	16.86	1.405	0	16.86	44.31
1997	0	0	0	14	77.312	0.718	0	0	3.215	76.313	124.81	52.985	29.113	0	124.807	918.11
1998	27.337	2.35	0	0	28.632	0	0	0	0	0	0	0	4.86	0	28.632	153.26
1999	4.687	20.399	29.796	20.478	0	2.978	0	0	0	0	7.36	16.844	8.545	0	29.796	269.48
2000	9.738	37.767	44.326	19.508	0	0	0	0	0	0	0	0	9.278	0	44.326	292.59
Mean	12.975	13.4	12.361	22.994	22.979	4.5	0.184	0	0.357	8.816	34.345	26.497	13.284			
Min	0	0	0	0	0	0	0	0	0	0	0	0		0		
Max	31.856	46.68	44.326	97.503	77.312	31.763	1.652	0	3.215	76.313	124.81	103.18			124.807	

Total deficits in Uda Walawe project
Present
scenario

Simulation 2 m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1992						0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	0.278	0.959	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	0	0	0	0	0	0.082	1.15	0	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	0	7.002	4.578	0.225	0	0

Inflow at Samanalawewa reservoir
Future scenario

Simulation 1 m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean MCM
2005	6.619	3.246	2.233	10.292	18.279	9.071	9.817	5.48	5.128	12.474	38.414	18.067	11.593	2.233	38.414	365.597
2006	7.823	4.124	7.789	13.438	30.866	32.24	16.096	6.513	3.335	23.752	44.597	38.921	19.125	3.335	44.597	603.126
2007	19.611	21.577	11.849	18.547	10.492	7.538	2.764	4.101	7.191	34.662	32.619	22.012	16.08	2.764	34.662	507.099
2008	21.819	9.61	8.104	48.808	39.539	21.409	9.572	5.541	6.17	13.593	15.814	7.188	17.264	5.541	48.808	544.438
2009	5.02	5.669	4.373	21.834	5.677	8.584	7.542	3.002	9.59	21.175	16.947	12.563	10.165	3.002	21.834	320.563
2010	4.941	2.531	1.682	23.361	39.421	10.047	8.472	3.779	22.33	44.74	54.045	30.044	20.449	1.682	54.045	644.880
2011	12.78	9.485	5.599	14.124	23.114	9.623	7.043	10.679	8.241	9.727	14.255	31.182	12.988	5.599	31.182	409.590
2012	23.773	23.702	17.24	19.329	15.812	23.92	6.378	5.914	5.816	16.23	22.017	20.078	16.684	5.816	23.92	526.147
2013	18.42	24.013	15.81	14.872	5.069	9.629	4.645	13.609	8.396	9.229	14.008	8.605	12.192	4.645	24.013	384.487
2014	18.839	24.013	15.81	14.872	5.069	9.629	4.645	13.609	8.396	9.229	14.008	8.605	12.227	4.645	24.013	385.591
Mean	13.964	12.797	9.049	19.948	19.334	14.169	7.697	7.223	8.459	19.481	26.672	19.726	14.877			
Min	4.941	2.531	1.682	10.292	5.069	7.538	2.764	3.002	3.335	9.229	14.008	7.188		1.682		
Max	23.773	24.013	17.24	48.808	39.539	32.24	16.096	13.609	22.33	44.74	54.045	38.921			54.045	

Water levels in Samanalawewa reservoir
Future scenario

Simulation 1 **Meters**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
2005	451.782	445	440.679	440.628	443.009	443	441.133	440.048	437.287	437.918	443.595	448.431	442.709	437.287	451.782
2006	446.023	445	440.918	441.399	443.245	446.359	441.298	440.048	437.271	437.783	444.366	449.651	442.78	437.271	449.651
2007	446.505	445.169	440.806	442.642	443	443	441.132	440.022	437.213	438.024	443.873	449.129	442.543	437.213	449.129
2008	446.261	445	440.738	444.461	452.501	447.922	441.191	440.046	437.306	437.809	442.068	446.231	443.461	437.306	452.501
2009	445.186	444.998	440.742	442.139	443	443	441.132	440.044	437.251	437.893	440.466	447.186	441.92	437.251	447.186
2010	445.67	444.999	440.586	442.009	446.715	443.534	441.148	440.045	437.396	438.789	445.645	449.801	443.028	437.396	449.801
2011	446.185	445	440.721	441.909	443.385	443	441.152	440.044	437.274	437.886	440.933	448.598	442.174	437.274	448.598
2012	447.538	445	440.881	442.537	443.012	443.082	441.146	440.045	437.336	437.865	441.234	448.463	442.345	437.336	448.463
2013	446.258	445.036	440.967	442.263	443	443	441.157	440.043	437.288	437.864	441.081	445.568	441.96	437.288	446.258
2014	445.188	445.045	440.97	442.254	443	443	441.157	440.043	437.287	437.863	441.036	445.414	441.855	437.287	445.414
Mean	446.659	445.025	440.801	442.224	444.387	443.89	441.165	440.043	437.291	437.969	442.43	447.847	442.477		
Min	445.186	444.998	440.586	440.628	443	443	441.132	440.022	437.213	437.783	440.466	445.414		437.213	
Max	451.782	445.169	440.97	444.461	452.501	447.922	441.298	440.048	437.396	438.789	445.645	449.801			452.501

Inflow at Uda Walawe reservoir
Future scenario

Simulation 1 m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean MCM
2005	46.026	5.321	13.888	10.67	31.563	11.522	15.479	8.391	10.806	12.823	86.92	31.351	23.73	5.321	86.92	748.349
2006	28.32	8.973	24.544	19.033	50.192	64.671	28.142	12.212	10.429	43.267	93.96	108.096	40.987	8.973	108.096	1292.566
2007	62.564	63.948	35.618	43.753	24.086	12.86	9.447	7.819	16.823	71.209	68.967	39.636	38.061	7.819	71.209	1200.292
2008	65.198	19.777	23.05	96.926	84.993	58.121	20.821	11.665	13.664	13.971	12.562	7.547	35.691	7.547	96.926	1125.551
2009	12.148	7.488	14.979	45.457	11.344	11.673	12.946	6.045	15.494	37.672	29.927	28.634	19.484	6.045	45.457	614.447
2010	22.653	6.893	14.55	57.592	111.629	35.251	21.235	10.647	59.677	97.734	130.869	63.675	52.7	6.893	130.869	1661.947
2011	39.636	17.96	21.604	16.732	53.619	15.451	14.825	15.826	15.217	8.632	8.388	63.871	24.314	8.388	63.871	766.766
2012	65.156	42.596	48.047	37.826	23.303	36.459	13.49	9.924	12.083	20.144	35.539	32.408	31.415	9.924	65.156	990.703
2013	46.651	54.572	49.1	22.468	9.67	12.591	9.967	20.479	15.252	7.861	7.47	6.426	21.876	6.426	54.572	689.882
2014	39.893	54.817	48.74	22.418	9.55	12.498	9.974	20.534	15.261	7.748	7.47	6.426	21.277	6.426	54.817	670.991
Mean	42.825	28.235	29.412	37.288	40.995	27.11	15.633	12.354	18.471	32.106	48.207	38.807	30.953			
Min	12.148	5.321	13.888	10.67	9.55	11.522	9.447	6.045	10.429	7.748	7.47	6.426		5.321		
Max	65.198	63.948	49.1	96.926	111.629	64.671	28.142	20.534	59.677	97.734	130.869	108.096			130.869	

Water levels in Uda Walawe reservoir
Future scenario

Simulation 1

Meters

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
2005	83.265	81.098	77.828	76.301	78.135	77.53	78.395	78.088	78.616	79.698	83.063	87.47	79.957	76.301	87.47
2006	87.157	84.337	83.002	82.539	83.537	86.683	87.657	85.64	83.565	83.301	87.372	88.3	85.258	82.539	88.3
2007	88.299	88.298	88.299	88.238	87.137	85.119	80.664	76.272	76.635	81.377	88.07	88.216	84.719	76.272	88.299
2008	88.221	87.715	87.487	88.07	88.3	88.3	87.566	84.586	83.519	83.44	81.318	77.843	85.53	77.843	88.3
2009	76.489	75.233	77.061	79.132	81.746	77.211	76.255	75.102	76.342	80.122	83.317	85.499	78.626	75.102	85.499
2010	85.621	82.822	79.502	78.96	87.676	88.07	86.741	84.45	84.235	88.201	88.3	88.3	85.24	78.96	88.3
2011	88.179	86.673	86.171	84.412	85.301	85.241	82.863	81.178	81.593	78.994	75.158	80.993	83.063	75.158	88.179
2012	87.471	88.237	88.292	88.232	87.059	86.84	84.991	81.251	78.942	78.001	77.273	80.528	83.926	77.273	88.292
2013	81.513	83.311	86.957	88.239	86.442	82.788	77.254	75.673	77.229	77.366	76.906	76.886	80.88	75.673	88.239
2014	78.215	80.983	85.679	87.461	85.452	81.225	76.096	75.697	77.272	77.271	76.789	76.811	79.912	75.697	87.461
Mean	84.443	83.871	84.028	84.158	85.078	83.901	81.848	79.794	79.795	80.777	81.756	83.084	82.711		
Min	76.489	75.233	77.061	76.301	78.135	77.211	76.096	75.102	76.342	77.271	75.158	76.811		75.102	
Max	88.299	88.298	88.299	88.239	88.3	88.3	87.657	85.64	84.235	88.201	88.3	88.3			88.3

Water levels in Uda Walawe reservoir
Future scenario

Simulation 2 Meters

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
2005	83.743	82.708	80.442	76.854	78.4	76.996	75.247	75.235	76.464	76.759	81.388	87.512	79.312	75.235	87.512
2006	87.92	85.975	85.207	83.743	84.605	87.553	87.801	86.445	86.032	85.853	88.25	88.3	86.474	83.743	88.3
2007	88.299	88.296	88.295	88.287	87.96	86.824	83.992	80.581	79.594	82.338	88.036	88.3	85.9	79.594	88.3
2008	88.296	87.859	87.716	87.933	88.3	88.3	87.634	86.035	86.013	85.697	84.935	83.811	86.877	83.811	88.3
2009	81.477	76.656	76.489	77.806	80.063	76.282	75.121	75.072	76.653	79.506	80.756	82.961	78.237	75.072	82.961
2010	83.032	79.134	77.341	77.712	87.23	88.092	86.895	85.169	86.228	88.3	88.3	88.3	84.644	77.341	88.3
2011	88.232	87.53	87.509	86.843	87.72	87.211	85.177	83.003	83.307	82.928	80.574	82.881	85.243	80.574	88.232
2012	87.765	88.237	88.293	88.284	87.718	87.929	86.537	84.283	84.033	83.529	83.437	85.936	86.332	83.437	88.293
2013	87.623	88.208	88.296	88.236	87.221	85.111	81.68	77.889	79.77	78.683	76.207	75.095	82.835	75.095	88.296
2014	78.104	81.302	85.125	86.432	85.164	82.447	77.903	75.829	78.87	77.841	75.601	75.002	79.968	75.002	86.432
Mean	85.449	84.59	84.471	84.213	85.438	84.675	82.799	80.954	81.696	82.143	82.749	83.81	83.582		
Min	78.104	76.656	76.489	76.854	78.4	76.282	75.121	75.072	76.464	76.759	75.601	75.002		75.002	
Max	88.299	88.296	88.296	88.287	88.3	88.3	87.801	86.445	86.228	88.3	88.3	88.3			88.3

Water levels in Uda Walawe reservoir
Future scenario

Simulation 3 **Meters**

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max
2005	83.411	81.591	78.484	77.127	78.692	78.305	79.387	79.016	79.549	80.68	83.974	88.108	80.694	77.127	88.108
2006	87.799	85.323	84.316	84.114	85.232	87.906	87.974	86.108	84.247	84.114	87.757	88.3	86.099	84.114	88.3
2007	88.299	88.299	88.3	88.254	87.306	85.541	81.722	77.38	77.353	81.921	88.17	88.232	85.065	77.353	88.3
2008	88.251	87.795	87.687	88.195	88.3	88.3	87.628	84.836	83.899	83.989	82.273	79.349	85.875	79.349	88.3
2009	77.29	75.784	77.37	79.479	82.369	78.2	76.69	75.294	76.382	80.311	83.673	85.947	79.066	75.294	85.947
2010	86.199	83.81	81.214	80.57	87.918	88.111	86.962	84.914	84.757	88.261	88.3	88.3	85.776	80.57	88.3
2011	88.204	86.837	86.492	85.038	86.159	86.259	84.354	83.048	83.464	81.798	76.288	81.094	84.086	76.288	88.204
2012	87.576	88.25	88.295	88.258	87.177	87.172	85.57	82.345	80.515	79.634	78.263	81.334	84.532	78.263	88.295
2013	82.449	84.309	87.654	88.277	86.681	83.397	78.311	75.695	77.321	77.665	77.237	77.27	81.355	75.695	88.277
2014	78.67	81.393	86.093	87.972	86.34	82.855	77.608	75.717	77.362	77.581	77.184	77.185	80.497	75.717	87.972
Mean	84.815	84.339	84.59	84.728	85.617	84.605	82.621	80.435	80.485	81.595	82.312	83.512	83.305		
Min	77.29	75.784	77.37	77.127	78.692	78.2	76.69	75.294	76.382	77.581	76.288	77.185		75.294	
Max	88.299	88.299	88.3	88.277	88.3	88.3	87.974	86.108	84.757	88.261	88.3	88.3			88.3

Spill at Uda Walawe reservoir
Future
scenario

Simulation 1 m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean (MCM)
2005	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2006	0	0	0	0	0	0	0	0	0	0	36.56	87.662	10.352	0	87.662	326.46
2007	32.119	41.675	23.102	17.198	0	0	0	0	0	0	25.203	13.304	12.717	0	41.675	401.04
2008	29.386	0	0	68.395	46.996	19.054	2.162	0	0	0	0	0	13.833	0	68.395	436.24
2009	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
2010	0	0	0	0	40.993	6.065	0	0	0	74.042	118.595	43.341	23.586	0	118.595	743.81
2011	10.323	0	0	0	0	0	0	0	0	0	0	0	0.86	0	10.323	27.12
2012	3.175	22.195	29.861	9.897	0	0	0	0	0	0	0	0	5.427	0	29.861	171.15
2013	0	0	0.168	4.322	0	0	0	0	0	0	0	0	0.374	0	4.322	11.79
2014	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0.00
Mean	7.5	6.387	5.313	9.981	8.799	2.512	0.216	0	0	7.404	18.036	14.431	6.715			
Min	0	0	0	0	0	0	0	0	0	0	0	0		0		
Max	32.119	41.675	29.861	68.395	46.996	19.054	2.162	0	0	74.042	118.595	87.662			118.595	

Deficits in Uda Walawe irrigation project
Future scenario

Simulation 1 m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	0	0.542	2.54	9.361	4.611	2.147	1.787	1.453	0.154	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	1.455	9.474	3.129	0.42	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	5.57
2009	10.468	10.341	3.806	2.406	0	8.922	12.833	14.477	3.743	0.862	0	0
2010	0	0	1.881	2.429	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	5.923	28.433	1.454
2012	0	0	0	0	0	0	0	0	1.037	3.119	9.208	0
2013	0	0	0	0	0	0	16.505	17.301	4.533	1.93	4.14	3.322
2014	5.416	0.823	0	0	0	1.031	25.454	17.271	4.383	1.93	4.384	3.964

Deficits in Uda Walawe irrigation project
Future scenario

Simulation 2 m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	0	0	0	9.811	3.42	10.749	23.884	15.05	2.912	8.184	2.198	0
2006	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	0.153	0	0	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	0
2009	0	12.029	8.487	6.162	1.319	16.904	27.742	17.492	2.298	2.167	0	0
2010	0	3.583	6.183	6.906	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	0	0
2012	0	0	0	0	0	0	0	0	0	0	0	0
2013	0	0	0	0	0	0	0.352	3.384	0	2.362	10.698	14.324
2014	5.461	0.382	0	0	0	0	10.263	9.992	0.106	4.816	11.156	16.233

Deficits in Uda Walawe irrigation project
Future Scenario

Simulation 3

m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2005	0	0	0.997	5.54	2.914	1.705	0	0.18	0	0	0	0
2006	0	0	0	0	0	0	0	0	0	0	0	0
2007	0	0	0	0	0	0	0	5.707	2.592	0.195	0	0
2008	0	0	0	0	0	0	0	0	0	0	0	1.434
2009	6.426	7.428	2.299	1.624	0	4.465	9.725	12.199	3.468	0.717	0	0
2010	0	0	0	0	0	0	0	0	0	0	0	0
2011	0	0	0	0	0	0	0	0	0	0	15.727	1.344
2012	0	0	0	0	0	0	0	0	0	0	5.765	0
2013	0	0	0	0	0	0	9.175	16.746	3.999	1.556	1.791	2.034
2014	4.029	0.722	0	0	0	0	13.057	16.68	3.908	1.556	2.441	2.183

Inflow to Uda Walawe reservoir
With out Samanalawewa

m³/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Mean inflow MCM
1992						11.47	11.987	6.535	5.796	15.501	102.822	43.451	28.223	5.796	102.822	
1993	16.31	10.628	14.04	27.346	62.589	52.989	23.367	10.23	5.368	49.604	112.74	115.592	41.734	5.368	115.592	1316.123
1994	50.392	64.794	27.75	49.558	25.181	12.171	5.498	5.645	12.886	77.982	81.442	50.344	38.637	5.498	81.442	1218.456
1995	53.363	20.224	13.2	121.344	91.441	36.622	17.579	10.122	8.721	15.053	26.512	13.029	35.601	8.721	121.344	1122.713
1996	6.906	8.065	4.396	52.083	11.683	12.256	9.273	4.331	10.983	40.007	46.441	38.064	20.374	4.331	52.083	642.514
1997	12.612	7.219	3.751	72.108	114.846	27.6	17.841	9.012	57.024	106.988	148.13	67.913	53.754	3.751	148.13	1695.186
1998	27.934	18.85	11.869	22.531	53.828	15.967	10.865	14.083	9.985	9.589	20.879	80.22	24.717	9.589	80.22	779.475
1999	52.273	44.566	38.766	44.845	24.241	36.34	9.683	8.085	7.056	22.339	50.013	45.221	31.952	7.056	52.273	1007.638
2000	35.028	55.53	39.286	28.759	10.232	12.928	5.686	19.082	10.177	9.168	19.049	14.223	21.596	5.686	55.53	681.051
Mean	31.852	28.735	19.132	52.322	49.255	24.26	12.42	9.681	14.222	38.47	67.559	52.006	33.326			
Min	6.906	7.219	3.751	22.531	10.232	11.47	5.498	4.331	5.368	9.168	19.049	13.029		3.751		
Max	53.363	64.794	39.286	121.344	114.846	52.989	23.367	19.082	57.024	106.988	148.13	115.592			148.13	

Spill at Uda Walawe reservoir
with out Samanalawewa

m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean	Min	Max	Spill MCM
1992						0	0	0	0	0	49.91	21.129	10.148	0	49.91	
1993	0	0	0	0	8.844	26.172	3.328	0	0	0	81.992	101.4	18.478	0	101.4	582.72
1994	27.899	48.558	22.089	30.24	0	0	0	0	0	1.111	60.663	23.757	17.86	0	60.663	563.23
1995	27.98	0	0	100.748	62.097	7.149	0	0	0	0	0	0	16.498	0	100.748	520.28
1996	0	0	0	0	0	0	0	0	0	0	0	19.916	1.66	0	19.916	52.35
1997	0	0	0	7.529	92.271	0.127	0	0	0	99.845	143.282	50.601	32.804	0	143.282	1034.51
1998	2.45	0	0	0	4.301	0	0	0	0	0	0	1.842	0.716	0	4.301	22.58
1999	32.948	30.661	28.308	25.906	0	0	0	0	0	0	0	0	9.819	0	32.948	309.65
2000	0	14.081	36.082	15.184	0	0	0	0	0	0	0	0	5.446	0	36.082	171.75
Mean	11.41	11.662	10.81	22.451	20.939	3.716	0.37	0	0	11.217	37.316	24.294	12.849			
Min	0	0	0	0	0	0	0	0	0	0	0	0		0		
Max	32.948	48.558	36.082	100.748	92.271	26.172	3.328	0	0	99.845	143.282	101.4			143	

Total deficits in Uda Walawe irrigation project with out Samanalawewa

m^3/s

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
1992						0	0	0	0	0	0	0
1993	0	0	0	0	0	0	0	0	0	0	0	0
1994	0	0	0	0	0	0	0	1.235	1.534	0	0	0
1995	0	0	0	0	0	0	0	0	0	0	0	0
1996	0	0	1.02	0.239	0	0	0.525	6.06	2.91	0.301	0	0
1997	0	0	0	0	0	0	0	0	0	0	0	0
1998	0	0	0	0	0	0	0	0	0	0	0	0
1999	0	0	0	0	0	0	0	0	0	0	0	0
2000	0	0	0	0	0	0	2.986	11.784	6.046	0.684	0.44	0

Height Area Capacity table for Uda Walawe reservoir

Elevation m asl	Area km^2	Capacity MCM
67.1	1.20	6.80
73.2	5.08	17.57
73.5	5.28	19.12
73.8	5.48	20.97
74.1	5.68	22.82
74.4	6.04	24.74
74.7	6.46	26.47
75.0	6.66	28.19
75.3	6.88	30.04
75.6	7.28	32.75
75.9	7.68	35.22
76.2	8.20	37.87
76.5	8.56	40.46
76.8	8.94	43.05
77.1	9.28	45.89
77.4	9.68	48.73
77.7	10.08	51.44
78.0	10.52	54.77
78.3	11.00	57.98
78.6	11.44	61.31
78.9	11.92	64.40
79.2	12.40	67.97
79.6	12.96	71.80
79.9	13.52	75.62
80.2	14.00	79.94
80.5	14.60	83.89
80.8	15.14	88.21
81.1	15.74	92.52
81.4	16.28	97.21
81.7	16.88	102.27
82.0	17.56	107.45
82.3	18.12	113.25
82.6	18.68	119.42
82.9	19.28	125.59
83.2	19.96	131.75
83.5	20.60	137.92
83.8	21.28	144.09
84.1	21.92	150.26
84.4	22.56	156.43
84.7	23.28	163.83
85.0	24.00	171.23
85.3	24.76	178.63
85.6	25.52	186.04
86.0	26.28	194.67
86.3	27.08	203.31
86.6	28.28	215.40
86.9	28.80	220.58
87.2	29.80	229.21
87.5	30.72	237.85
87.8	31.72	247.72
88.1	32.72	257.59
88.4	33.74	268.69
88.7	34.72	279.71