Local Environmental Impact Assessment

February 2014

Sri Lanka: Green Power Development and Energy Efficiency Improvement Investment Program

Annexures

Prepared by Ceylon Electricity Board, Ministry of Power and Energy, Democratic Socialist Republic of Sri Lanka for the Asian Development Bank.

ANNEXURES

ANNEXURE 1

Table 1.3 List of persons interviewed

No.	Agency	Name / Position	Address
1.	DS Office Ganga Ihala Korele,	Pradesiya Lekam (Secretary)	Kurunduwata
2.	Pradesiya Saba, Ganga Ihala Korele,	Mahinda (No Suggestions) / President	Kurunduwata
3.	DS Office, Udapalatha,	Pradesiya Lekam (Secretary)	Udapalatha, Gampola
4.	Department of Agrarian Services, Ganga Ihala Korele,	Department of Agrarian Services Officer	Ganga Ihala Korele, Kurunduwata
5.	Department of Agrarian Services, Ganga Ihala Korele,	Agriculture Production & Research Assistant / R M Ratnayake	Kurunduwata
6.	Pradesiya Saba, Ganga Ihala Korele,	Secretary / N B Karaliyadda	Kurunduwata
7	GN Office, Ulapane South	Senaka Premawardana / GN	GN, Ulapane South
8	GN, Office Singhepura	G K Udeshika / GN	GN, Singhepura
9	Agrarian Development Center, Kurunduwatta	M B Marasinghe / Agriculture Production & Research Assistant	Agrarian Development Center, Kurunduwatta
10	GN Office, Weliganga, Mawagura	Sandarathne / GN	GN, Weliganga, Mawagura
11	Crysbro farm	M Imthiyas / Owner Crysbro Company	272, Jayamalpura, Gampola
12	Pradesiya Lekam, Udapalatha,	Sunitha Menike / Director Planning	Udapalatha, Gampola
13	Pradesiya Lekam, Udapalatha, Gampola	I D Bandara / Land Officer	Pradesiya Lekam, Udapalatha, Gampola
14	Water Board, Gampola	A N B Heenkanda / Assistant Technician	Gampola
15	Water Board, Gampola	S P Ratnayake / Officer In Charge	Gampola
16	Ganga Ihala Korele DS Office, Kurunduwata	Chamila /Assistant Pradesiya Lekam	Kurunduwata
17	Ganga Ihala Korele DS Office, Kurunduwata	K M P M Menike / Land Officer	Ganga Ihala Korele, Kurunduwata
18	Ganga Ihala Korele DS Office, Kurunduwata	Hemanta Wijesekera / Development Officer	Ganga Ihala Korele, Kurunduwata
19	Ganga Ihala Korele DS Office, Kurunduwata	Shantha/ Permit Issuer for Excavations	Ganga Ihala Korele, Kurunduwata
20	GN Office	Premaratna / GN	Gampola wela
21	Mahaweli Development Authority,	Dharmadasa /Executive Engineer	Mahaweli Development Authority, Pilimatalawa
22	GN Office	Nimal Asoka Gamage / GN	Kalugalhinna, Mawagura
23	GN Office	H Wijeratna / GN	Galana, Gampola
24	President Farming	W A G Wimalasena President Farming	Mahaweli Janapadaya, Galatha
25	Independent Person	K G Tilakaratna / Teacher	Weliganga, Mawagura, Gampola

Ctd.....

No.	Agency	Name / Position	Address
26	Independent Person	M Pematunga / Technician	Weliganga, Mawagura, Gampola
27	Independent Person	M A Abeyaratna/ Mason	Weliganga, Mawagura, Gampola
28	Independent Person	M A N Saratha Kumara / Driver	Weliganga, Mawagura, Gampola
29	Independent Person	Dinuka Lankara/ Insurance Agent	Weliganga, Mawagura, Gampola
30	Independent Person	M D Ghnanappu/ Farmer	Weliganga, Mawagura, Gampola
31	Independent Person	P G Premaratna/ Laborer	Weliganga, Mawagura, Gampola
32	Independent Person	Esline Moraya Dias/ Farmer	Weliganga, Mawagura, Gampola
33	Independent Person	R A G S K Jayasundara / Driver	Weliganga, Mawagura, Gampola
34	Independent Person	Janapriya Udaya Kumara/ Technician	Weliganga, Mawagura, Gampola
35	Independent Person	P G Aronolis Appuhamy/ Laborer	Weliganga, Mawagura, Gampola
36	Independent Person	R G Sonnandare / Technician	Weliganga, Mawagura, Gampola
37	Independent Person	U K D Vijitha Mallika / Self employment	Weliganga, Mawagura, Gampola
38	Independent Person	K G Dayaratna/ Business	Weliganga, Mawagura, Gampola
39	Independent Person	L R M Karunawathie/ Tea Grower	Weliganga, Mawagura, Gampola
40	Independent Person	K D A Nanayakkara/ Retire	Weliganga, Mawagura, Gampola
41	Udapalatha Predeshiya Saba, Gampola	Secretary / Secretary (Uda Palatha Predeshiya Sabha)	Udapalatha Predeshiya Saba, Gampola

Table 1.4 GPS Locations of sampling points (Biological Environment - Transects)

Area	Starting point	End point	Height (m)
Camp site	07° 06.220' 80° 34.264'	07° 06.267' 80° 34.309'	592 610
Road diversion	07° 06.097' 80° 33.990'	07° 06.152' 80° 34.076'	604 590
Road from Ethgala to Surge Shaft	07° 07.912' 80° 34.152'	07° 07.627' 80° 34.333'	547 614
Road from Ethgala to Powerhouse	07° 07.912' 80° 34.152'	07° 07.819' 80° 34.577'	547 526

Group Discussions taken place in year 2009

(i) Notes on the focus group discussions held with different stakeholders.

During the Social impact assessment field study the data collection team consulted stakeholders who hold different stakes of the proposed Moragolla hydro-power project. As an initial activity, discussions were held with project relevant key agency stakeholders and the information gathered in these discussions are summarized in ***Table 1.5***

Table 1.5 Notes on the discussions with key agency staff

Agency	Persons	Views
Divisional Secretariat (Udapalatha)	Divisional Secretary and GNs	The development interventions should be well guided by EIA report. Project required land need to be acquired from the private owners. According to the GN (Weliganga division) required land can be acquired with compensation. Many of these land plots hold annual permits issued by MASL.
Divisional Secretariat (Ganga Ihala Korele)	Divisional Secretary	The proposed project may not create serious negative impacts to the settlements in the division because proposed tunnel is an underground construction and also other project interventions will be carried out in non-residential lands. However, project development activities should be implemented in accordance with the recommendations in the EIA Report.
National Water Supply & Drainage Board (NWS&DB) Gampola Office	Officer-In-Charge (Mr. S P Ratnayake), Technical Assistant (Mr. A. N. B. Heenkenda)	There are no domestic water supply projects located in the downstream of the proposed dam which will have impacts due to the proposed project.
Road Development Authority – Embilmeegama, Pilimatalawa Office	Executive Engineer (Mr. Dharmadasa)	If the proposed road diversion is established to replace the section of existing road that will be inundated due to proposed reservoir, there will not be a problem for the users of the existing road located on the right side of Mahaweli river at the project location.
Department of Agrarian Services – Ganga Ihala Korele	Divisional Officer (Mr. Kamal Priyantha)	Generating power is a national need. Similarly agriculture in Gampola-Raja Ela irrigation scheme is also important and therefore, irrigation canal (Known as Dunhinda) located in the downstream of proposed dam should be provided with adequate water to deliver to the Gampola-Raja Ela Irrigation scheme

(ii) Notes on the discussions with sand miners likely to be affected be proposed project (from Community view point)

Five persons holding permits for sand mining in the upstream and downstream of the project location participated in the group discussion. The views they expressed on the impacts are summarized below:

- We have been involved in sand mining in the river at different locations for a long period of time.

- The labourers working in our sand mining sites are local communities who are unemployed. We do not hire same labourers regularly but whoever who works for us are from the local communities.
- We would like to propose that project developer to consider offering employment in construction sites for our labourers when they lose their work in our mining sites.
- We also would like to propose Divisional Secretaries to recommend to issue new permits to us in other feasible locations in the upstream and other downstream locations to start new sites for sand mining.
- Most of us are small scale sand miners involved in sand mining with the assistance of the local communities and therefore we insist that the authorities consider us as persons who will have negative impacts due to proposed project.

(iii) Notes on the focus group discussions with community members affected due to proposed reservoir (from Community view point)

- Many of us were the people who were evacuated from Kotmale area due to Kotmale power project and resettled in these present locations. Once again we are going to face the same fate. We do not mind losing current residences if we are given suitable alternative places and other assistance to re-establish our settlements.
- Some of the persons in the area will not have to shift their residences but portions of their land will get inundated due to reservoir.
- We have been told by some officers that only a section of our lands will be affected but we need to get the balance portions of the land protected from the possible landslides and other vulnerabilities due to reservoir. Even though some of our houses will not have negative impacts, we do not like to take the risk of living in a hilly land of the upstream of the reservoir due to possible land slides.
- We must be properly compensated for our properties affected (land).
- All potentially vulnerable houses must be evacuated from the upstream of the reservoir although the houses will not get inundated.

(iv) Notes on the focus group discussions with community members affected due to access roads (Ethgala to Powerhouse and few other access roads).

Ten persons whose property will have negative impacts due to improvements to the existing roads in the area participated in the group discussion.

- If the roads to proposed project site are widened there will be some negative impacts on the lands in our home gardens. In most cases small sections of the lands will have to be acquired.
- The structures that have been built in the would be affected land belt (such as boundary walls, fences and gates) will have negative impacts.
- There will be disturbances to the local road users during construction phase of the roads. However, in some cases the local communities have some other alternative access to reach their residences.
- We see/perceive expansion of local roads as benefits to the local communities from the project.

- We were told that the CEB will introduce certain conditions for the road development contractors to manage the construction sites in such a way so as to minimize the possible disturbances to the local communities.

(v) The views of the stakeholders on the impact of Ulapane Industrial Estate

The Divisional secretaries, GNs and the community leaders in the Ulapane area were consulted and they were made to understand the project. Their views were documented on the potential impacts of the proposed project on the Ulapane Industrial Estate.

The views expressed:

- Industries have not yet been established in a major portion of the land allocated for Ulapane Industrial Estate.
- Water scarcity is a significant problem in the area since ground water table is very deep in this hilly area. There are no surface water sources also to tap easily.
- The proposed tunnel has been designed to construct about 30 M below the surface of the land and therefore as it appears, there will be no direct interventions to the land area in Ulapane industrial estate.
- The project will not require any land from the industrial estate.
- The only negative impact perceive is potential disturbances to the limited ground water due to construction activities during underground tunnelling works of the project.
- The impact will have to be carefully mitigated by the CEB and introduce alternative measures to solve the problems during construction phase. This will have to be an obligation of the CEB as the project developer.

(vi) Group discussions with the river users for bathing and washing purposes

Eight persons from different locations who use the river for bathing and washing purposes were present for discussion. The views they expressed on the impact and also the mitigatory measures suggested by them are mentioned below:

- We have been using these river locations for bathing and washing for long period of time. These locations are important for us from many aspects. These locations can be accessed free of cost with no payments involved and the water in these locations is good for bathing and washing.
- The locations we use are the only places those can be reached with no serious access difficulties.
- Most of other locations of the river within the project area cannot be accessed due to its steep river bed posing serious access difficulties.
- Only three locations in the upstream and on location in the downstream of the proposed dam are used for bathing.
- What we request is to establish alternative locations for bathing and washing and construct concrete steps to create safer access to theses bathing spots.

Table 2.3 Present ownership of lands at the project site

Development component	Land Ownership	To be acquired from	Possibility for acquisition	Compensation to be paid – Yes / No
Reservoir	Mahaweli river reservation, road likely to inundated belongs to RDA, Some land belongs to private parties	Mahaweli Authority of Sri Lanka, RDA & private owners.	Possible through following required procedures	Mahaweli reservation & RDA land will not be required for compensation but private owners to be paid.
Tunnel	The proposed tunnel will be established far beyond the land surface therefore, land acquisition will not be required.	-	-	-
Power house /Switchyard	Mahaweli river reservation, private land	Mahaweli Authority of Sri Lanka, Private owner who is living abroad	It is possible to acquire land from this private owner	Compensation for Mahaweli reservation is not required but it should be paid to the private owner.
Area around Surge Chamber, Penstock	Private land plots belonging to two individuals. These owners claim that they hold LDO permits to their land plots	Private parties	Need to negotiate and will be possible paying compensation (details need to be worked during Resettlement planning)	Need to pay compensation.
Power Transmission Line	Private lands	Not required to acquire	Not applicable	No need to pay compensation.
Office / Camp / Stores	Annual permit under Land Development Ordinance (LDO), belongs to four persons	From the owners	Possible	Yes

Ctd.....

Table 2.3 Present ownership of the project site (...Ctd)

Development component	Land Ownership	To be acquired from	Possibility for acquisition	Compensation to be paid – Yes / No
Labor camps (LB at dam site)	Part of land belongs to Ulapane Industrial Estate- Long leased land. Two line houses of the Tamil community occupy the other part of land.	To be acquired from the present owner of the land in the Industrial Estate and from LRC	Need to negotiate with the investors of the Industrial Estate and the LRC	If agreed need to pay some compensation to the present leased in person. This land was owned by "JANAWASAMA" a government organization before leased out to the Industrial Estate.
Spoil dumping sites	Lands of four dumping sites are owned by CEB and the fifth is owned by MASL	Consent from CEB and MASL has been received.	No need to acquire. Need to negotiate with MASL	Not required as Government Land
Proposed resettlement sites (Four sites)	Mahawila Watta-Estate belongs to JANAWASAMA. Government Land One land proposed belongs to MASL Two lands belong to private parties	From the Estate Management Mahaweli Authority of Sri Lanka To be acquired from these private parties	Need to negotiate with the estate Management Need to negotiate with MASL Need to negotiate with private parties	May not be required as Government Land Need to pay compensation.

Table 3.22 Details of sand mining activities and sand mine operators as at 01/10/2012

No.	Name of the Sand Mine Operator	Address	GN Division	No. of Labourers Work	Approx. Qty. (Cubes /day)	Gross Income per mine owner (Rs./day)	Expenditure for labourers (Rs.)	Net income per mine owner (Rs./day)	Net income per Labourer (Rs./day)	Status of the permit	Maximum Quantity permitted as per GS&MB Liscence (Cubes /month)	Gross income if Maximum Quantity permitted as per GS&MB Liscence (Cubes /month)	Net income if Maximum Quantity permitted as per GS&MB Liscence (Cubes /month)
1	Abusali Sahabdeen	123, Mawala Rd.,Ulapane	Ulapane	2	2	5,000	2,000	3,000	1,000		35	87,500	52,500
2	RPR Senevirathna	128, Bogolla, Ulapane	Ulapane	2	2	5,500	2,700	2,800	1,350		35	96,250	49,000
3	PDG Premawathie	36,Sark Villege, Ulapane	Weliganga	5	2	6,000	4,000	2,000	800	expired	15	45,000	15,000
4	MG Rathnasekara	Undalluduwa,Meethalawa,Kurunduwatta	Galpaya	3	2	6,000	4,000	2,000	1,333		10	30,000	10,000
5	HGT Nihal Sisira Kumara	106, Angammana, Gampola	Nawadevita	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
6	PADP Thilakarathna	Orwel Watta, Delpitiya,Alabage	Nawadevita	3	2	6,000	4,000	2,000	1,333		10	30,000	10,000
7	JAD Padmalatha	25A,Pallewela, Gampola	Nawadevita	3	2	6,000	4,000	2,000	1,333		15	45,000	15,000
8	RM Herath Banda	Elwatta, Angammana, Gampola	Nawadevita	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
9	SD Pushpa	Sumith Kade, Storfield, N-Eliya Rd, Gampola	Nawadevita	3	2	6,000	4,000	2,000	1,333		15	45,000	15,000
10	H Amarasinghe	129, Moragolla, Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
11	B Sirisena	181/21, Angammana, Gampola	Amunupura	3	3	9,000	6,000	3,000	2,000		15	45,000	15,000
12	SDJ Fernando	221/8, Dairy Pahalakotasa, Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
13	RM Jayarathna	129, Moragolla, Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
14	SDG Nihal	5A, Kobbewala, Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333		15	45,000	15,000
15	NM Sunil Nawarathna	149, Angammana,Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
16	DMAU Jayalath	42,Dairy Pahalakotasa, Gampola	Amunupura	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
17	RM Aberathna	145, Angammana, Gampola	Nawadevita	3	2	6,000	4,000	2,000	1,333	expired	15	45,000	15,000
18	Sunil Rajapaksha	57, Udage	Not Present for Interviews								10		
19	MP Rathnasekara	Kurunduwatta, Uddalkotuwa	Not Present for Interviews								10		

Notes

1. Miners 3-17 have not done work for months due to lack of sand. Miners 1 and 2 are still functioning
2. The sand extracted in these mines can only be used for Cement block making.
3. Miners are permitted to extract only 3 days per week. And only 1 raft per day.
4. Selling price of miner 1 and 2 varies between Rs. 2500 - Rs. 2750 depending on the sand quality
5. Selling price of mines 3 -17 is Rs. 3000

Table 3.25 Existing infrastructure facilities

Project location	Electricity	Communication	Transport facilities
Reservoir area	This area has access to electricity facilities	Ulapane North and South GN divisions have access to telephone facilitates. This facility is not available in rest of the area	Transport facilities in right bank of the river is some what satisfactory but not in the left bank area. A main road traverse along right bank that connects the project area to Gampola-Nuwaraeliya main road. Major part of river reservation in LB can not be reached due to difficulty in access and even the roads located in the LB area are narrow and dilapidated. Public transport facilities are available in the Ulapane North GN division area.
Area around the Dam	Same as above	Telephone lines are not available but most of the people have cellular telephones.	The transport facilities in the left bank area are rather poor.
Corridor of the Tunnel	Same as above	There are no telephone lines and even access difficulties are experienced	The transport facilities are very poor. As the tunnel is designed to construct underground there will not be any positive or negative impact on the existing access facilities.
Area around Power house / Switch Yard and Surge Chamber	Same as above	This area has access to telephone lines	Pubic transport facilities is not available and the roads are narrow and poor in physical condition
Transmission line	Same as above	This area has access to telephone lines	Pubic transport facilities is not available and the roads are narrow and poor in physical condition
Residential Camp / Office & Stores	No access to electricity facilities in this area.	Same as above	This area can be reached through existing main road on the Right Bank.
Labor Camp – left bank	Available	Available	Part of Ulapane Industrial Estate. Therefore, access facilities are available.

Table 3.26 Socially, Religiously and Culturally Sensitive Locations

Place	The distance (crow fly distance) to places from project locations			
	From Reservoir area - km	From Tunnel-km	From Power House, Switch yard & Surge Shaft –km	From Road diversion and Residential Camp area -km
Estate hospital (Mahawela Watta)	3	3	5.5	3
Badrakali Devalaya – very small place (Weliganga)	2	2	4.5	2
Sri Gangaramaya- Temple (Weliganga)	2	2	4.5	21
Weligala School	1	1	3.5	1
Ulapane hospital	1	0.8	2	1
Ulapane- Sub-post Office	1	0.8	2	1
Ulapane Sinhala school	1	0.8	2	1
Training centre- Ulapane	1	0.5	2	1
Buddhist Temple Ulapane	2	1.5	2	2
Muslim School Ulapane	3	3	5	3
Mosque- Ulapane	3	3	5	3
Udagama temple	3.5	1.5	1.5	3.5
Udagama School	2.3	0.8	1.3	2.3
Army Camp- Atabage	3	05	0.5	3

ANNEXURE 2

Table 3.1 General soil properties of the representative soil samples collected from the surface soil layers

Sample No.	*Location No.	Liquid Limit	Plastic Limit	Plasticity Index	Moisture Content	Φ 60% (mm)	Φ□ 30% (mm)	Φ10% (mm)	C_u	C_c
1-A	1	46.3	26.13	20.17	31.9	0.640	0.054	0.0022	290.1	2.071
2-B	2	46.55	26.75	19.8	24.7	1.700	0.078	0.033	51.5	0.108
3-C	3	59.65	33.22	26.43	33.1	0.120	0.033	-	-	-
4-4	4	54.20	26.25	27.95	37.6	0.400	0.0064	-	-	-
5-5	5	46.20	21.88	24.32	31.5	0.230	0.031	-	-	-
6	6	40.90	22.53	18.37	29.3	1.000	0.130	0.007	142.9	2.414
7-7	7	52.90	31.71	21.19	34.2	0.200	0.013	-	-	-
8-8	8	45.10	24.89	20.21	30.9	0.530	0.037	-	-	-

* Reference ***Figure no. 3.3(a)***

Table 3.2 Un-drained and compaction properties of the representative soil samples collected from the surface soil layers

Sample No.	*Location No.	Longitude E	Latitude N	MDD (g/cm^3)	OMC (%)	Specific Gravity (G_{SAV})	Unconfined Compressive Strength (kPa)	Undrained Cohesion (kPa)
1-A	1	177503 E	211396 N	1.62	23.00	2.610	34.92	17.46
2-B	2	177286 E	211379 N	1.73	19.50	2.524	27.51	13.75
3-C	3	177438 E	211621 N	1.50	27.80	2.483	73.02	36.51
4-4	4	176873 E	210807 N	1.57	24.20	2.457	34.48	17.24
5-5	5	176691 E	210622 N	1.60	22.00	2.419	28.52	14.26
6	6	176401 E	210591 N	1.66	19.50	2.566	24.19	12.10
7-7	7	176724 E	210841 N	1.46	28.50	2.423	56.16	28.08
8-8	8	176871 E	211335 N	1.64	20.30	2.421	53.05	26.52

* Reference ***Figure no. 3.3(a)***

Table 3.3 Depths and thickness of overburden soil deposits, weathered deposits and bedrock conditions of proposed structures

Location/ Structure	Borehole no.	Height of over burden/depth to weathered rock	Depth to moderately weathered rock	Depth to Fresh rock (m)	Rock type	Depth to water table (m)	Remarks
Dam axis (LB)	MD-01	14.23	18	20	Garnet Biotite Gneiss	10.9	
	MD-02	15	15	19	Garnet Biotite Gneiss	18.7	
	MD-03	30.15	30.15	34	Garnet Biotite Gneiss	19.8	
	MD-04	6.2	6.2	17	Garnet Biotite Gneiss	12.18	
	MD-05	4.2	4.2	5	Garnet Biotite Gneiss	10.16	
Dam axis (RB)	MD-06	3.45	3.45	4.15	Garnet Biotite Gneiss	1.5	
	MD-07	9.35	9.35	13	Garnet Biotite Gneiss	10.8	
	MD-08	13.5	13.5	17.45	Garnet Biotite Gneiss	15.46	
	MD-09	0.9	0.9	7.17	Garnet Biotite Gneiss	3	
Tunnel Trace	MTT-01	15	31	>51	Quarzite	37.4	
	MTT-02	>40	>40	>40		Not found	
	MTT-03	29	29	30	Garnet Biotite Gneiss	4.28	
	MTT-04	27	27	28	Garnet Biotite Gneiss	6.2	
	MTT-05	23		23	Garnet Biotite Gneiss	5.6	
	MTT-06	14.5	15.5	15.5	Garnet Biotite Gneiss	12.2	
	MTT-07	14.85	14.85	19.75	Garnetierous Biotite Gneiss and Quartzite	9	
	MTT-08	21.5	24.5	27.85	Garnet Biotite Gneiss	25.4	
	MTT-09	30		30	Garnet Biotite Gneiss	13.4	

Borehole testing locations are shown in ***Figure 3.3 (b)-1 & 3.3 (b)-2***

Ctd....

Table 3.3 (...Ctd) Depths and thickness of overburden soil deposits, weathered deposits and bedrock conditions of proposed structures

Location/ Structure	Borehole no:	Height of over burden/depth to weathered rock	Depth to moderately weathered rock	Depth to Fresh rock	Rock type	Depth to water table	Remarks
Tunnel Trace	MTT-10	7	7	16.6	Garnet Biotite Gneiss	29.8	
	MTT-11	28.5	28.5	38.7	Biotite Gneiss	6	
	MTT-12	9.75		9.75	Garnetiferous Biotite Gneiss	4	
	MTT-13	26	>30 ,altenate decomposed and fresh zones		Biotite Gneiss	25.2	
	MTT-14	8.9		8.9	Garnetiferous Biotite Gneiss intersected by 5-10 cm calc gneiss at 10,15 & 26m	19.1	
	MTT-15	22	22	26.6	Garnet Biotite Gneiss	24.1	
	MTT-16	21	21	23	Garnet Biotite Gneiss	-	Rock layers are found before 21m
	MTT-17	23		25	Garnetiferous Quartzofeldspathic Gneiss	-	
Tunnel out fall	MTT-18	1.4	1.4	2.2	Biotite Gneiss	-	
Power House	MPH 01	9	10.75	>20	Garnet Biotite Gneiss	9.3	from 13-20 fresh to slightly weathered rock
	MPH 02	8.25	8.25	>15	Garnet Biotite Gneiss	8.5	from 13-15 fresh to slightly weathered rock
	MPH 03	6.4	6.4	>15	Garnet Biotite Gneiss	6.4	from 15-20 fresh to slightly weathered rock
	MPH 04	9	10.5	13	Garnet Biotite Gneiss	7.55	
	MPH 05	5	5	9.9	Garnet Biotite Gneiss	1.8	
Tailrace area	MTR-01	3	3.8	6	Garnet Biotite Gneiss	1.9	

Borehole testing locations are given in ***Figure 3.3 (b) & 3.3 (b)-2***

Table 3.4 Rock mass Classification for the Interpretation of Tunnel Design Aspects

Rock Class	Description
Class I	Very good rock with no support requirements except individual rock bolts
Class II	Good rock with shotcrete and locally installed rock bolts
Class III	Medium quality rock with pattern bolting and shotcrete possibly with wire mesh
Class IV	Unstable rock condition where installation of lattice arches and shotcrete with wire mesh and pattern rock bolts
Class V	Completely weathered weak rock, unstable conditions where the depth of heading is reduced with simultaneous installation of steel ribs, lagging and forepoling.

Table 3.5 (a) Recommended Effective Shear Strength Parameters for the stability assessment .

Soil/Rock Category	Unit weight kN/m^3	Cohesion Intercept (Effective) kPa	Effective Angle of Internal Friction of soil (Phi) in degrees
Top Soil Layer (Clayey Silt)	18	3	34
Decomposed Rock	21	2	40
SW/MW Garnet Biotite Gneiss	22	200	45
Fresh Garnet Biotite Gneiss	23	400	45

Table 3.5 (b) Factor of Safety of critical Slope Sections

Section	Description	Bishop's FOS	
		Without considering Seismic Coefficient	Seismic Coefficient =0.15g
Slope Section 1	Right bank upper slope stability of the dam site (without fluctuation of water table)	1.820	1.438
Slope Section 2	Left bank upper slope stability of the dam site (without the fluctuation of water table)	1.546	1.261
Slope Section 1	Right bank upper slope stability of the dam site (with fluctuation of water table)	1.820	1.438
Slope section 2	Left bank upper slope stability of the dam site (with fluctuation of water table)	1.310	1.079

ANNEXURE 3

Table 3.6 (a) Mean Monthly Flows at Talawakelle (m^3/s)

Calender Year

Catchment Area : 316 km2

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1955	23.7	17.1	14.0	17.9	42.9	78.7	40.4	20.0	18.8	19.5	20.9	12.2	27.2
1956	9.9	7.3	8.4	8.0	9.3	53.4	23.7	22.3	20.3	24.6	28.5	15.4	19.3
1957	8.9	6.9	6.0	4.6	10.5	21.2	25.5	13.0	11.2	10.9	26.4	70.5	18.1
1958	25.7	10.0	11.3	9.9	11.1	20.5	20.0	19.4	10.7	23.4	22.1	12.4	16.4
1959	8.0	6.0	4.9	9.1	10.0	49.9	39.3	16.7	15.0	20.6	19.2	12.4	17.6
1960	10.0	14.8	8.9	13.0	12.6	17.5	22.4	25.9	41.2	30.9	31.8	13.5	20.2
1961	8.6	7.8	6.4	7.9	22.2	14.5	15.8	26.4	13.8	12.8	14.9	11.7	13.6
1962	8.5	6.7	5.6	6.5	20.1	11.5	22.0	15.5	26.6	24.3	15.0	10.6	14.5
1963	11.6	8.7	6.3	10.4	8.7	11.9	13.9	12.4	14.5	28.3	20.5	21.1	14.1
1964	12.8	8.8	7.2	6.3	6.2	6.5	15.5	21.9	25.3	12.6	23.7	10.3	13.1
1965	6.5	7.0	5.5	12.7	33.2	20.4	10.2	19.5	12.8	20.3	19.2	16.4	15.4
1966	10.1	6.7	7.6	9.6	7.3	7.3	8.8	9.8	25.8	25.7	18.8	10.6	12.4
1967	8.0	7.5	7.0	6.8	6.0	9.3	14.7	10.8	9.4	32.6	24.5	22.2	13.3
1968	9.2	6.0	6.0	5.5	10.1	12.6	38.9	34.7	28.5	25.5	19.0	12.1	17.4
1969	8.3	6.0	5.4	9.9	15.2	25.5	15.1	10.2	23.1	21.7	13.6	18.6	14.4
1970	15.7	14.8	8.2	11.4	10.4	12.7	15.3	29.9	12.6	22.4	18.3	20.6	16.1
1971	14.0	7.8	6.5	13.8	11.6	17.7	24.3	27.4	49.0	28.1	13.7	19.5	19.5
1972	7.8	5.7	4.5	6.7	23.7	7.9	43.2	22.5	16.6	39.8	34.2	21.2	19.6
1973	8.9	6.3	4.7	5.7	4.5	6.4	8.4	29.7	9.7	9.9	14.0	14.9	10.3
1974	9.3	7.0	6.1	8.0	13.5	22.6	57.9	42.9	34.2	23.5	10.0	10.3	20.6
1975	12.2	6.5	8.6	10.5	9.5	58.9	17.4	31.1	34.3	35.3	47.5	19.0	24.2
1976	11.1	5.8	4.6	9.5	5.6	4.9	11.3	10.7	8.0	11.7	19.2	10.2	9.4
1977	6.6	5.7	5.2	8.6	12.8	20.7	36.7	19.8	9.8	37.3	23.0	12.1	16.6
1978	7.6	5.9	10.9	4.8	39.0	21.4	28.0	48.9	20.8	27.4	51.2	18.4	23.8
1979	7.2	6.6	4.6	9.4	14.1	20.3	32.5	22.1	30.4	36.2	36.2	26.6	20.6
1980	8.6	5.1	4.7	6.7	8.3	9.2	14.9	17.7	10.2	20.1	16.1	11.2	11.1
1981	9.4	5.1	4.4	5.5	5.2	22.2	14.9	14.6	35.0	12.7	18.6	10.8	13.2
1982	3.6	2.3	2.6	2.9	9.2	21.4	15.6	12.3	4.9	8.7	12.7	11.7	9.0
1983	5.1	2.9	1.4	0.5	2.7	1.8	3.8	7.3	5.0	3.2	13.4	15.2	5.2
1984	11.8	13.0	12.9	14.4	10.1	17.2	37.6	13.7	15.8	19.9	13.9	9.8	15.9
1985	7.8	3.7	3.5	3.7	11.5	55.3	24.6	16.5	9.9	19.7	24.7	14.3	16.3
1986	27.9	11.2	7.1	9.1	9.7	8.6	9.2	23.5	14.8	22.6	11.7	8.0	13.7
1987	4.6	2.4	1.9	3.4	5.8	10.4	4.9	9.2	8.0	21.9	18.1	9.9	8.4
1988	4.8	4.1	4.2	10.4	9.9	12.6	21.2	17.5	19.9	9.6	17.8	7.0	11.6
1989	6.2	2.5	1.7	2.9	12.2	26.8	44.8	23.9	21.5	18.9	23.5	10.6	16.4
1990	12.1	4.4	5.4	3.1	7.3	19.7	13.3	15.5	7.7	9.3	15.6	10.2	10.3
1991	14.6	4.8	3.0	3.7	3.5	16.6	8.9	13.3	9.8	14.6	21.0	11.3	10.4
1992	5.9	2.3	0.6	1.9	4.2	11.9	24.0	31.2	18.1	24.5	26.8	13.8	13.9
1993	5.9	3.2	2.9	2.1	9.1	28.6	34.7	17.6	9.1	32.5	24.5	17.9	15.8
1994	11.5	10.3	4.2	4.6	4.6	13.0	13.4	28.9	15.2	23.2	25.1	13.1	13.9
1995	7.0	4.7	3.0	8.1	19.8	22.9	17.5	14.3	22.9	28.3	21.0	7.4	14.8
1996	5.3	4.4	1.8	8.2	3.0	12.5	23.0	21.8	28.5	24.7	13.8	8.9	13.0
1997	4.0	2.2	1.4	8.2	12.8	6.1	9.9	8.5	18.2	26.4	30.6	20.5	12.5
1998	5.7	4.0	2.0	1.5	4.5	11.0	16.1	23.1	18.4	26.4	30.6	20.5	13.7
1999	5.7	4.0	2.0	1.5	4.5	11.0	16.1	23.1	18.4	21.4	13.5	11.7	11.1
2000	10.4	6.9	3.9	6.9	11.5	33.8	10.3	9.8	7.2	16.1	10.2	6.8	11.1
2001	6.2	6.8	2.1	5.2	4.7	9.5	18.3	11.7	19.9	19.1	15.8	11.4	10.9
2002	6.2	3.5	2.9	6.9	6.3	10.0	7.3	18.7	6.5	10.9	14.4	10.7	8.7
2003	9.1	4.3	4.4	5.6	9.2	4.3	9.4	15.5	6.7	13.0	9.5	5.4	8.1
2004	3.3	2.3	1.8	8.8	10.0	21.8	13.3	9.5	8.3	14.4	14.2	13.6	10.1
2005	7.1	4.8	5.0	3.6	5.2	9.3	13.4	11.5	23.9	15.9	24.2	16.3	11.7
2006	11.8	6.6	5.7	9.9	17.9	17.3	24.8	13.5	11.2	15.5	39.5	18.8	16.1
2007	12.2	5.0	2.7	4.2	3.1	16.3	12.5	7.0	20.3				
Mean	9.5	6.3	5.2	7.2	11.2	19.2	20.4	19.1	17.7	21.1	21.3	14.8	14.5
Max	27.9	17.1	14.0	17.9	42.9	78.7	57.9	48.9	49.0	39.8	51.2	70.5	27.2
Min	3.3	2.2	0.6	0.5	2.7	1.8	3.8	7.0	4.9	3.2	9.5	5.4	5.2
StDv	4.9	3.3	2.9	3.6	8.3	15.0	11.6	8.8	9.7	8.2	8.9	9.1	4.4

Table 3.6 (b) Mean Monthly Flows at Nawalapitiya (m^3/s)

Calender Year Catchment Area : 176 km2

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1989										20.8	21.3	13.3	
1990	12.4	9.7	10.9	10.2	22.8	37.1	26.7	23.0	13.7	8.6	29.1	6.0	17.5
1991	4.7	3.3	3.0	3.7	4.0	31.8	17.9	21.4	10.7	21.9	19.7	6.1	12.4
1992	3.4	2.6	2.2	3.8	6.5	27.7	34.1	29.8	24.8	32.3	16.5	6.6	15.9
1993	3.2	2.7	2.8	3.2	16.6	54.3	36.0	20.7	10.9	34.3	14.9	9.5	17.5
1994	5.5	4.7	2.8	3.4	9.8	18.1	18.9	21.9	16.2	20.6	18.9	7.8	12.4
1995	3.6	2.9	3.0	8.5	28.9	38.7	19.8	20.9	34.0	33.4	26.8	4.8	18.8
1996	3.5	2.9	2.3	5.8	3.1	10.8	22.3	22.9	38.8	25.7	9.9	6.8	13.0
1997	3.3	2.7	2.7	5.3	14.4	8.7	37.0	17.7	26.8	21.2	18.6	13.2	14.4
1998	7.6	3.7	2.5	2.5	8.1	27.9	24.8	26.6	31.1	26.9	16.9	9.0	15.7
1999	9.1	4.0	3.4	15.8	27.9	48.6	13.0	19.4	12.8	25.5	13.1	6.6	16.6
2000	5.8	6.3	4.0	4.2	6.5	24.2	18.3	26.0	19.2	27.0	9.3	7.3	13.2
2001	4.5	8.9	3.0	4.8	8.6	12.4	28.3	14.4	15.3	24.6	12.5	8.7	12.2
2002	5.6	3.3	2.8	8.5	14.1	27.0	20.5	26.3	6.8	14.9	11.9	8.2	12.6
2003	5.4	3.5	5.1	7.9	18.0	10.7	25.6	25.0	17.5	13.6	10.3	4.9	12.4
2004	3.1	2.7	2.3	4.7	24.2	30.1	24.3	15.0	18.1	22.7	16.3	9.3	14.5
2005	4.3	4.1	3.7	4.6	5.0	22.9	22.7	21.9	34.6	23.5	24.5	12.5	15.4
2006	7.1	3.8	5.1	4.9	12.9	23.3	25.1	22.1	15.3	19.3	33.0	10.9	15.3
2007	8.1	4.0	3.5	6.3	11.4	29.3	30.2	20.0	42.6	31.1	21.3	10.0	18.2
2008	6.3	6.0	12.8	22.4	17.4	26.9	35.1	19.4	21.2				
Mean	5.6	4.3	4.1	6.9	13.7	26.9	25.3	21.8	21.6	23.6	18.1	8.5	14.89
Max	12.4	9.7	12.8	22.4	28.9	54.3	37.0	29.8	42.6	34.3	33.0	13.3	18.81
Min	3.1	2.6	2.2	2.5	3.1	8.7	13.0	14.4	6.8	8.6	9.3	4.8	12.20
StDv	2.4	2.1	2.9	4.9	7.9	12.2	6.8	3.9	10.3	6.7	6.7	2.6	2.22

Table 3.6 (c) Mean Monthly Flows at Morape (m^3/s)

Calender Year — Catchment Area : 562 km^2

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1949	18.6	11.9	10.9	21.6	18.3	41.7	41.8	33.9	44.0	36.8	30.9	29.6	28.4
1950	15.7	9.9	9.7	7.2	14.9	33.1	52.0	40.2	80.1	30.8	16.3	10.5	26.7
1951	28.2	18.2	10.7	14.3	16.6	165.8	65.8	23.2	33.5	50.6	52.2	21.5	41.7
1952	27.0	13.6	8.3	23.8	99.5	68.7	51.8	44.0	43.4	58.6	20.5	13.5	39.6
1953	12.6	6.2	13.3	29.2	12.4	29.6	47.8	42.8	35.2	38.2	39.2	27.4	27.9
1954	31.3	19.8	12.7	18.6	18.1	21.5	37.7	57.0	33.0	67.4	19.9	29.7	30.7
1955	26.6	17.0	6.6	18.0	40.1	136.0	50.9	26.7	33.6	32.7	31.6	14.5	36.1
1956	4.9	4.6	5.3	5.1	14.1	50.0	47.5	49.9	43.9	53.8	41.0	28.4	29.2
1957	15.0	11.9	9.4	7.6	14.7	54.2	56.4	34.3	35.9	29.5	42.4	81.5	32.9
1958	33.5	16.0	20.1	19.0	26.3	40.9	40.5	46.0	19.4	57.9	45.8	20.7	32.3
1959	10.9	7.1	4.3	15.4	15.7	81.4	89.2	32.3	31.0	40.2	36.1	20.2	32.1
1960	14.7	23.6	13.7	18.9	24.2	40.1	49.2	51.3	84.0	61.4	62.5	21.7	38.8
1961	12.8	11.9	8.7	10.9	42.0	34.3	34.1	67.2	30.6	22.8	30.7	23.0	27.6
1962	15.3	9.2	7.2	11.0	42.7	26.9	51.0	35.2	59.6	48.1	30.3	18.6	29.7
1963	19.2	12.3	7.3	16.1	13.2	23.8	36.4	31.2	27.5	48.9	39.7	41.0	26.5
1964	27.3	18.5	12.3	6.9	8.6	13.4	41.9	53.4	54.0	23.1	52.6	17.3	27.5
1965	7.0	6.4	5.0	19.1	76.2	44.1	18.1	36.9	42.2	38.3	35.9	30.6	30.1
1966	18.7	8.3	10.1	16.2	9.0	12.9	20.4	19.4	40.6	51.9	40.4	18.4	22.2
1967	12.8	10.5	9.1	6.8	7.1	18.4	30.7	22.4	16.6	60.7	45.5	53.1	24.6
1968	13.5	6.3	7.9	6.9	17.7	31.1	97.1	82.2	64.2	54.0	37.2	21.4	36.9
1969	12.4	6.6	4.2	17.5	34.4	60.0	31.7	17.7	40.2	36.6	24.1	26.7	26.0
1970	27.0	18.3	10.1	16.6	15.6	29.7	34.5	62.2	23.1	41.6	36.6	44.4	30.1
1971	24.6	11.2	8.8	21.9	21.6	39.3	56.0	57.8	92.5	49.5	27.2	38.8	37.6
1972	11.6	6.0	3.5	10.6	40.8	12.9	67.2	42.2	29.7	64.4	54.4	35.8	31.8
1973	16.7	9.8	6.6	8.8	6.1	14.2	25.3	62.4	23.9	19.8	30.7	33.2	21.6
1974	20.0	10.2	9.9	19.0	26.5	56.8	93.4	112.4	54.2	48.5	24.0	17.6	41.3
1975	21.0	12.8	12.2	17.9	21.4	72.6	37.5	64.4	59.7	80.1	98.8	29.9	44.1
1976	20.5	9.1	6.6	17.2	7.4	5.8	22.2	21.1	17.3	30.5	32.2	19.9	17.5
1977	8.6	7.0	6.4	11.0	31.8	43.9	57.6	31.2	18.4	65.9	37.3	21.5	28.6
1978	10.9	8.7	9.1	7.0	67.0	36.8	81.8	110.2	41.5	53.1	94.6	32.7	46.4
1979	12.4	8.7	6.1	12.7	23.4	39.4	69.1	39.5	55.6	69.5	73.4	42.7	37.9
1980	14.2	7.4	6.2	12.5	15.0	18.3	38.9	46.4	22.3	41.8	30.4	22.7	23.2
1981	16.5	8.1	7.2	9.7	8.6	54.1	32.4	36.9	83.6	24.9	38.7	18.8	28.3
1982	6.1	4.8	7.2	9.4	23.2	54.6	42.1	31.7	17.6	27.8	31.6	29.5	23.9
1983	17.9	7.6	5.6	4.1	9.0	9.8	18.3	24.5	20.4	19.5	34.5	36.1	17.4
1984	29.3	21.2	16.5	20.7	18.4	38.7	85.3	35.3	39.6	43.5	24.3	19.9	32.8
1985	16.9	7.0	8.0	8.5	20.5	107.5	61.3	43.5	28.2	34.8	45.3	45.5	35.7
1986	40.2	22.3	14.2	16.6	9.1	16.0	29.6	35.2	46.1	44.5	25.8	13.3	26.1
1987	14.5	7.4	8.3	11.5	11.3	35.8	24.7	37.6	32.5	44.7	34.7	22.9	23.9
1988	9.1	6.3	5.9	43.1	67.3	43.0	42.3	35.0	38.7	9.6	33.1	21.4	29.7
1989	16.6	6.6	4.9	10.5	33.1	61.6	65.6	67.4	43.1	45.4	39.5	19.5	34.7
1990	15.0	10.2	8.4	5.9	21.2	72.6	37.0	37.0	17.2	27.1	28.0	23.0	25.3
1991	25.7	11.0	8.8	7.1	13.3	55.1	53.9	39.5	22.1	23.1	23.4	18.3	25.2
1992	7.2	4.3	3.8	8.8	9.3	36.2	50.6	74.0	27.5	27.0	42.9	24.5	26.5
1993	10.9	7.7	5.9	6.6	27.2	58.3	46.6	25.9	19.3	69.4	36.0	27.1	28.6
1994	16.7	12.6	5.5	9.1	12.4	16.0	31.4	32.1	44.6	65.6	42.8	18.4	25.7
1995	13.7	11.0	11.5	33.2	44.5	61.5	48.6	31.4	31.2	54.1	23.5	12.5	31.5
1996	11.7	8.8	4.6	18.4	8.2	27.7	30.9	38.2	70.5	44.2	29.5	22.6	26.3
1997	8.0	7.5	8.5	27.0	25.4	28.4	46.7	24.4	43.8	47.5	30.3	22.7	26.8
1998	14.6	8.6	4.7	6.6	11.2	49.2	32.9	35.6	80.0	51.1	30.6	34.2	30.0
1999	26.1	16.5	10.5	9.6	16.9	48.6	32.7	31.8	19.2	27.9	23.0	15.4	23.2
2000	14.1	20.3	15.2	9.6	7.9	35.1	34.9	24.7	26.5	23.8	19.1	15.8	20.6
2001	16.7	9.8	4.5	23.1	13.2	23.8	26.4	13.1	44.3	41.5	24.5	24.9	22.2
2002	13.5	8.4	8.8	18.3	15.6	19.7	32.9	41.6	17.1	24.1	28.2	21.7	20.9
2003	18.2	12.3	16.5	21.6	17.1	14.5	34.3	22.7	25.0	15.1	19.6	10.0	18.9
2004	7.6	6.1	4.8	17.7	15.5	32.4	23.1	12.2	37.8	46.2	28.8	33.3	22.2
2005	16.7	9.4	9.5	8.1	7.7	18.7	37.5	46.0	33.3	39.1	39.0	29.8	24.7
Mean	17.0	10.8	8.6	14.6	23.0	42.4	45.2	41.6	39.3	42.6	36.7	26.1	29.10
Max	40.2	23.6	20.1	43.1	99.5	165.8	97.1	112.4	92.5	80.1	98.8	81.5	46.44
Min	4.9	4.3	3.5	4.1	6.1	5.8	18.1	12.2	16.6	9.6	16.3	10.0	17.35
StDv	7.4	4.8	3.6	7.6	18.4	29.1	18.7	20.1	19.0	15.7	15.8	11.8	6.56

** Up to 1984 based on Morape Gauged Data

** Since 1984 based on estimated from Kothmale reservoir operation data

Table 3.9 Mean Monthly Flows at Moragolla Dam site 1968-2007 (m^3/s)

Mahaweli Ganga — Catchment Area = 241 km^2

Year	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Mean
1968	9.37	5.95	7.88	19.99	37.83	68.44	69.19	46.31	48.44	26.47	35.18	12.87	32.43
1969	7.60	6.36	7.02	12.81	46.50	44.45	16.30	14.72	30.61	19.39	13.60	10.15	19.16
1970	12.26	6.57	7.03	9.45	16.85	39.61	31.66	37.17	24.47	39.72	19.01	16.09	21.77
1971	7.35	6.95	9.41	10.49	21.87	31.95	40.61	50.84	64.87	26.50	13.14	7.92	24.40
1972	6.11	5.54	5.88	11.29	35.31	18.15	33.95	30.13	35.95	48.30	31.48	12.33	23.00
1973	6.67	5.99	5.32	5.58	7.35	23.80	22.08	37.57	10.23	9.99	18.97	11.53	13.81
1974	7.90	8.79	8.78	10.54	38.71	51.44	76.40	45.39	42.08	29.45	9.98	8.45	28.31
1975	6.47	5.55	5.66	5.38	28.85	45.65	22.28	43.00	47.06	52.81	75.97	14.27	29.45
1976	6.66	5.93	5.60	10.64	4.91	7.82	29.18	20.72	15.38	28.17	20.17	13.96	14.17
1977	6.31	5.28	5.42	12.61	34.10	44.36	25.24	19.70	14.57	29.58	19.23	8.47	18.81
1978	5.68	5.25	6.27	9.78	36.74	24.14	55.15	50.92	34.45	30.95	44.99	11.38	26.46
1979	6.08	5.66	5.72	8.18	14.26	32.50	32.10	18.09	37.29	28.25	27.36	17.43	19.45
1980	6.08	5.39	5.68	19.37	7.48	24.75	44.39	31.94	19.47	24.04	27.01	11.51	19.00
1981	6.93	5.74	5.33	5.06	11.78	48.72	30.64	21.97	47.98	13.55	26.76	11.61	19.65
1982	5.81	5.31	4.86	13.98	24.71	67.94	36.16	20.12	7.91	20.82	22.79	12.39	20.27
1983	5.82	5.33	4.60	4.93	8.98	16.49	24.71	24.62	15.54	11.34	24.37	19.61	13.92
1984	23.06	9.14	11.11	26.12	23.38	49.12	52.93	16.41	34.64	33.84	19.65	9.77	25.83
1985	7.20	6.23	5.96	14.44	49.92	112.51	58.33	40.96	22.17	48.26	33.70	15.11	34.68
1986	11.97	11.03	6.98	9.45	21.84	14.42	19.49	44.56	53.60	34.77	18.22	7.22	21.18
1987	5.84	5.34	4.82	4.44	5.77	28.93	11.67	37.24	14.77	43.59	27.35	13.25	16.99
1988	5.60	5.15	6.82	25.29	33.45	37.12	45.10	48.39	37.60	13.19	16.46	8.52	23.65
1989	5.88	5.31	4.94	9.80	35.34	74.60	52.89	40.79	39.56	22.31	32.97	8.33	27.78
1990	8.16	7.98	4.93	9.65	36.17	32.04	29.80	13.85	7.94	35.01	38.41	11.94	19.73
1991	7.34	5.79	6.98	6.32	10.76	44.32	22.95	32.67	18.53	25.74	24.49	8.12	17.87
1992	5.43	5.05	4.39	4.74	12.86	48.32	48.63	37.35	34.73	42.68	19.04	8.69	22.76
1993	5.11	4.68	4.05	6.98	35.87	77.57	36.10	19.94	23.86	37.86	23.01	14.24	24.17
1994	8.00	5.44	5.63	5.43	22.75	30.76	36.54	29.96	32.86	41.12	26.48	11.35	21.46
1995	5.97	5.66	8.87	20.58	59.77	62.30	33.51	39.55	46.72	41.56	30.52	6.90	30.25
1996	5.95	5.39	7.64	14.10	8.35	17.22	34.70	44.56	61.69	32.71	12.48	13.93	21.64
1997	6.49	5.46	7.43	11.16	21.87	15.57	37.48	32.80	37.66	27.88	29.00	17.04	20.92
1998	8.08	5.96	5.42	6.55	16.93	37.58	37.42	38.24	54.03	33.33	30.83	13.71	24.06
1999	12.87	6.22	5.82	26.77	45.86	49.55	20.71	26.75	26.97	34.63	14.42	9.22	23.39
2000	8.06	14.88	8.82	7.01	11.12	28.85	23.38	36.54	23.96	27.47	13.63	7.66	17.63
2001	6.98	8.95	9.03	5.92	18.63	26.06	40.49	24.47	34.36	31.63	16.78	10.52	19.56
2002	6.92	5.64	5.19	32.34	29.31	53.16	21.42	33.30	9.63	20.30	38.83	16.55	22.74
2003	7.14	6.44	13.31	13.60	28.91	25.06	32.50	37.14	31.11	20.40	16.34	7.53	20.05
2004	5.76	6.58	7.95	6.88	44.47	45.96	31.43	22.23	31.05	29.49	19.79	12.42	22.08
2005	6.80	5.94	5.37	4.88	7.42	25.63	23.59	20.12	45.99	27.94	30.80	12.67	18.10
2006	6.78	5.60	15.20	7.22	17.00	32.29	18.87	26.64	15.75	24.41	40.91	10.32	18.46
2007	6.08	5.74	6.24	5.67	13.79	32.30	30.90	23.07	52.27	24.67	19.23	7.19	18.95
Mean	7.51	6.38	6.83	11.39	24.69	39.79	34.77	32.02	32.19	29.85	25.58	11.55	21.95
Max	23.06	14.88	15.20	32.34	59.77	112.51	76.40	50.92	64.87	52.81	75.97	19.61	34.68
Min	5.11	4.68	4.05	4.44	4.91	7.82	11.67	13.85	7.91	9.99	9.98	6.90	13.81
StDv	3.08	1.89	2.35	6.94	14.07	20.60	14.13	10.67	15.17	10.07	11.82	3.21	4.73

ANNEXURE 4

Table 3.7 Water quality measured at different locations (March 2009)

* Location No.	Place	Temperature (^{0}C)	Conductivity (micro S/cm)	Turbidity (NTU)	Dissolved Oxygen (mg/l)	Coliform count (per 100 ml)	Algae counts (per 100 ml)	Total phosphates as (P) (mg/l)	Total Nitrogen as (N) (mg/l)
W1	Close to dam	26.7	74	9.1	7.8	More than 200	Not detected	0.013	0.19
W2	Between dam and power house	26.5	72	2.9	7.8	96	$2x10^3$	0.013	0.16
W3	At Piliwela Village	26.6	73	12.0	6.6	More than 200	Not detected	0.026	0.18
W4	Near the bridge uptream of dam	27.3	76	17.8	7.4	More than 200	$4x10^3$	0.013	0.29
W5	Ulapane Anicut	26.5	55	6.1	7.8	More than 200	Not detected	0.013	0.18
W6	Ulapane irrigation channel	25.4	47	11.0	7.8	More than 200	Not detected	0.026	0.18
W7	Close to power house	27.1	71	2.7	8.6	More than 200	$1x10^3$	0.013	0.16
W8	Irrigation channel close to power house	27.4	73	5.6	7.8	136	$1x10^3$	0.013	0.19

* Reference ***Figure 3.5 (a)*** for testing locations; Testing by NWS&DB (see ***Appendix C*** for full report)

Table 3.10 Ambient Air quality measurements carried out at different locations (March 2009)

Parameter	Average time of measurement (Hrs)	Concentration (mg/m^3)					Allowable level (mg/m^3)
		* L1	* L2	* L3	* L4	* L5	
SO_2	8	0.007	0.013	0.019	0.018	0.012	0.120
NO_2	8	0.009	0.011	0.028	0.015	0.010	0.150
CO	8	1.5	1.8	3.5	2.8	2.5	10
O_3	1	0.001	0.001	0.003	0.003	0.002	0.200
PM_{10}	24	0.008	0.008	0.013	0.016	0.011	0.100
$PM_{2.5}$	24	0.003	0.002	0.005	0.007	0.005	0.050

* Reference ***Figure 3.5 (b)*** for testing locations; Testing by NBRO (see ***Appendix C*** for full report)

Table 3.11 Noise levels measured at different locations (March 2009)

* Location No.	Place	Day time noise level (Leq – dB(A))	Night time noise level (Leq – dB(A))
N1	Power house	46	43
N2	Proposed quarry site	40	45
N3	Mahaweli Maha Seya	44	41
N4	Residence at Mawathura	53	49
N5	Dam site	54	48
N6	Dam site	52	46
N7	Industrial Estate , Ulapone	56	49
N8	SAARC Village, Ulapone	54	48
N9	Residence at Ethgala	54	48
N10	Residence at Madawilawtte	54	48

* Reference ***Figure 3.5 (c)*** for testing locations; Testing by NBRO (see ***Appendix C*** for full report)

Table 3.12 Ambient vibration levels measured at different locations (March 2009)

* Location No.	Place	Vibration level (mm/sec)	Allowable level at residences or any sensitive area due to construction activities with intermittent vibration incidence (mm/sec)
V1	Proposed Power house	Less than 0.5	0.5
V2	Proposed Dam site	Less than 0.5	0.5
V3	Paththini Dewalaya, Industrial Estate, Ulapone	Less than 0.5	0.5
V4	SAARC Village, Ulapone	Less than 0.5	0.5
V5	Resedence at Ethgala	Less than 0.5	0.5
V6	Residence at Denmark Division, Gampola	Less than 0.5	0.5
V7	Residence at Mawathura, Gampola	Less than 0.5	0.5
V8	Proposed dam site	Less than 0.5	0.5
V9	Mahaweli Maha Seya	Less than 0.5	0.5

* Reference ***Figure 3.5 (d)*** for testing locations; Testing by NBRO (see ***Appendix C*** for full report)

ANNEXURE 5

Table 3.13 Detailed list of flora observed in the immediate impact zone

Abbreviations

HA – Habitat, **T** – Tree, **S** – Shrub, **H** – Herbaceous, **C** – Climber or Creeper, **Ep** – Epiphyte, **TS** – Taxonomic status, **E** – Endemic, **N** – Native, **I** – Introduced, **CS** – Conservation status, **VU** – Vulnerable, **WE** – Weir, **DW** – Downstream, **UP** – Upstream, **IN** – Inundation Area, **PS** – Penstock Path, **PH** – Power House, **TR** – Tailrace Canal, **CP** – Camp Site, **NR** – New Road, **R1** – Expansion Road 1, **R2** – Expansion Road 2, **DS** – Dump Sites, **S1** – Resettlement Site 1 (Mahawilawatte), **S2** - Resettlement Site 2 (Riverside), **S3** – Resettlement Site 3 (Next to Land Sale Plot), **S4** – Resettlement Site 4 (Private Land), **TL** – Transmission Line

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Acanthaceae	Justicia betonica	*Sudu Puruk*	S	N			+	+	+													
Acanthaceae	Strobilanthes sp.	*Nelu*	S	E			+															
Amaryllidaceae	Hymenocallis littoralis		H	I		+	+	+	+													
Anacardiaceae	Anacardium occidentale	*Cadju*	T	I											+	+						
Anacardiaceae	Lannea coromandelica	*Hik*	T	N									+	+						+	+	
Anacardiaceae	Mangifera indica	*Amba*	T	I					+				+	+	+	+		+			+	+
Anacardiaceae	Mangifera zeylanica	*Etamba*	T	E			+															
Anacardiaceae	Semecarpus nigro-viridis	*Badulla*	T	E			+	+	+													
Annonaceae	Annona glabra	*Wel Atha*	T	I			+	+	+													
Apiaceae	Centella asiatica	*Gotukola*	H	N									+	+					+			
Apocynaceae	Alstonia macrophylla	*Havari Nuga*	T	I		+	+	+	+	+	+		+	+	+	+	+			+	+	+
Apocynaceae	Alstonia scholaris	*Ruk Attana*	T	N				+	+	+												
Apocynaceae	Pagiantha dichotoma	*Divi Kaduru*	T	N			+	+	+													
Araceae	Colocasia esculenta	*Gahala*	H	N			+	+	+													
Araceae	Lagenandra sp.	*Ketala*	H	E			+	+	+													
Araceae	Lasia spinosa	*Kohila*	H	N				+	+													
Araceae	Pothos scandens	*Pota Wel*	C	N			+	+	+													
Araliaceae	Schefflera stellata	*Ittha*	C	N			+	+	+													
Arecaceae	Areca catechu	*Puwak*	T	N			+		+					+	+	+					+	
Arecaceae	*Calamus sp.*	*Wewel*	C	N				+	+													
Arecaceae	*Caryota urens*	*Kitul*	T	N			+	+	+				+	+	+	+					+	
Arecaceae	*Cocos nucifera*	*Pol*	T	N					+				+	+	+	+	+				+	
Asparagaceae	*Asparagus falcatus*	*Hathawariya*	C	N			+															
Asteraceae	*Ageratum conyzoides*	*Hulan Tala*	H	I		+	+	+	+	+			+	+	+	+	+	+	+	+	+	+

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Asteraceae	*Bidens pilosa*		H	I		+	+	+	+				+	+				+	+	+		+
Asteraceae	*Crassocephalum crepidioides*		H	I									+						+			
Asteraceae	*Emilia exserta*		H	N				+	+	+			+	+	+			+	+		+	
Asteraceae	*Eupatorium inulifolium*	*Podisinnamaran*	S	I		+	+	+	+	+	+		+	+	+		+	+	+	+	+	+
Asteraceae	*Eupatorium odoratum*	*Podisinnamaran*	S	I		+	+	+	+	+	+		+	+	+		+	+	+	+	+	+
Asteraceae	*Eupatorium riparium*		H	I			+	+	+	+												
Asteraceae	*Mikania cordata*	*Watu Palu*	C	I		+	+	+	+	+	+	+		+	+	+		+	+		+	+
Asteraceae	*Struchium sparganophorum*		H	I		+	+	+	+													
Asteraceae	*Synedrella nodiflora*		H	I		+	+	+	+					+	+	+		+	+		+	+
Asteraceae	*Tithonia diversifolia*	*Wal Suriyakanthi*	S	I			+	+	+	+					+							
Asteraceae	*Vernonia cinerea*	*Monara Kudumbiya*	H	N		+	+	+	+				+	+				+	+	+	+	+
Asteraceae	*Wedelia trilobata*		H	I		+	+	+	+			+		+	+			+	+		+	+
Asteraceae	*Xanthium indicum*	*Urukossa*	S	I				+	+													
Bignoniaceae	*Oroxylum indicum*	*Totila*	T	N										+								
Bignoniaceae	*Spathodea campanulata*		T	I			+						+	+	+	+	+	+	+			
Bignoniaceae	*Stereospermum colais*	*Dunu Madala*	T	N			+	+	+				+							+		
Bignoniaceae	*Tabebuia rosea*		T	I					+					+								
Blechnaceae	*Blechnum orientalis*	*Pattara Werella*	S	N			+	+	+				+		+				+	+	+	+
Bombacaceae	*Bombax ceiba*	*Katu Imbul*	T	N			+															
Bombacaceae	*Ceiba pentandra*	*Pulun*	T	I											+	+						
Bombacaceae	*Durio zibethinus*	*Duriyan*	T	I				+	+													
Boraginaceae	*Cynoglossum zeylanicum*		H	N			+					+										
Boraginaceae	*Heliotropium indicum*	*Ath Honda*	H	N				+	+													
Caricaceae	*Carica papaya*	*Gas Labu*	T	I										+								
Celastraceae	*Bhesa ceylanica*	*Pelan*	T	E																	+	
Clusiaceae	*Clusia rosea*	*Gal Goraka*	T	I		+	+	+	+				+	+			+				+	
Colchicaceae	*Gloriosa superba*	*Niyangala*	C	N			+															
Combretaceae	*Terminalia arjuna*	*Kumbuk*	T	N			+															
Commelinaceae	*Commelina sp.*		H	N		+	+	+	+	+			+	+	+	+		+	+	+	+	+
Convolvulaceae	*Cuscuta chinensis*	*Aga Mula Neti Wel*	C	N		+	+	+	+													
Convolvulaceae	*Evolvulus alsinoides*	*Vishnu Kranthi*	H	N									+									
Convolvulaceae	*Ipomoea cairica*		C	N		+	+	+	+	+	+	+	+						+	+		+
Convolvulaceae	*Ipomoea indica*		C	I											+	+						
Convolvulaceae	*Merremia tridentata*	*Heen Madu*	C	N			+						+							+		

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Convolvulaceae	*Merremia umbellata*	*Kiri Madu*	C	N		+	+	+	+	+			+	+	+	+		+	+	+	+	+
Crassulaceae	*Kalanchoe pinnata*	*Akkapana*	H	I			+															
Cyatheaceae	*Cyathea walkerae*	*Ginihota*	T	E			+															
Cyperaceae	*Cyperus spp.*		H	N			+	+	+												+	
Cyperaceae	*Fimbristylis spp.*		H	N			+	+	+													
Datiscaceae	*Tetrameles nudiflora*	*Niguna*	T	N				+	+													
Dennstaedtiacea	*Pteridium revolutum*	*Werella*	H	N			+	+	+				+	+					+	+		
Dilleniaceae	*Dillenia indica*	*Honda Para*	T	N			+	+	+													
Dilleniaceae	*Dillenia suffruticosa*	*Diya Para*	T	I			+															
Elaeocarpaceae	*Elaeocarpus serratus*	*Weralu*	T	N										+	+						+	
Erythroxylaceae	*Erythroxylum obtusifolium*		S	N			+	+	+				+	+	+				+	+		
Euphorbiaceae	*Antidesma ghaesembilla*	*Bu Embilla*	T	N										+								
Euphorbiaceae	*Aporusa lanceolata*	*Heen Kebella*	T	E			+						+							+		
Euphorbiaceae	*Breynia retusa*		S	N		+	+	+	+				+	+	+	+				+	+	+
Euphorbiaceae	*Bridelia retusa*	*Ketakala*	T	N																+		
Euphorbiaceae	*Croton hirtus*	*Val Tippilu*	H	I									+	+								
Euphorbiaceae	*Glochidion zeylanicum*	*Hunu Kirilla*	T	N			+						+							+		
Euphorbiaceae	*Hevea brasiliensis*	*Rubber*	T	I											+	+						
Euphorbiaceae	*Homonoia riparia*		T	N	VU		+	+	+													
Euphorbiaceae	*Macaranga indica*	*Kenda*	T	N			+													+	+	+
Euphorbiaceae	*Macaranga peltata*	*Kenda*	T	N		+	+	+	+	+	+		+	+	+	+	+			+	+	+
Euphorbiaceae	*Mallotus sp.*		T	N			+															
Euphorbiaceae	*Mallotus tetracoccus*	*Bu Kenda*	T	N			+	+	+	+			+				+			+		
Euphorbiaceae	*Phyllanthus emblica*	*Nelli*	T	N	VU		+						+							+	+	
Euphorbiaceae	*Sauropus androgynus*	*Mella Dum Kola*	S	N										+							+	
Fabaceae	*Acacia caesia*	*Hinguru Wel*	C	N			+	+	+													+
Fabaceae	*Acacia mangium*		T	I		+	+	+	+				+	+			+			+		
Fabaceae	*Acacia melanoxylon*		T	I			+	+	+													
Fabaceae	*Albizia falcataria*		T	I			+	+	+				+	+	+	+	+			+	+	+
Fabaceae	*Albizia odoratissima*	*Huriya Mara*	T	N						+				+	+	+						
Fabaceae	*Albizia sp.*		T	I																		
Fabaceae	*Calliandra calothyrsus*		T	I			+	+	+													
Fabaceae	*Cassia alata*	*Rata Tora*	T	I		+	+	+	+													
Fabaceae	*Cassia spectabilis*	*Kaha Kona*	T	I				+	+					+	+	+		+				
Fabaceae	*Centrosema pubescens*		C	I		+	+	+	+				+	+							+	

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Fabaceae	*Clitoria laurifolia*		H	I		+	+	+	+			+	+							+	+	
Fabaceae	*Crotalaria sp.*		H	N		+	+	+	+	+			+	+					+	+	+	+
Fabaceae	*Delonix regia*	*May Mara*	T	I				+	+						+							
Fabaceae	*Desmodium triflorum*	*Undupiyaliya*	H	N		+	+	+	+	+			+	+	+	+	+		+	+	+	
Fabaceae	*Entada pusaetha*	*Pus Wel*	C	N			+															
Fabaceae	*Erythrina subumbrans*		T	I			+							+				+				+
Fabaceae	*Flemingia strobilifera*	*Hampinna*	S	N			+															
Fabaceae	*Gliricidia sepium*	*Weta Mara*	T	I			+	+	+	+	+		+	+	+	+		+	+		+	+
Fabaceae	*Mimosa invisa*		H	I		+	+	+	+	+		+	+	+					+	+		+
Fabaceae	*Mimosa pigra*	*Yodha Nidikumba*	S	I		+	+	+	+			+										
Fabaceae	*Mimosa pudica*	*Nidikumba*	H	I		+	+	+	+	+			+	+	+	+			+	+		+
Fabaceae	*Peltophorum pterocarpum*	*Kaha Mara*	T	N				+	+				+	+								
Fabaceae	*Pongamia pinnata*	*Magul Karanda*	T	N			+	+	+													
Fabaceae	*Pterocarpus marsupium*	*Gammalu*	T	N									+									
Fabaceae	*Pueraria phaseoloides*		C	I			+				+											
Fabaceae	*Samanea saman*	*Para Mara*	T	I					+													
Flacourtiaceae	*Hydnocarpus venenata*	*Makulu*	T	E			+															
Gleichniaceae	*Dicranopteris linearis*	*Kekilla*	H	N			+	+	+	+			+	+	+	+			+	+	+	+
Hydrocharitacea	*Blyxa auberti*	*Diya Hawari*	H	N				+	+													
Lamiaceae	*Hyptis capitata*		S	I			+	+	+												+	
Lamiaceae	*Hyptis suaveolens*	*Madurutala*	H	I							+		+	+						+	+	
Lamiaceae	*Ocimum gratissimum*	*Gas Tala*	S	N			+	+	+	+			+							+		
Lauraceae	*Actinodaphne elegans*		T	E			+	+	+				+				+				+	
Lauraceae	*Cinnamomum verum*	*Kurundu*	T	N			+						+							+		
Lauraceae	*Litsea longifolia*	*Rat Keliya*	T	E			+														+	
Lauraceae	*Neolitsea cassia*	*Dawul Kurundu*	T	N			+	+	+	+			+		+	+				+	+	
Lauraceae	*Persea americana*	*Ali Pera*	T	I					+				+	+	+	+					+	
Lecythidaceae	*Careya arborea*	*Kahata*	T	N									+							+		
Leeaceae	*Leea indica*	*Gurulla*	T	N			+															
Loranthaceae	*Dendrophthoe falcata*	*Pilila*	Ep	N			+	+	+													
Lycopodiaceae	*Lycopodiella sp.*	*Badalwanassa*	H	N			+	+	+				+							+		
Lythraceae	*Cuphea micropetala*		H	I			+	+	+													
Magnoliaceae	*Michelia champaca*	*Sapu*	T	N					+	+			+	+	+	+					+	
Malvaceae	*Hibiscus furcatus*	*Napiritta*	C	N			+	+	+												+	
Malvaceae	*Sida acuta*	*Gas Bevila*	H	N			+	+	+				+					+		+	+	

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Malvaceae	*Sida rhombifolia*	*Kotikan Bevila*	H	N		+	+	+	+	+		+										
Malvaceae	*Urena lobata*	*Patta Epala*	S	N		+	+	+	+	+			+	+	+	+		+	+	+	+	+
Marattiaceae	*Angiopteris evecta*		H	N																		
Melastomataceae	*Clidemia hirta*		H	I		+	+	+	+	+	+		+	+	+	+		+		+	+	+
Melastomataceae	*Melastoma malabathricum*	*Maha Bowitiya*	S	N			+	+	+	+			+	+							+	
Melastomataceae	*Osbeckia aspera*	*Bowitiya*	S	N			+	+	+													
Melastomataceae	*Osbeckia octandra*	*Heen Bowitiya*	S	E			+	+	+	+			+					+	+	+	+	+
Meliaceae	*Cipadessa baccifera*	*Hal Bembiya*	T	N		+	+	+	+	+			+							+	+	
Meliaceae	*Melia azedarach*	*Lunu Midella*	T	N											+	+						
Meliaceae	*Swietenia macrophylla*	*Mahogani*	T	I					+						+	+						
Meliaceae	*Toona sp.*	*Toona*	T	I			+						+	+				+			+	
Menispermaceae	*Anamirta cocculus*	*Titta Wel*	C	N			+	+	+													
Moraceae	*Artocarpus heterophyllus*	*Kos*	T	I				+	+				+	+	+	+	+				+	+
Moraceae	*Artocarpus incisus*	*Del*	T	I										+	+	+						
Moraceae	*Artocarpus nobilis*	*Wal Del*	T	E			+	+	+							+	+					
Moraceae	*Ficus amplissima*		T	N			+	+	+													
Moraceae	*Ficus arnottiana*	*Patana Bo*	T	N			+	+	+										+			
Moraceae	*Ficus benghalensis*	*Maha Nuga*	T	N			+															
Moraceae	*Ficus drupacea*		T	N			+															
Moraceae	*Ficus exasperata*	*Bu Deliya*	T	N										+	+	+	+					
Moraceae	*Ficus hispida*	*Kota Dimbula*	T	N			+	+	+								+					
Moraceae	*Ficus racemosa*	*Attikka*	T	N			+	+	+													
Moraceae	*Ficus sp.*	*Nuga*	T	N			+	+	+													
Moraceae	*Ficus tinctoria*		T	N			+	+	+													
Musaceae	*Musa x paradisiaca*	*Kesel*	T	I					+					+	+	+						+
Myrsinaceae	*Maesa indica*		T	N			+										+					
Myrtaceae	*Eucalyptu torelliana*		T	I			+						+									
Myrtaceae	*Eucalyptus sp.*		T	I										+	+	+		+		+		
Myrtaceae	*Eugenia sp.*		T	N			+															
Myrtaceae	*Psidium sp.*	*Pera*	T	I			+	+	+	+			+	+					+	+	+	
Myrtaceae	*Syzygium aromaticum*	*Karabu*	T	I										+	+	+					+	
Myrtaceae	*Syzygium caryophyllatum*	*Dan*	T	N						+					+						+	
Myrtaceae	*Syzygium cumini*	*Madan*	T	N			+															
Myrtaceae	*Syzygium jambos*	*Seeni Jambo*	T	I			+	+	+								+					
Myrtaceae	*Syzygium operculatum*	*Bata Damba*	T	E																	+	

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Ochnaceae	*Gomphia serrata*	*Bo Kera*	T	N			+	+	+				+				+				+	
Oleandraceae	*Nephrolepis sp.*		H	N			+	+	+													
Onagraceae	*Ludwigia peruviana*		H	I		+	+	+	+			+	+				+		+			
Onagraceae	*Ludwigia sp.*		H	N			+	+	+													
Oxalidaceae	*Oxalis barrelieri*		H	I									+	+	+	+						
Pandanaceae	*Pandanus ceylanicus*		S	E			+															
Pandanaceae	*Pandanus kaida*	*Wetake*	S	N				+	+													
Pinaceae	*Pinus caribaea*	*Pinus*	T	I				+														
Piperaceae	*Piper nigrum*	*Gam Miris*	C	I									+		+	+					+	
Poaceae	*Arundo donax*		S	I			+	+	+								+					
Poaceae	*Axonopus compressus*	*Potu Tana*	H	I		+	+	+	+					+	+	+						
Poaceae	*Bambusa vulgaris*	*Kaha Una*	T	N			+	+	+													
Poaceae	*Cymbopogon nardus*	*Pengiri Mana*	H	N			+	+	+	+			+	+	+			+	+	+	+	+
Poaceae	*Cynodon dactylon*	*Ruha*	H	N				+	+													
Poaceae	*Dendrocalamus sp.*	*Una*	T	I				+	+													
Poaceae	*Imperata cylindrica*	*Iluk*	H	N						+			+							+		
Poaceae	*Panicum maximum*	*Rata Tana*	H	I		+	+	+	+	+	+	+	+	+	+	+	+		+	+	+	+
Poaceae	*Pennisetum polystachion*		H	I						+			+		+	+			+	+	+	+
Poaceae	*Saccharum spontaneum*	*Wal Uk*	H	N			+	+	+													
Poaceae	*Tripsacum laxum*		H	I			+	+	+												+	
Polygonaceae	*Persicaria barbata*	*Ratu Kimbul Wenna*	H	N		+	+	+	+													
Polypodiaceae	*Drynaria quercifolia*	*Beduru*	Ep	N			+	+	+												+	
Polypodiaceae	*Pyrrosia sp.*		Ep	N			+															
Pontederiaceae	*Monochoria vaginalis*	*Jabara*	H	N				+	+													
Potamogetonaceae	*Potamogeton nodosus*		H	N				+	+													
Proteaceae	*Grevillea robusta*	*Sabukku*	T	I										+				+				
Rhamnaceae	*Ventilago gamblei*		C	N			+															
Rhamnaceae	*Ziziphus oenoplia*	*Heen Eraminiya*	C	N			+	+	+	+			+	+	+					+		
Rhizophoraceae	*Carallia brachiata*	*Dawata*	T	N			+			+			+	+	+					+	+	
Rubiaceae	*Coffea arabica*	*Kopi*	T	I				+	+					+	+	+	+				+	
Rubiaceae	*Hedyotis fruticosa*	*Weraniya*	S	N			+	+	+	+			+	+	+					+	+	+
Rubiaceae	*Ixora coccinea*	*Ratambala*	S	N			+	+	+													
Rubiaceae	*Mitracarpus hirtus*		H	I									+	+						+	+	
Rubiaceae	*Mussaenda frondosa*	*Mussanda*	S	N			+						+	+	+					+	+	
Rubiaceae	*Richardia brasiliensis*		H	I									+	+						+	+	

Family	Species	Local Name	HA	TS	CS	WE	DW	UP	IN	PS	PH	TR	CP	NR	R1	R2	DS	S1	S2	S3	S4	TL
Rubiaceae	*Spermacoce verticillata*		H	I									+							+	+	
Rubiaceae	*Wendlandia bicuspidata*	*Wana Idala*	T	E			+	+	+											+	+	+
Rutaceae	*Acronychia pedunculata*	*Ankenda*	T	N			+															
Rutaceae	*Euodia lunu-ankenda*	*Lunu Ankenda*	T	N																	+	
Rutaceae	*Micromelum minutum*	*Wal Karapincha*	T	E			+															
Rutaceae	*Toddalia asiatica*	*Kudu Miris*	C	N			+	+	+				+							+	+	+
Sapindaceae	*Allophylus cobbe*	*Kobbe*	C	N			+													+	+	
Sapindaceae	*Harpullia arborea*	*Na Imbul*	T	N			+															
Sapindaceae	*Nephelium lappaceum*	*Rambutan*	T	I					+													
Sapotaceae	*Madhuca neriifolia*	*Gan Mi*	T	N			+	+	+													
Schizaeaceae	*Lygodium sp.*	*Paba Wel*	C	N			+	+	+				+							+	+	
Sterculiaceae	*Pterospermum suberifolium*	*Welan*	T	N			+															
Symplocaceae	*Symplocos cochinchinensis*	*Bobu*	T	N		+	+	+	+	+			+	+	+					+	+	+
Theaceae	*Camellia sinensis*	*Tea*	S	I									+	+				+		+	+	
Tiliaceae	*Grewia damine*	*Daminiya*	T	N			+															
Tiliaceae	*Muntingia calabura*	*Jam*	T	I																		
Ulmaceae	*Trema orientalis*	*Gadumba*	T	N		+	+	+	+	+	+		+	+	+			+		+	+	+
Urticaceae	*Debregeasia longifolia*	*Gas Dul*	T	N		+	+	+	+													
Verbenaceae	*Callicarpa tomentosa*		T	N			+															
Verbenaceae	*Clerodendrum infortunatum*	*Sudu Pinna*	S	N		+	+	+	+				+							+	+	+
Verbenaceae	*Clerodendrum serratum*	*Kan Henda*	S	N			+						+	+						+		
Verbenaceae	*Clerodendrum sp.*		S	I			+															
Verbenaceae	*Lantana camara*	*Ganda Pana*	S	I		+	+	+	+	+	+		+	+	+	+	+			+	+	+
Verbenaceae	*Stachytarpheta dichotoma*		H	I		+	+	+	+	+		+	+	+	+	+			+	+	+	
Verbenaceae	*Stachytarpheta jamaicensis*	*Balu Nakuta*	H	I		+	+	+	+	+		+	+	+	+	+				+	+	+
Verbenaceae	*Stachytarpheta mutabilis*		H	I													+			+		
Verbenaceae	*Vitex altissima*	*Milla*	T	N			+															
Verbenaceae	*Vitex negundo*	*Nika*	T	N			+	+	+													
Vitaceae	*Cissus trilobata*		C	N			+															
Zingiberaceae	*Costus malortieanus*		H	I				+	+													

Table 3.15 Detailed list of fauna observed in the immediate impact zone

Abbreviations used:

TS – Taxonomic status, E – Endemic, N – Native, I – Introduced, M - Migrant, CS – Conservation status, CR - Critically Endangered, EN - Endangered, VU – Vulnerable, NT - Near Threatened, WE – Weir, DW – Downstream, IN – Inundation Area, PS – Penstock Path, PH – Power House, CP – Camp Site, NR – New Road, R1 – Expansion Road 1, R2 – Expansion Road 2, DS – Dump Sites, RS – Resettlement Sites, TL – Transmission Line

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
		BUTTERFLIES														
Family - Papilionidae																
Troides darsius	Ceylon birdwing	Maha kurulu piya papiliya	E	NT	+	+	+		+							
Pachliopta hector	Crimson rose	Maha rosa papilia	N		+		+									
Pachliopta aristolochiae	Common rose	Podu rosa papilia	N						+	+					+	+
Papilio crino	Banded peacock	Monara papilia	N							+			+			
Papilio polytes	Common mormon	Kalu papilia	N			+								+		
Papilio polymnestor	Blue mormon	Maha nilaya	N			+		+			+	+	+			
Graphium sarpedon	Blue bottle	Nil papilia	N					+			+	+	+			
Graphium agamemnon	Tailed jay	Kola papilia	N					+			+					
Chilasa clytia	Mime	Rawana papilia	N	NT					+							
Family - Pieridae																
Leptosia nina	Psyche	Kalu-thith sudda	N		+	+	+		+	+		+			+	+
Delias eucharis	Jezebel	Podu Maha-sudda	N		+	+	+		+	+				+	+	+
Cepora nadina	Lesser gull	Heen Punduru-sudana	N	CR					+							
Appias paulina	Lesser albatross	Kuda sudana	N		+	+								+		
Catopsilia pyranthe	Mottled emigrant	Thith-piya piyasariya	N			+	+		+	+		+				+
Catopsilia pomona	Lemon emigrant	Kaha piyasariya	N		+		+		+	+					+	+
Eurema hecabe	Common grass yellow	Maha kahakolaya	N			+			+	+				+		
Eurema andersoni	One-spot grass yellow	Kela kahakolaya	N	EN	+		+									

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Nymphalidae																
Parantica aglea	Glassy tiger	Suduwan nil-kotithiya	N		+	+								+		
Danaus chrysippus	Plain tiger	Podu koti-thambiliya	N		+		+							+		
Junonia lemonias	Lemon pansy	Dumburuwan alankarikya	N						+	+				+	+	
Junonia atlites	Grey pansy	Aluwan alankarikya	N						+	+					+	
Junonia iphita	Chocolate soldier	Podu alankarikya	N		+	+	+		+	+				+	+	+
Junonia almana	Peacock pansy	Monera alankarikya	N		+	+	+		+							
Pantoporia hordonia	Common lasker	Kaha selaruwa	N	NT	+	+	+									
Neptis hylas	Common sailor	Gomara selaruwa	N		+	+	+	+	+	+		+		+	+	+
Acraea violae	Tawny costor	Thambily panduru-boraluwa	N		+		+									
Melanitis leda	Common evening brown	Podu dumburuwa	N		+		+			+					+	
Orsotriaena medus	Nigger	Maha-iri panduru-dumburuwa	N		+	+			+	+						
Mycalesis perseus	Common bushbrown	Podu panduru-dumburuwa	N		+	+			+	+					+	+
Ypthima ceylonica	White four-ring	Podu heen-dumburuwa	N		+	+	+		+	+		+		+		+
Family - Lycaenidae																
Castalius rosimon	Common Pierrot	Podu Mal-nilaya	N			+			+							
Jamides bochus	Dark Cerulean	Anduruwan Seru-nilaya	N												+	
		DRAGON FLIES														
Family - Calopterygidae																
Vestalis apicalis	Black-tipped flashwing		E													
Family - Cholorocyphidae																
Libellago greeni	Green's Gem		E		+	+	+									
Family - Coenagrionidae																
Pseudagrion rubriceps	Red-headed Sprite		N		+	+	+									
Family - Libellulidae																
Orthetrum sabina	Green Skimmer		N		+	+				+	+					
Crocothemis servilia	Oriental Scarlet		N		+	+	+									
Neurothemis tullia	Pied parasol		N							+						
Trithemis festiva	Indigo Dropwing		N		+	+										

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
		INLAND FISHES														
Family - Cyprinidae																
Devario cf. aequipinnatus	Knuckles Danio	Dumbara salaya	E		+	+	+		+							
Puntius bimaculatus	Redside barb	Ipili Kadaya	N													
Puntius nigrofasciatus	Black ruby barb /	Bulath Hapaya	E	VU	+	+										
Puntius reval	Redfin Two-banded carplet	Rathu varal Depulliya	E		+	+	+									
Puntius singhala	Filamented Barb	Dankola Pethiya	E		+	+	+		+							
Rasbora carverii	Carverii Rasbora	Caveri Randiya	N		+	+										
Rasbora daniconius	Striped rasbora	Dandiya	N		+		+									
Tor khudree	Mahseer	Lehella	N		+	+	+									
Family - Cobitidae																
Lepidocephalichthys thermalis	Common spiny loach	Thith Ahirawa	N				+									
Family - Gobiidae																
Awaous melanocephalus	Scribbled goby	Bali Weligouva	N				+		+							
Family - Belontiidae																
Belontia signata	Combtail	Thalkossa	E	NT	+		+									
Family - Poeciliidae																
Poecilia reticulata	Guppy	Vel gappy/ Sari gappy	N													
		AMPHIBIANS														
Family - Bufonidae																
Duttaphrynus melanostictus	Common house toad	Sulaba geai gemba	N				+									
Family - Microhylidae																
Ramanella variegata	White-bellied pugsnout frog	Bada-sudu motahombu madiyas	N			+										
Family - Nyctibatrachidae																
Lankanectes corrugatus	Corrugated water frog	Vakarali madiya	E							+	+					
Family - Dicroglossidae																
Euphlyctis cyanophlyctis	Skipper frog	Utpatana madiya	N		+	+	+		+							
Fejervarya limnocharis	Common paddy field frog	Sulaba vel madiya	N		+	+	+		+							
Family - Ranidae																
Hylarana gracilis	Sri Lanka wood frog	Lanka bandi madiya	E			+										
Hylarana temporalis	Common wood frog	Sulaba bandi madiya	E	NT			+									

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
		REPTILES														
Family - Agamidae																
Calotes calotes	Green garden lizard	Pala katussa	N		+	+	+		+							
Calotes versicolor	Common garden lizard	Gara katussa	N		+	+								+		+
Otocryptis wiegmanni	Sri Lankan kangaroo lizard	Gomu talikatussa	E	NT					+							
Family - Gekkonidae																
Hemidactylus brookii	Spotted housegecko	Pulli gehuna	N						+							
Family - Colubridae																
Ahaetulla nasuta	Green vine snake	Ahaetulla	N													
Ptyas mucosa	Rat snake	Gerandiya.	N						+	+				+		
Xenochrophis cf. piscator	Checkered Keelback	Diya bariya	E						+							
		BIRDS														
Family - Phasianidae																
Gallus lafayetii	Sri Lanka Junglefowl	Sri Lanka Wali-kukula	E							+	+					
Family - Picidae																
Dendrocopus nanus	Brown-capped Pygmy Woodpecker	Bora Esasi Gomara-karela	N	NT		+				+	+					
Celeus brachyurus	Rufous Woodpecker	Borath Koda-karela	N	NT	+	+										
Picus chlorolophus	Lesser Yellow-naped Woodpecker	Heen Kaha-gelasi Karela	N	NT	+		+									
Dinopium benghalense	Black-rumped Flameback	Rath-karela	N		+	+	+		+	+	+	+			+	
Family - Ramphastidae																
Megalaima zeylanica	Brown-headed Barbet	Polos Kottoruwa	N		+	+	+		+	+	+		+	+	+	+
Megalaima flavifrons	Sri Lanka Yellow-fronted Barbet	Sri Lanka Ranmhunatha Kottoruwa	E		+	+	+	+	+	+	+	+	+		+	+
Megalaima rubricapilla	Crimson-fronted Barbet	Rathmhunath Kottoruwa	E		+		+				+					
Family - Alcedinidae																
Alcedo atthis	Common Kingfisher	Mal Pilihuduwa	N		+	+	+		+							
Pelargopsis capensis	Stork-billed Kingfisher	Manathudu Madi-pilihuduwa	N		+	+										
Halcyon smyrnensis	White-throated Kingfisher	Layasudu Madi-pilihuduwa	N		+	+	+		+	+			+			

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Meropidae																
Merops philippinus	Blue-tailed Bee-eater	Nilpenda Binguharaya	M			+										
Merops leschenaulti	Chestnut-headed Bee-eater	Thambala-hisa Binguharaya	N		+	+	+		+	+						
Family - Cuculidae																
Eudynamys scolopacea	Asian Koel	Kowula	N		+	+	+	+	+	+	+		+		+	+
Centropus sinensis	Greater Coucal	Ati-kukula	N			+			+					+		
Family - Psittacidae																
Loriculus beryllinus	Sri Lanka Hanging Parakeet	Sri Lanka Giramaliththa	E		+	+	+		+	+		+				+
Psittacula krameri	Rose-ringed Parakeet	Rana Girawa	N		+	+	+		+	+	+				+	+
Psittacula cyanocephala	Plum-headed Parakeet	Pandu Girawa	N		+		+			+					+	
Psittacula calthropae	Sri Lanka Layard's Parakeet	Sri Lanka Alu Girawa	E	NT					+							
Family - Apodidae																
Collocalia unicolor	Indian Swiftlet	Indu Upa-thurithaya	N	NT	+		+									
Cypsiurus balasiensis	Asian Palm Swift	Asiaa Thal-thurithaya	N		+	+			+							
Family - Columbidae																
Streptopelia chinensis	Spotted Dove	Alu Kobeiyya	N		+	+	+		+	+	+	+		+	+	+
Chalcophaps indica	Emerald Dove	Neela-Kobeiyya	N						+							
Treron pompadora	Pompadour Green-pigeon	Pompadoru Batagoya	N			+				+	+	+				
Ducula aenea	Green Imperial Pigeon	Neela Mahagoya	N						+							
Family - Rallidae																
Amaurornis phoenicurus	White-breasted Waterhen	Laya-sudu Korawakka	N						+							
Family - Accipitridae																
Haliastur indus	Brahminy Kite	Bamunu Piyakussa	N		+	+	+		+	+						
Haliaeetus leucogaster	White-bellied Sea-eagle	Kusa-ali Sayurukussa	N			+			+							
Spilornis cheela	Crested Serpent Eagle	Silu Sarapakussa	N													
Accipiter badius	Shikra	Ukussa	N			+										
Ictinaetus malayensis	Black Eagle	Kalukussa	N				+									
Family - Phalacrocoracidae																
Phalacrocorax niger	Little Cormorant	Punchi Diyakava	N		+	+	+		+		+					

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Ardeidae																
Egretta garzetta	Little Egret	Punchi Ali-koka	N		+	+	+		+							
Bubulcus ibis	Cattle Egret	Gava-koka	N		+	+	+		+							
Ardeola grayii	Pond Heron	Kana-koka	N		+	+	+		+							
Family - Ciconiidae																
Anastomus oscitans	Asian Openbill	Asia Vivarathuduwa	N		+	+										
Family - Pittidae																
Pitta brachyura	Indian Pitta	Avichchiya	M			+			+							
Family - Chloropseidae																
Chloropsis jerdoni	Blue-winged Leafbird	Nilpiya Kolarisiya	N		+	+	+	+	+	+		+			+	
Family - Laniidae																
Lanius cristatus	Brown Shrike	Bora Sabariththa	M		+	+	+									
Family - Artamidae																
Artamus fuscus	Ashy Woodswallow	Alu Wanalihiniya	N		+		+									
Family - Oriolidae																
Oriolus xanthornus	Black-hooded Oriole	Kahakurulla	N		+	+	+		+	+	+	+		+	+	+
Family - Dicruidae																
Dicrurus caerulescens	White-bellied Drongo	Kawuda	N		+	+								+		
Family - Monarchidae																
Terpsiphone paradisi	Asian Paradise- flycathcher	Asia Rahanmara	N		+	+	+		+	+				+	+	+
Family - Corvidae																
Corvus splendens	House Crow	Kolamba Kaputa	N		+	+	+		+	+					+	
Corvus levaillantii	Large-billed Crow	Kalu Kaputa	N		+	+	+		+	+	+	+	+	+	+	+
Family - Campephagidae																
Coracina melanoptera	Black-headed Cuckooshrike	Kalu-his Kovul-saratiththa	N		+	+										
Pericrocotus cinnamomeus	Small Minivet	Punchi Miniviththa	N		+	+	+									
Pericrocotus flammeus	Scarlet Minivet	Dilirath Miniviththa	N		+	+	+									
Coracina macei	Large Cuckooshrike	Maha Kovul-saratiththa	N						+							
Tephrodornis pondicerianus	Common Woodshrike	Podu Wana-saratiththa	N		+	+										
Hemipus picatus	Bar-winged Flycatcher-shrike	Wairapiya Masi-saratiththa	N		+	+										

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Aegithinidae																
Aegithina tiphia	Common Iora	Podu Iorawa	N		+	+	+		+	+	+	+		+		
Family - Muscicapidae																
Muscicapa daurica	Asian Brown Flycatcher	Asia Bora Masimara	M			+				+					+	
Cyornis tickelliae	Tickell's Blue Flycatcher	Tickel Nil-masimara	N		+	+	+			+	+					
Copsychus saularis	Oriental Magpie Robin	Polkichcha	N		+	+	+		+	+	+	+		+	+	+
Saxicoloides fulicata	Indian Robin	Indu Kalukichcha	N							+						
Family - Sturnidae																
Acridotheres tristis	Common Myna	Mayna	N		+	+	+		+	+	+	+		+	+	+
Gracula religiosa	Hill Myna	Salalihiniya	N		+	+	+	+	+	+	+	+	+		+	
Family - Sittidae																
Sitta frontalis	Velvet-fronted Nuthatch	Villuda Nalal Yatikuriththa	N	NT		+										
Family - Paridae																
Parus major	Great Tit	Maha Tikiriththa	N		+	+				+				+	+	
Family - Hirundinidae																
Hirundo rustica	Barn Swallow	Atu Wahilihiniya	N				+									
Hirundo daurica	Red-rumped Swallow	Nithamba rathu Wahilihiniya	N	NT	+	+										
Family - Pycnonotidae																
Pycnonotus cafer	Red-vented Bulbul	Kondaya	N		+	+	+	+	+	+	+			+	+	+
Iole indica	Yellow-browed Bulbul	Bamakaha Guluguduwa	N	NT	+	+	+		+	+						
Pycnonotus luteolus	White-browed Bulbul	Bamasudu Kondaya	N							+				+		+
Pycnonotus melanicterus	Black-crested Bulbul	Kalu Hisasi Kondaya	N		+	+	+			+	+					
Family - Cisticolidae																
Prinia socialis	Ashy Prinia	Alu Priniya	N		+	+			+	+	+	+			+	
Prinia inornata	Plain Prinia	Sarala Priniya	N		+	+			+					+		
Family - Zosteropidae																
Zosterops palpebrosus	Oriental White-eye	Peradigu Sithasiya	N		+	+	+		+	+					+	

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Sylviidae																
Acrocephalus dumetorum	Blyth's Reed Warbler	Blyths Panraviya	M		+	+										
Orthotomus sutorius	Common Tailorbird	Battichcha	N		+	+	+		+	+	+	+		+	+	+
Phylloscopus trochiloides	Greenish Warbler	Kola Gassraviya	M		+	+	+		+	+					+	
Phylloscopus magnirostris	Large-billed Leaf Warbler	Mathusu Gassraviya	M			+			+							
Family - Timalidae																
Pellorneum fuscocapillum	Sri Lanka Brown-capped Babbler	Sri Lanka Boraga-demalichcha	E	NT	+	+	+		+	+						
Pomatorhinus melanurus	Sri Lanka Scimitar Babbler	Da-demalichcha	E	NT			+									
Rhopocichla atriceps	Dark-fronted Babbler	Wathanduru Panduru-demalichcha	N							+						
Dumetia hyperythra	Tawny-bellied Babbler	Kusakaha Landu-demalichcha	N	NT	+	+	+		+	+					+	
Turdoides affinis	Yellow-billed Babbler	Demalichcha	N		+	+	+		+	+	+	+		+	+	+
Family - Dicaeidae																
Dicaeum erythrorhynchos	Pale-billed Flowerpecker	Lathudu Pililichcha	N		+	+	+		+	+	+	+	+	+	+	+
Family - Nectariniidae																
Nectarina zeylonica	Purple-rumped Sunbird	Nithamba Dam Sutikka	N		+	+	+		+	+	+	+	+	+	+	+
Nectarina lotenia	Loten's Sunbird	Lotenge Sutikka	N		+	+	+		+	+		+			+	
Family - Passeridae																
Passer domesticus	House Sparrow	Gekurulla	N				+									
Family - Motacillidae																
Dendronanthus indicus	Forest Wagtail	Wana-halapenda	M		+	+				+						
Motacilla cinerea	Grey Wagtail	Alu Halapenda	M		+	+	+		+							
Family - Estrididae																
Lonchura striata	White-rumped Munia	Nithamba Sudu Weekurulla	N		+	+	+		+	+		+			+	
Lonchura punctulata	Scaly-breasted Munia	Laya Kayuru Weekurulla	N		+		+							+		
		MAMMALS														
Family - Pteropodidae																
Pteropus giganteus	Flying fox	Ma-vavula	N				+							+		
Family - Rhinolophidae																
Rhinolophus rouxii	Rufous horse-shoe bat	Borath Ashladan-vavula	N			+										

Scientific Name	English Name	Sinhala Name	TS	CS	WE	DW	IN	PS	PH	CP	NR	R1	R2	DS	RS	TL
Family – Cercopithecidae																
Macaca sinica	Sri Lanka toque monkey	Sri Lanka Rilawa	E	NT		+			+							
Family - Felidae																
Prionailurus viverrinus	Fishing cat	Handun Diviya	N	VU		+	+									
Family - Herpestidae																
Herpestes edwardsii	Grey mongoose	Alu Mugatiya	N				+									
Family - Mustelidae																
Lutra lutra	Otter	Diya-balla	N	VU		+										
Family - Canidae																
Canis aureus	Jackal	Nariya / Hiwala	N							+						
Family - Bovidae																
Bos indicus	Domestic hump-backed cattle	Sinhala Elaharaka	I			+	+		+	+						
Family - Tragulidae																
Moschiola kathygre	Sri Lanka pigmy mouse-deer	Sri Lanka Kuru Meminna	E	NT						+						
Family - Suidae																
Sus scrofa	Wild boar	Wal Ura	N		+	+	+		+	+					+	
Family - Hystricidae																
Hystrix indica	Procupine	Ittewa	N		+	+	+			+	+				+	
Family - Sciuridae																
Funambulus palmarum	Palm squirrel	Leena	N		+	+	+	+	+	+	+	+	+	+	+	+
Family - Leporidae																
Lepus nigricollis	Black-naped hare	Wal Hawa	N		+	+	+	+		+					+	+

ANNEXURE 6

Table 3.27 Details of the Industries at the Ulapane Industrial Estate

Company Name *Approved Industries*	Product	Present status	Extent of Land allotted	Investment (Rs. Million)	Expected Employment generation
(i) Ogel Shoe Pvt Ltd.	Shoes	in operation	04 Acres 30 Perches	187	200
(ii) Tri-star Plastic Industries	Polythene	in operation	80 Perches	61.3	53
(iii) Rathne Iron Works	Agricultural Equipment	not in operation	20 Perches	4.0	21
(iv) Akthari Traders Pvt Ltd.	Flexible conduits	in operation	240 Perches	30	168
(v) Srilak Super Food Products	Spices	in operation	40 Perches	4.8	33
(vi) Siyaba Concrete Works Pvt Ltd	Cement related	in operation	50 Perches	7.5	54
(vii) Viskam Lanka Engineering Works	Steel and MDF Furniture	not in operation	80 Perches	15	86
(viii) Sampe International Trading (Pvt) Ltd.	Matchboxes for Hotels	not in operation	40 Perches	3.5	80
(ix) Lanka Food and Dairies (Pvt.) Ltd	Food and Drinks	not in operation	40 Perches	4.5	60
(x) Perl Plastic Industries	PVC pipes	not in operation	40 Perches	6.9	45
(xi) Thimas Technology Pvt. Ltd.	Flat Screen TV assemblage	not in operation	80 Perches	114	234
Industries to be set-up in future	***Type of Industry***				
(i) Dyva Plastic Ltd.	Polythene and Polythene bags				
(ii) Frametake Company	Timber Picture Frames				
(iii) Jayalanka Furnitures	MDF, Timber and Steel Furniture				
(iv) Tharindu Products	Fruit Drinks				

ANNEXURE 7

Table 4.3: The trees likely to be removed or affected due to the project

Total number of 489 individual trees over 20 cm dbh will be removed / affected due to proposed project. The names of the tree species and the number of trees affected by various activities of the project are given below.

Abbreviations **HA** – Habit, **T** – Tree, **TS** – Taxonomic status, **N** – Native, **I** – Introduced, **CS** – Conservation status, **WE** – Weir, **IN** – Inundation Area, **PS** – Penstock Path, **PH**– Power House, **CP** – Camp Site, **NR** – New Road, **R1** – Expansion Road 1, **R2** – Expansion Road 2, **DS** – Dumping Sites, **DBH** – Diameter at Breast Height

Family	Species	Local Name	HA	TS	No. of trees over 20 cm DBH									
					WE	IN	PS	PH	CP	NR	R1	R2	DS	TL
Anacardiaceae	Anacardium occidentale	Cadju	T	I							1			1
Anacardiaceae	Lannea coromandelica	Hik	T	N					1					
Anacardiaceae	Mangifera indica	Amba	T	I		10			1	9	6	1		
Apocynaceae	Alstonia macrophylla	Havari Nuga	T	I		12				3	8	3	2	4
Apocynaceae	Alstonia scholaris	Ruk Attana	T	N		2								1
Arecaceae	Areca catechu	Puwak	T	N										2
Arecaceae	Caryota urens	Kitul	T	N		6			2					
Arecaceae	Cocos nucifera	Pol	T	N		7					6	1		
Bignoniaceae	Spathodea campanulata		T	I						3	2	7		
Bignoniaceae	Tabebuia rosea		T	I		4				1				
Bombacaceae	Bombax ceiba	Katu Imbul	T	N										
Bombacaceae	Ceiba pentandra	Pulun	T	I							1	2		
Bombacaceae	Durio zibethinus	Duriyan	T	I		1								
Combretaceae	Terminalia arjuna	Kumbuk	T	N		4								
Datiscaceae	Tetrameles nudiflora	Niguna	T	N		1								
Elaeocarpaceae	Elaeocarpus serratus	Weralu	T	N						2	1			
Euphorbiaceae	Hevea brasiliensis	Rubber	T	I							2	1		
Euphorbiaceae	Macaranga peltata	Kenda	T	N	1	4	2				3	9	4	8

Family	Species	Local Name	HA	TS	No. of trees over 20 cm DBH									
					WE	IN	PS	PH	CP	NR	R1	R2	DS	TL
Euphorbiaceae	Mallotus tetracoccus	Bu Kenda	T	N		2							3	
Fabaceae	Acacia mangium		T	I	3	14			3	1				4
Fabaceae	Acacia melanoxylon		T	I		3								
Fabaceae	Albizia falcataria		T	I		34			1	7		1	5	
Fabaceae	Albizia odoratissima	Huriya Mara	T	N						1	2	1		5
Fabaceae	Cassia spectabilis	Kaha Kona	T	I							1			
Fabaceae	Delonix regia	May Mara	T	I		5					1			
Fabaceae	Gliricidia sepium	Weta Mara	T	I				2						
Fabaceae	Peltophorum pterocarpum	Kaha Mara	T	N		23			1	1				
Fabaceae	Pterocarpus marsupium	Gammalu	T	N					1					
Lauraceae	Neolitsea cassia	Dawul Kurundu	T	N		1	2		1		2	4		
Magnoliaceae	Michelia champaca	Sapu	T	N		5	1		1	10		1		
Meliaceae	Melia azedarach	Lunu Midella	T	N								1		
Meliaceae	Swietenia macrophylla	Mahogani	T	I		5					42	11		2
Meliaceae	Toona sp.	Toona	T	I					1	2				
Moraceae	Artocarpus heterophyllus	Kos	T	I		13			5	32	14	12	1	
Moraceae	Artocarpus nobilis	Wal Del	T	E		3						2		
Moraceae	Ficus exasperata	Bu Deliya	T	N							1	2		
Moraceae	Ficus racemosa	Attikka	T	N		6								
Moraceae	Ficus sp.	Nuga	T	N		6								
Myrtaceae	Eucalyptu torelliana		T	I		3								
Myrtaceae	Eucalyptus sp.		T	I						1	1			
Proteaceae	Grevillea robusta	Sabukku	T	I						1				
Rhizophoraceae	Carallia brachiata	Dawata	T	N							3			
Sapindaceae	Nephelium lappaceum	Rambutan	T	I		1								
Tiliaceae	Grewia Damine	Daminiya	T	N										1
Ulmaceae	Trema orientalis	Gadumba	T	N	3	4	2	2		1				
				Sub Total	7	179	7	4	18	75	97	59	15	28
				Total	489									

Table 4.4 : Results of Backwater Computations

(a) 2- Year Return Flood Q= 600m ^{3}/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
0.0		522.07	522.07	522.07
260.0		523.65	523.65	523.65
300.0	Proposed Dam	524.06	552.16	548.00
461.0		524.97	552.16	548.00
636.5		526.04	552.16	548.00
843.5		529.18	552.16	548.00
	Confluence of Ulapane Oya			
1025.5		532.30	552.16	548.00
1210.5		534.36	552.16	548.00
1369.5		535.86	552.16	548.00
1475.5		536.99	552.16	548.00
1626.5		538.92	552.16	548.00
1757.5		539.35	552.16	548.00
1929.5		541.00	552.16	548.02
2111.5		541.29	552.17	548.03
2299.5		541.68	552.17	548.04
2448.5	Arch bridge under construction	542.17	552.18	548.07
2624.5		542.23	552.19	548.09
2718.5		546.23	552.19	548.34
2908.5		548.84	552.19	548.84
3030.5		549.81	552.19	549.81
3146.5	Limit of proposed reservoir	552.18	552.50	552.18
3416.5		553.49	553.56	553.49
3981.5		554.20	554.24	554.20
	Confluence of Kothmale Oya			
4137.5		554.36	554.39	554.36
4235.5		554.43	554.46	554.43
4362.5		554.51	554.53	554.51
4485.5		554.61	554.63	554.61
4736.5	Patthunupitiya Maha Vidyalaya	554.80	554.82	554.80
4908.5		554.94	554.96	554.94
5063.5		555.17	555.19	555.17
5365.5		555.32	555.33	555.32
6011.5		555.49	555.51	555.49
5782.5		555.54	555.55	555.54
5910.5	Close to KahammanaTemple	555.73	555.74	555.73
6241.5		555.96	555.97	555.96
6326.5	Close to Warakawa rail gate	556.01	556.02	556.01

Table 4.4 Results of Backwater Computations

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga.

(b) 2-Year Return Flood Q= 36 m ^{3}/s
Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
166.0		536.48	552.16	547.92
203.0		538.22	552.16	547.97
256.0		546.36	552.16	548.00
281.0		547.07	552.16	548.01
309.0		547.86	552.16	548.13
	Bridge on Nawalapitiya road			
326.0		548.17	552.21	548.33
409.0	Limit of proposed reservoir	548.60	552.21	548.64
546.0		549.59	552.21	549.59
649.0		550.23	552.21	550.23
1044.0		551.17	552.21	551.17
1286.0		551.74	552.23	551.74
1398.0		552.40	552.45	552.40
1561.0		553.01	553.01	553.01
1854.0	Close to railway bridge	555.25	555.26	555.25
1904.0		555.59	555.60	555.59
1954.0		555.78	555.79	555.78

(c) 2-Year Return Flood Q= 68m ^{3}/s
Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
445.0		554.57	554.60	554.57
1016.0		560.50	560.50	560.50
1682.0		571.04	571.04	571.04
2429.0		580.36	580.36	580.37
3112.0		590.51	590.51	590.51
3911.0		600.71	600.71	600.71

Table 4.4 Results of Backwater Computations

(d) 5- Year Return Flood Q= 788 m ^{3}/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
0.0		522.52	522.52	522.52
260.0		524.13	524.13	524.13
300.0	Proposed Dam	524.63	552.58	548.00
461.0		525.63	552.58	548.00
636.5		526.63	552.59	548.00
843.5		529.47	552.59	548.00
	Confluence of Ulapane Oya			
1025.5		532.60	552.59	548.00
1210.5		534.77	552.59	548.00
1369.5		536.27	552.59	548.00
1475.5		537.46	552.59	548.00
1626.5		539.54	552.59	548.00
1757.5		539.84	552.59	548.00
1929.5		541.66	552.59	548.03
2111.5		541.98	552.60	548.06
2299.5		542.35	552.60	548.07
2448.5	Arch bridge under construction	542.94	552.61	548.11
2624.5		543.09	552.63	548.15
2718.5		546.92	552.60	548.60
2908.5		549.50	552.60	549.50
3030.5		550.41	552.53	550.42
3146.5	Limit of proposed reservoir	552.84	553.05	552.84
3416.5		554.13	554.17	554.13
3981.5		554.90	554.93	554.90
	Confluence of Kothmale Oya			
4137.5		555.08	555.10	555.08
4235.5		555.16	555.18	555.16
4362.5		555.23	555.25	555.23
4485.5		555.34	555.36	555.34
4736.5	Patthunupitiya Maha Vidyalaya	555.54	555.56	555.54
4908.5		555.69	555.70	555.69
5063.5		555.96	555.97	555.96
5365.5		556.11	556.12	556.11
6011.5		556.28	556.29	556.28
5782.5		556.33	556.34	556.33
5910.5	Close to KahammanaTemple	556.50	556.51	556.50
6241.5		556.74	556.75	556.74
6326.5	Close to Warakawa rail gate	556.79	556.80	556.79

Table 4.4 Results of Backwater Computations

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga

(e) 5- Year Return Flood Q= 48 m^3/s
Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
166.0		536.73	552.59	547.85
203.0		538.44	552.59	547.94
256.0		546.58	552.59	548.01
281.0		547.39	552.59	548.01
309.0		548.21	552.59	548.26
	Bridge on Nawalapitiya road			
326.0		548.58	552.66	548.60
409.0	Limit of proposed reservoir	548.87	552.66	548.88
546.0		549.62	552.66	549.62
649.0		550.30	552.66	550.30
1044.0		551.27	552.67	551.27
1286.0		551.90	552.68	551.90
1398.0		552.57	552.80	552.57
1561.0		553.18	553.20	553.18
1854.0	Close to railway bridge	555.38	555.38	555.38
1904.0		555.86	555.86	555.86
1954.0		556.06	556.06	556.06

(f) 5- Year Return Flood Q= 89 m^3/s
Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
445.0		555.30	555.32	555.30
1016.0		560.60	560.60	560.60
1682.0		571.20	571.20	571.20
2429.0		580.44	580.44	580.44
3112.0		590.58	590.58	590.58
3911.0		600.85	600.85	600.85

Table 4.4 Results of Backwater Computations

(g) 10-Year Return Flood Q=909 m^3/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
0.0		522.79	522.79	522.79
260.0		524.40	524.40	524.40
300.0	Proposed Dam	524.96	552.83	548.00
461.0		526.02	552.84	548.00
636.5		526.99	552.84	548.00
843.5		529.65	552.84	548.00
	Confluence of Ulapane Oya			
1025.5		532.77	552.84	548.00
1210.5		535.02	552.84	548.00
1369.5		536.52	552.84	548.00
1475.5		537.74	552.84	548.00
1626.5		539.90	552.84	548.01
1757.5		540.11	552.84	548.01
1929.5		542.05	552.84	548.04
2111.5		542.38	552.84	548.08
2299.5		542.72	552.84	548.09
2448.5	Arch bridge under construction	543.39	552.87	548.15
2624.5		543.58	552.90	548.21
2718.5		547.23	552.90	547.50
2908.5		549.86	552.90	549.86
3030.5		550.77	552.90	550.77
3146.5	Limit of proposed reservoir	553.25	553.43	553.25
3416.5		554.49	554.54	554.49
3981.5		555.31	555.34	555.31
	Confluence of Kothmale Oya			
4137.5		555.50	555.52	555.50
4235.5		555.57	555.60	555.57
4362.5		555.65	555.67	555.65
4485.5		555.76	555.78	555.76
4736.5	Patthunupitiya Maha Vidyalaya	555.97	555.99	555.97
4908.5		556.12	556.13	556.12
5063.5		556.41	556.43	556.41
5365.5		556.57	556.58	556.57
6011.5		556.74	556.75	556.74
5782.5		556.79	556.80	556.79
5910.5	Close to KahammanaTemple	556.94	556.95	556.94
6241.5		557.19	557.20	557.19
6326.5	Close to Warakawa rail gate	557.24	557.25	557.24

Table 4.4 Results of Backwater Computations

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga

(h) 10-Year Return Flood $Q=55\ m^3/s$

Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
166.0		536.86	552.84	548.01
203.0		538.56	552.84	548.01
256.0		546.71	552.84	548.17
281.0		547.55	552.84	548.25
309.0		548.39	552.84	548.39
	Bridge on Nawalapitiya road			
326.0		548.80	552.93	548.80
409.0	Limit of proposed reservoir	549.03	552.94	549.03
546.0		549.62	552.94	549.62
649.0		550.34	552.94	550.34
1044.0		551.32	552.94	551.32
1286.0		551.99	552.95	551.99
1398.0		552.66	553.03	552.66
1561.0		553.27	553.35	553.27
1854.0	Close to railway bridge	555.44	555.44	555.44
1904.0		556.00	556.00	556.00
1954.0		556.20	556.20	556.20

(i) 10-Year Return Flood $Q=103\ m^3/s$

Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Closed	Gates Operational
445.0		555.73	555.75	555.73
1016.0		560.66	560.67	560.66
1682.0		571.30	571.31	571.30
2429.0		580.49	580.49	580.49
3112.0		590.63	590.63	590.63
3911.0		600.94	600.94	600.94

Table 4.6 Flood surcharge due to dam for Bank Full Discharge

(a) Bankfull Discharge Q= 550 m^3/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Opened	10% Gates Closed
0.0		521.94	521.94	521.94
260.0		523.51	523.51	523.51
300.0	Proposed Dam	523.89	536.50	536.88
461.0		524.78	536.50	536.89
636.5		525.87	536.51	536.90
843.5		529.10	536.51	536.90
	Confluence of Ulapane Oya			
1025.5		532.23	536.50	536.89
1210.5		534.31	536.53	536.91
1369.5		535.79	536.67	536.93
1475.5		536.93	536.93	537.01
1626.5		538.83	538.83	538.83
1757.5		539.28	539.28	539.28
1929.5		540.90	540.90	540.90
2111.5		541.19	541.19	541.19
2299.5		541.59	541.59	541.59
2448.5	Arch bridge under construction	542.05	542.05	542.05
2624.5		542.09	542.09	542.09
2718.5		546.12	546.12	546.12
2908.5		548.73	548.73	548.73
3030.5		549.73	549.73	549.73
3146.5	Limit of proposed reservoir	552.09	552.09	552.09
3416.5		553.40	553.40	553.40
3981.5		554.10	554.10	554.10
	Confluence of Kothmale Oya			
4137.5		554.29	554.29	554.29
4235.5		554.29	554.29	554.29
4362.5		554.30	554.30	554.30
4485.5		554.31	554.31	554.31
4736.5	Patthunupitiya Maha Vidyalaya	554.34	554.34	554.34
4908.5		554.36	554.36	554.36
5063.5		554.39	554.39	554.39
5365.5		554.42	554.42	554.42
6011.5		554.46	554.46	554.46
5782.5		554.47	554.47	554.47
5910.5	Close to KahammanaTemple	554.52	554.52	554.52
6241.5		554.58	554.58	554.58
6326.5	Close to Warakawa rail gate	554.59	554.59	554.59

Table 4.6 Flood surcharge due to dam for Bank Full Discharge

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga

(b) Bankfull Discharge Q= 33 m^3/s
Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Opened	10% Gates Closed
166.0		535.72	536.50	536.90
203.0		537.57	537.57	537.57
256.0		545.69	545.69	545.69
281.0		546.28	546.28	546.28
309.0	Bridge on Nawalapitiya road	546.70	546.70	546.70
326.0		547.03	547.03	547.03
409.0	Limit of proposed reservoir	548.26	548.26	548.26
546.0		549.35	549.35	549.35
649.0		550.08	550.08	550.08
1044.0		550.78	550.78	550.78
1286.0		551.31	551.31	551.31
1398.0		551.81	551.81	551.81
1561.0		552.40	552.40	552.40
1854.0	Close to railway bridge	554.48	554.48	554.48
1904.0		554.61	554.61	554.61
1954.0		554.72	554.72	554.72

(c) Bankfull Discharge Q=62 m^3/s
Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)		
		Before Project	After Project	
			With all Gates Opened	10% Gates Closed
445.0		554.65	554.65	554.65
1016.0		561.54	561.54	561.54
1682.0		572.61	572.61	572.61
2429.0		581.23	581.23	581.23
3112.0		591.20	591.20	591.20
3911.0		602.16	602.16	602.16

Table 4.7 Flood surcharge due to dam

(a) 50 -Year Return Flood Q= 2304 m^3/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
0.0		525.15	525.15
260.0		526.50	526.50
300.0	Proposed Dam	528.03	548.00
461.0		529.43	548.02
636.5		530.38	548.05
843.5		531.19	548.06
	Confluence of Ulapane Oya		
1025.5		534.47	548.04
1210.5		537.24	548.03
1369.5		538.73	548.02
1475.5		540.46	547.89
1626.5		543.31	548.05
1757.5		543.20	548.05
1929.5		545.43	548.28
2111.5		546.02	548.54
2299.5		545.87	548.32
2448.5	Arch bridge under construction	547.45	549.06
2624.5		547.96	549.43
2718.5		550.03	550.04
2908.5		552.10	552.10
3030.5		554.17	554.17
3146.5	Limit of proposed reservoir	557.20	557.20
3416.5		557.98	557.98
3981.5		559.02	559.02
	Confluence of Kothmale Oya		
4137.5		559.15	559.15
4235.5		559.15	559.15
4362.5		559.15	559.15
4485.5		559.16	559.16
4736.5	Patthunupitiya Maha Vidyalaya	559.20	559.20
4908.5		559.23	559.23
5063.5		559.28	559.28
5365.5		559.30	559.30
6011.5		559.33	559.33
5782.5		559.35	559.35
5910.5	Close to KahammanaTemple	559.36	559.36
6241.5		559.42	559.42
6326.5	Close to Warakawa rail gate	559.43	559.43

Table 4.7 Flood surcharge due to dam

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga

(b) 50 -Year Return Flood **Q= 1601m^3/s**
Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
166.0		536.63	548.08
203.0		538.35	548.08
256.0		546.49	548.03
281.0		547.26	547.97
309.0		548.07	548.24
	Bridge on Nawalapitiya road		
326.0		548.41	548.51
409.0	Limit of proposed reservoir	548.75	548.79
546.0		549.62	549.63
649.0		550.27	550.28
1044.0		551.24	551.24
1286.0		551.83	551.83
1398.0		552.51	552.51
1561.0		553.11	553.11
1854.0	Close to railway bridge	555.33	555.33
1904.0		555.75	555.75
1954.0		555.95	555.95

(c) 50 -Year Return Flood **Q= 43 m^3/s**
Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
445.0		559.25	559.25
1016.0		563.84	563.84
1682.0		575.55	575.55
2429.0		583.49	583.49
3112.0		593.05	593.05
3911.0		604.47	604.47

Table 4.7 Flood surcharge due to dam

(d) 100 -Year Return Flood Q= 2692 m^3/s
Mahaweli Ganga

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
0.0		525.66	525.66
260.0		527.04	527.04
300.0	Proposed Dam	528.76	548.00
461.0		530.20	548.02
636.5		531.17	548.07
843.5		531.87	548.08
	Confluence of Ulapane Oya		
1025.5		534.90	548.05
1210.5		537.65	548.05
1369.5		539.19	548.02
1475.5		541.06	547.85
1626.5		544.07	548.07
1757.5		543.94	548.07
1929.5		546.14	548.40
2111.5		546.81	548.75
2299.5		546.47	548.43
2448.5	Arch bridge under construction	548.33	549.43
2624.5		548.94	549.94
2718.5		550.59	550.59
2908.5		552.50	552.51
3030.5		554.84	554.84
3146.5	Limit of proposed reservoir	558.11	558.11
3416.5		558.79	558.79
3981.5		559.84	559.84
	Confluence of Kothmale Oya		
4137.5		559.94	559.94
4235.5		559.94	559.94
4362.5		559.94	559.94
4485.5		559.95	559.95
4736.5	Patthunupitiya Maha Vidyalaya	559.99	559.99
4908.5		560.03	560.03
5063.5		560.07	560.07
5365.5		560.09	560.09
6011.5		560.12	560.12
5782.5		560.14	560.14
5910.5	Close to KahammanaTemple	560.14	560.14
6241.5		560.19	560.19
6326.5	Close to Warakawa rail gate	560.21	560.21

Table 4.7 Flood surcharge due to dam

Chainages along Ulapane Oya and Kothmale Oya have been measured from the confluence with Mahaweli Ganga

(e) 100 -Year Return Flood Q= 50 m^3/s
Ulapane Oya

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
166.0		536.77	548.11
203.0		538.47	548.11
256.0		546.62	548.04
281.0		547.44	547.96
309.0		548.26	548.34
	Bridge on Nawalapitiya road		
326.0		548.64	548.68
409.0	Limit of proposed reservoir	548.91	548.93
546.0		549.62	549.62
649.0		550.31	550.31
1044.0		551.29	551.29
1286.0		551.93	551.93
1398.0		552.60	552.60
1561.0		553.21	553.21
1854.0	Close to railway bridge	555.40	555.40
1904.0		555.90	555.90
1954.0		556.10	556.10

(f) 100 -Year Return Flood Q= 1870 m^3/s
Kothmale Oya

Chainage (m)	Location	River Water Level (m asl)	
		Before Project	After Project With all Gates Opened
445.0		560.02	560.02
1016.0		564.22	564.22
1682.0		576.08	576.08
2429.0		583.89	583.89
3112.0		593.37	593.37
3911.0		604.82	604.82

Table 4.10 Details of 06 nos. of access roads

No.	Name of road	Improvements (m)	Additional length (m)	Total length (m)
1.	Ethgala to Powerhouse/Switchyard	980	98	1078
2.	Ethgala to Surge Shaft	1520	121	1641
3.	Road diversion (right bank) New road	40	998	1038
4.	Access road to residential camp (from road diversion)	-	211	211
5.	Access to intake structure (from dam)	-	329	329
6.	Access road to Outfall structure	30	203	233

Note : Specific information of impacts due access roads have been mentioned in ***Tables 4.11, 4.12, 4.13, 4.14(a), 4.14(b), 4.15(a)*** and ***4.15(b)*** (only 04 nos. of roads having impacts on Private property has been listed in these tables).

Table 4.11 Summary of Impacts due to access roads

No.	Road Name	Impacted property				
		Land (perches)	Business structure	house	gate	Boundary wall – length (m)
1.	Ethgala to Powerhouse/Switchyard	20	2	0	1	21
2.	Ethgala to Surge Shaft	24	0	0	0	0
3.	Road diversion (right bank) New road	30	1	2	0	0
4.	Access road to residential camp (from road diversion)	8	0	0	0	0
Total		82	3	2	1	21

Note : Refer ***Tables 4.12, 4.13, 4.14(a) and 4.14(b), 4.15(a) and 4.15(b)*** for details of ownership of the impacted property

Table 4.12 Impact due to road from Ethgala to Powerhouse

No.	APs	Property affected					Ownership
		Land perch	Business structure %	House	Gate	Boundary wall length (m)	
1.	U G A Nissanka	1	25%	0	0	0	Freehold
2.	D J C Jayatilake (Mrs)	2	30%	0	0	0	Freehold
3.	Senaviratna	2	0	0	0	0	Freehold
4.	Amarasiri Bandar	1	0	0	0	0	Freehold
5.	Nissanka Bandara	1	0	0	0	5	Freehold
6.	P Hearth	0	0	0	1	4	Freehold
7.	Nadeera	0	0	0	0	4	Freehold
8.	Chaminda	0	0	0	0	5	Freehold
9.	Tilakaratna	2	0	0	0	0	Freehold
10.	Kaluarchchi	3	0	0	0	0	Freehold
11.	Silva	0	0	0	0	3	Freehold
12.	Sampatha alawatenna	2	0	0	0	0	Freehold
13.	W P Navaratna	2	0	0	0	0	Freehold
14.	Tilak abeysinghe	4	0	0	0	0	Freehold
Total		20	2 places	0	1	21	Freehold

Note: Refer ***Table 4.11*** for summary of impacts

Table 4.13 Impact due to road from Ethgala to Surge Shaft

No.	APs	Property affected					Ownership
		Land perch	Business structure %	house	gate	Boundary wall length (m)	
1.	N P L F Perera	3	0	0	0	0	Freehold
2.	R M P Ratnayake	5	0	0	0	0	Freehold
3.	Rexon	10	0	0	0	0	freehold
4.	K M P Karunatilake	3	0	0	0	0	Freehold
5.	Mario Grey	3	0	0	0	0	Freehold
Total		24	0	0	0	0	Freehold

Note: Refer ***Table 4.11*** for summary of impacts

Table 4.14(a) Details of lands impacted due to road diversion (right bank)

No.	Name of AP	Residence or not	Extent (Ac / perch)	Title	Crop	Other
1.	K G Punchietha	Yes	1.0	Swarnaboomi	Tea / Fruit & Mixed	-
2.	Gamini Galppatthi	Yes	15 perch	Swarnaboomi	Tea / Fruit & Mixed	-
3.	P. G. Chandradasa	Yes	0.5	Swarnaboomi	Tea / Fruit & Mixed	-
4.	W G Jayewardene	Yes	1.0	Swarnaboomi	Tea / Fruit & Mixed	-
5.	E G Seimon Neide	Yes	1.0	Swarnaboomi	Tea / Fruit & Mixed	-
6.	N. G. Cyril Jayawardene	Yes	1.0	Swarnaboomi	No	-
7.	A M Abeyratna	No	1.0	Swarnaboomi	Tea	-
8.	H. M. Chandrapala	No	1.0	Swarnaboomi	No	-
9.	D. C. G. Weerasinghe	No	1.0	Swarnaboomi	Tea	-
10.	W Samaraweera	No	1.0	Swarnaboomi	No	-
11.	Dickson Perera	No	25.0 Ac	Not known	No	Belongs to 1 parliament MP

Note : Refer *Tables 4.14 (b), 4.15(a)* and *4.15(b)* for details

Table 4.14(b) Impact due to road diversion right bank

No.	APs	Property affected					Ownership
		Land perch	Business structure %	house	gate	Boundary wall - length	
1.	K G Punchiethana	2	0	0	0	0	Swarnaboomi (freehold)
2.	Gamini Galappatti	1	0	10%	0	0	Swarnaboomi (freehold)
3.	P G Chandradasa	2	0	0	0	0	Swarnaboomi (freehold)
4.	W G Jayewardene	2	0	15%	0	0	Swarnaboomi (freehold)
5.	E G Simon Neide	3	100%	0	0	0	Swarnaboomi (freehold)
6.	N G Cyril Jayewardene	4	0	0	0	0	Swarnaboomi (freehold)
7.	A M Abeyratna	1	0	0	0	0	Swarnaboomi (freehold)
8.	H M Chandrapala	4	0	0	0	0	Swarnaboomi (freehold)
9.	D C G Weerasinghe	2	0	0	0	0	Swarnaboomi (freehold)
10.	W Samaraweera	3	0	0	0	0	Swarnaboomi (freehold)
11	Dickson Perera	6	0	0	0	0	Swarnaboomi (freehold)
Total		30	1	2	0	0	Swarnaboomi (freehold)

Note : Refer *Table 4.11* for summary of impacts and *Tables 4.14(a), 4.15(a)* and *4.15(b)* for other details of these lands

Table 4.15(a) Details of residential lands impacted due to residential camp / office and stores (including access road)

No.	Name of Chief householder	Family size	Age	Employment	Education	Family Income (Rs. per month)
1.	K G Punchietha	7	95	Unemployed	Grade 7	18,000
2.	Gamini Galppatthi	5	44	Foreign	O/L	45,000
3.	P G Chandradasa	5	51	Mechanic	Grade 5	15,000
4.	W G Jayewardene	6	50	Mechanic	O/L	42,000
5.	E G Seimon Neide	6	80	Unemployed	Grade 5	12,000
6.	N G Cyril Jayewardene	3	Not known	Army	Grade 10	25,000

Table 4.15(b) Details of non-residential lands impacted due to residential camp / office and stores (including access road)

No.	Name	Address	Crops	Extent (Ac)
1.	D C G Weerasinghe	10, Weliganga, Mawatura	Fruit	1.5
2.	Dickson Perera	Colombo	None	0.75
3.	H M Chandrapala	18½, Weliganga, Mawatura	None	1.0
4.	A M Abeyratna	17, Weliganga, Mawatura	Fruit	1.0
5.	W A Samaraweera	113, Maswila Road, Ulapone	None	3.0

Table 4.19(a) Details of homesteads vulnerable due to Proposed Reservoir

No.	Name of AP	Family size	Age of AP	Employment	Family income (Rs. / month)	Education	Extent of land Acres/Perches
1.	D C G Weerasinghe	6		Business	47,000	G. C. E. (O/L)	1.5
2.	Y G Tilakaratna	5	52	Teacher	35,000	G. C. E. (O/L)	1
3.	L R M Karunawathi	3	53	Farmer	28,000	Grade 10	1
4.	P G Aronolis Appuhamy	7	51	Labourer	12,000	Grade 5	0.25
5.	M A N Sarath Kumara	3	32	Private sector	35,000	G. C. E. A/L	0.5
6.	N G Prematunga	5	52	Technician	50,000	Grade 10	1
7.	M A Abeyratna	5	53	Mason	30,000	Grade 10	1
8.	Malani Hemalatha	5		Retired	31,000		0.5
9.	P G Premaratna	2	58	Labourer	50,000	Nor formal	0.75
10	P A G S K Jayasundara	5	32	Driver	15,000	G. C. E. O/L	0.25
11.	Esline Moraya Dias	3	80	Farmer	20,000	Grade 5	1
12.	Dinuka Lankara	3	33	Private sector	40,000	G. C. E. A/L	1
13.	M D Ghnanappu	6	70	Farmer	20,000	Grade 5	1
14.	R G Sonnandare	6	50	Black smith	20,000	Grade 10	0.5
15.	Z M Muzadeen	5	38	Labourer	14,000	Grade 8	0.5
16.	Abusalee Sahabdeen	6	47	Labourer	18,000	Grade 10	0.5
17.	M M M Najeeb	5	40	Business	19,000	Grade 10	0.31
18.	Janaka Pushpakumara	5	33	Private sector	12,000	Grade 8	5 Perch
19.	Shivan Krishana Murthi	6	50	Foreign	28,000	Grade 10	0.25
20.	Leela Daniel	2	48	Teacher	10,000	G. C. E. A/L	20 Perch

Table 4.19(b) Details of families in two line houses vulnerable due to reservoir

No.	Name of AP	Family size	Age	Employment	Education	Monthly income (Rs.)
1.	S Karupaiya	03	58	Watcher Estate	No formal education	11,000/-
2.	Milton Laurence	05	32	Hotel employee	Grade 10	12,000/-
3.	K Selvarathnam	03	31	Welder	Grade 10	9,000/-
4.	Kumaravail	06	29	Labor	Grade 8	8,000/-

Table 4.19(c) Details of non-residential land plots impacted due to Proposed Reservoir

No.	Name	Address	Crops	Extent (Ac / perch)
1.	H M Chandrapala	Weliganga, Mawatura, Gampola	None	1
2.	T M Weerakkody	145, 1/8, Nuwaraeli road, Mahara, Gampola	Pepper	60 perch
3.	M W A Wickramage	8B, 256, Hospital Rd, Kiribathgoda, Kelaniya	Tea	1
4.	M G Ratnasinghe	40, Weliganga, Mawathura	None	0.25
5.	Piyal Susantha Devadipathi	31, Kanabediwatta, Mawathura	None	0.25
6.	M G Tilakaratna	1/26, Weliganga, Mawathura, Gampola	Fruits, Pepper, Tea	0.25
7.	D G Yasawathie	32, Ihala Watawala, Watawala	None	0.25
8.	K G Dayaratna	Weliganga, Mawatura	Tea	0.25
9.	M G Nandawathie	31, Weliganga, Mawatura	None	0.25
10.	Y G Padmalatha	109, Weliganga, Mawatura	Tea, Fruit	0.25
11.	Colonel Amaralal	Not known	None	0.25
12.	A Rahoof	Mallanda, Nawalapitiya	Fruit, Coffee, Pepper	0.25
13.	P G Mudalihamy	Bogoda, Colony, Ulapone	Fruit, Pepper	0.5
14.	A A Waieef	Nawalapitiya road, Ulapone	Fruit, Pepper, Coffee	20 perch

Table 4.20 Overall List of likelihood affected persons

No.	Name	Address	Project Intervention	Property	Residence Yes or no	DS Division
1	D C G Weerasinghe	10, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
2	Y G Tilakaratna	277 A/5,Jayamalpura, Gampola	Proposed reservoir	Land & house	Yes	Udapalatha
3	L R M Karunawathi	4, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
4	P G Aronolis Appu	11C Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
5	M A N Sarath Kumara	1/17, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
6	N G Pematunga	6, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
7	M A Abeyaratna	17, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
8	W D Malani Hemalatha	11A, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
9	P G Premaratna	11, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
10	P A D S K Jayasundara	12 ½, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
11	S E M Dias	12 ½, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
12	Dinukalankara	12 ½, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
13	M D Ghnanappu	5/6, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
14	R G Sonandare	14, Weliganga, Mawathura	Proposed reservoir	Land & house	Yes	Udapalatha
15	I M Musadeen	123 / B, Mawila Rd, Ulapone	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
16	Abusalee Sahabdeen	123, Mawila Rd, Ulapone	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
17	M M M Najeeb	123 /1, Mawila Rd, Ulapone	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
18	Janaka Pushpakumara	119, Mawila Rd, Ulapone	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
19	Shivan Krishnamurthy	113/A, Mawila Rd, Ulapone	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
20	Leela Denial	"Kelehanda", Mawila Rd,	Proposed reservoir	Land & house	Yes	Ganga Ihala Korale
21	H M Chandrapala	18 ½, Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
22	Thushari manjula	145 1/8, Nuwaraeli rd,	Proposed reservoir	Land	No	Udapalatha
23	M W A Wickramage	8/B, - 256, Hospital Rd,	Proposed reservoir	Land	No	Udapalatha
24	M G Ratnasinghe	40, Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
25	Piyala Sussanta	31, Kanabendiwatta,	Proposed reservoir	Land	No	Udapalatha
26	M G Tilakaratna	1/26, Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
27	D G Yasawathi	32, Ihala Watawala,	Proposed reservoir	Land	No	Udapalatha

Ctd.....

No.	Name	Address	Project Intervention	Property	Residence Yes or no	DS Division
28	K G Dayaratna	Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
29	N G Nandawathi	31, Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
30	Y G Padmalatha	109, Weliganga, Mawathura	Proposed reservoir	Land	No	Udapalatha
31	Colonel Amaralal	Not known	Proposed reservoir	Land	No	Udapalatha
32	A Rahoof	Mallanda, Nawalapitiya	Proposed reservoir	Land	No	Ganga Ihala Korale
33	P G Mukdalihamy	Bogoda, Colony, Ulapone	Proposed reservoir	Land	No	Ganga Ihala Korale
34	A A Waieef	Nawalapitiya Rd, Ulapone	Proposed reservoir	Land	No	Ganga Ihala Korale
35	D C G Weerasinghe	10, Weliganga, Mawathura	Road diversion, Residential	Land	No	Udapalatha
36	Dickson Perera	Colombo	Road diversion, Residential	Land	No	Udapalatha
37	H M Chandrapala	18 ½, Weliganga, Mawathura	Road diversion, Residential	Land	No	Udapalatha
38	A M Abeyratna	17, Weliganga, Mawathura	Road diversion, Residential	Land	No	Udapalatha
39	W Samaraweera	113, Maswila Rd, Ulapone	Road diversion, Residential	Land	No	Udapalatha
40	N G Cyril Jayewardene	34, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
41	K G Punchiethana	31, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
42	Gamini Galappatti	30 ½, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
43	W G Jayewardene	21, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
44	P G Chandradasa	30 ½, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
45	E G Simon Neide	28, Weliganga, Mawathura	Road diversion, Residential	Land & house	Yes	Udapalatha
46	Naleen Liyanaarchchi	2/863, Ethgalawatta,	Powerhouse, Switch yard	Land & house	Yes	Ganga Ihala Korale
47	H M Francis	1/863, Ethgalawatta,	Powerhouse, Switch yard	Land & house	Yes	Ganga Ihala Korale
48	Tilak Abeysinghe	Colombo	Powerhouse, Switch yard	Land	No	Ganga Ihala Korale
49	G Cumaraweil	Denmark watta, Ulapone	Proposed Reservoir	Land & house	Yes	Ganga Ihala Korale
50	S Karupaiya	Denmark watta	Proposed Reservoir	Land & house	Yes	Ganga Ihala Korale
51	K Selvaratnam	Denmark watta	Proposed Reservoir	Land & house	Yes	Ganga Ihala Korale
52	Milton Lawrence	Denmark watta	Proposed Reservoir	Land & house	Yes	Ganga Ihala Korale

ANNEXURE 8

Google images of the locations of the Proposed Dumping Sites

Location 1

Coordinates : North: 513700 East : 478483



Location 2

Coordinates : North: 513,553 East : 478,741



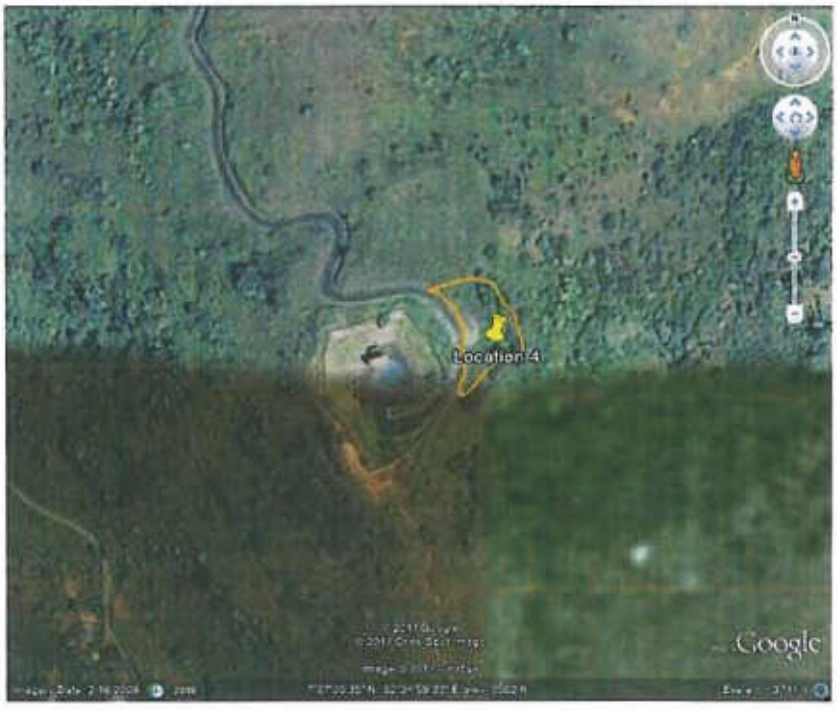
Location 3

Coordinates : North: 513372 East : 478952



Location 4

Coordinates : North: 513,037 East : 478980



Location 5

Coordinates : North: 514721 East : 478,579



PHOTOGRAPHS



Crysbro Industry Outfall area

Dunhinda Irrigation Canal





Dam Site View

Riverside vegetation





Powerhouse site

River





Participants at the awareness programme conducted by CEB

Participants at the awareness programme conducted by CEB





Purana Pattini Devalaya



Niyamgampaya Monastery



Valvasagoda Viharaya.



Gal Viharaya at Mawathura

FIGURES

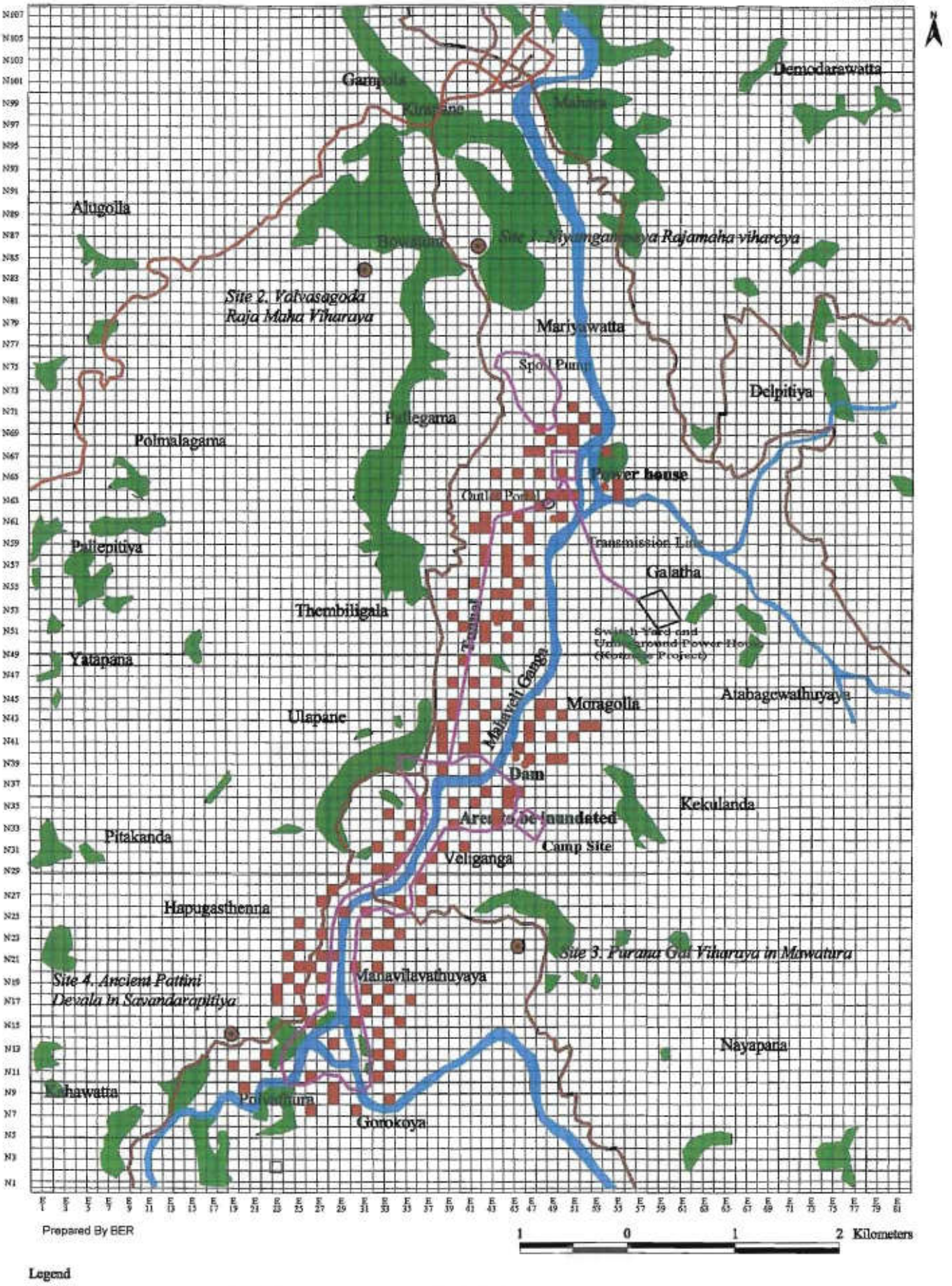


Figure 1.2 Archaeological Survey - Survey grids and observed locations.

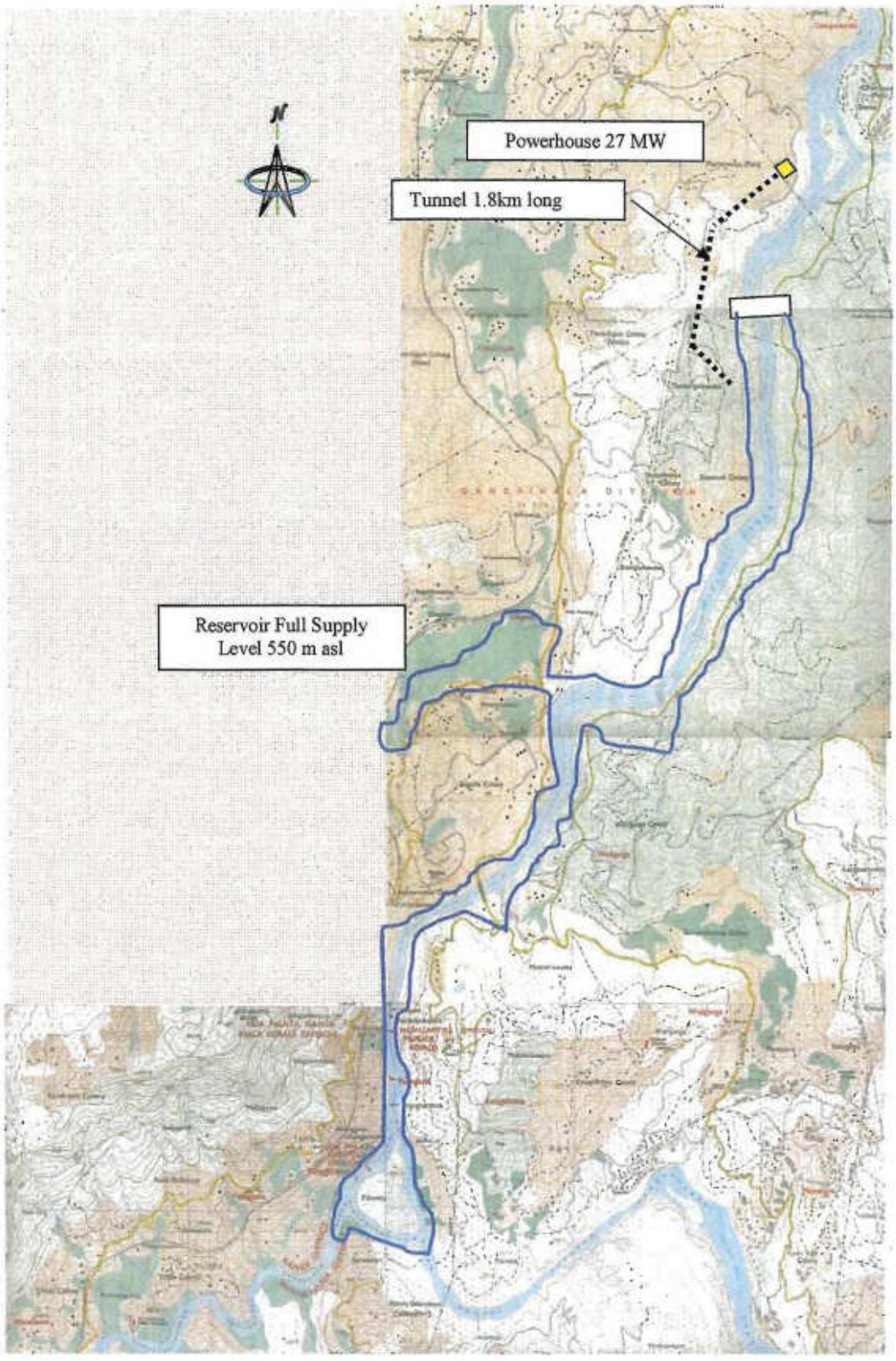


FIGURE 2.1	MORAGOLLA HYDROPOWER PROJECT LAYOUT FOR ALTERNATIVE 1

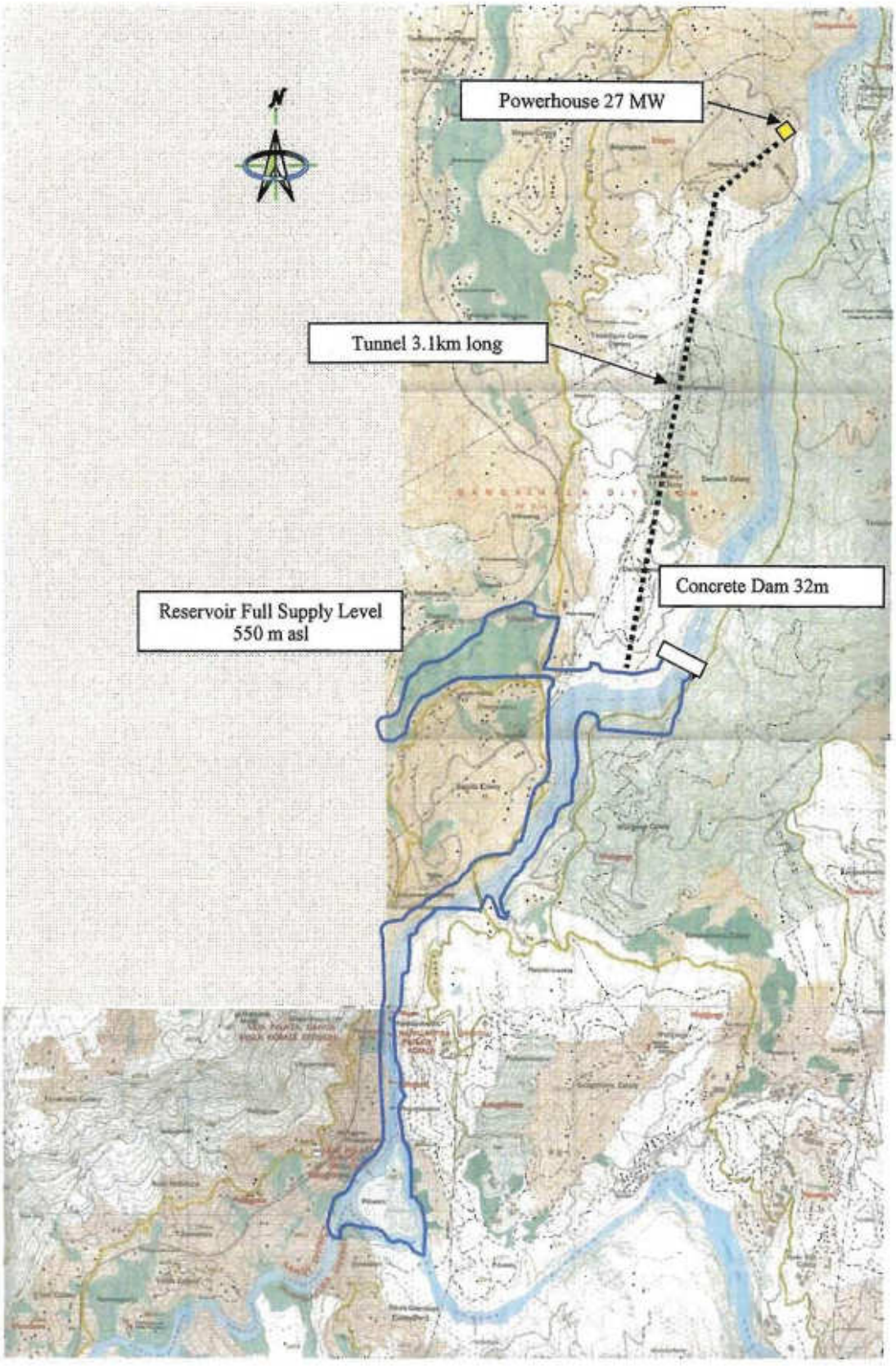
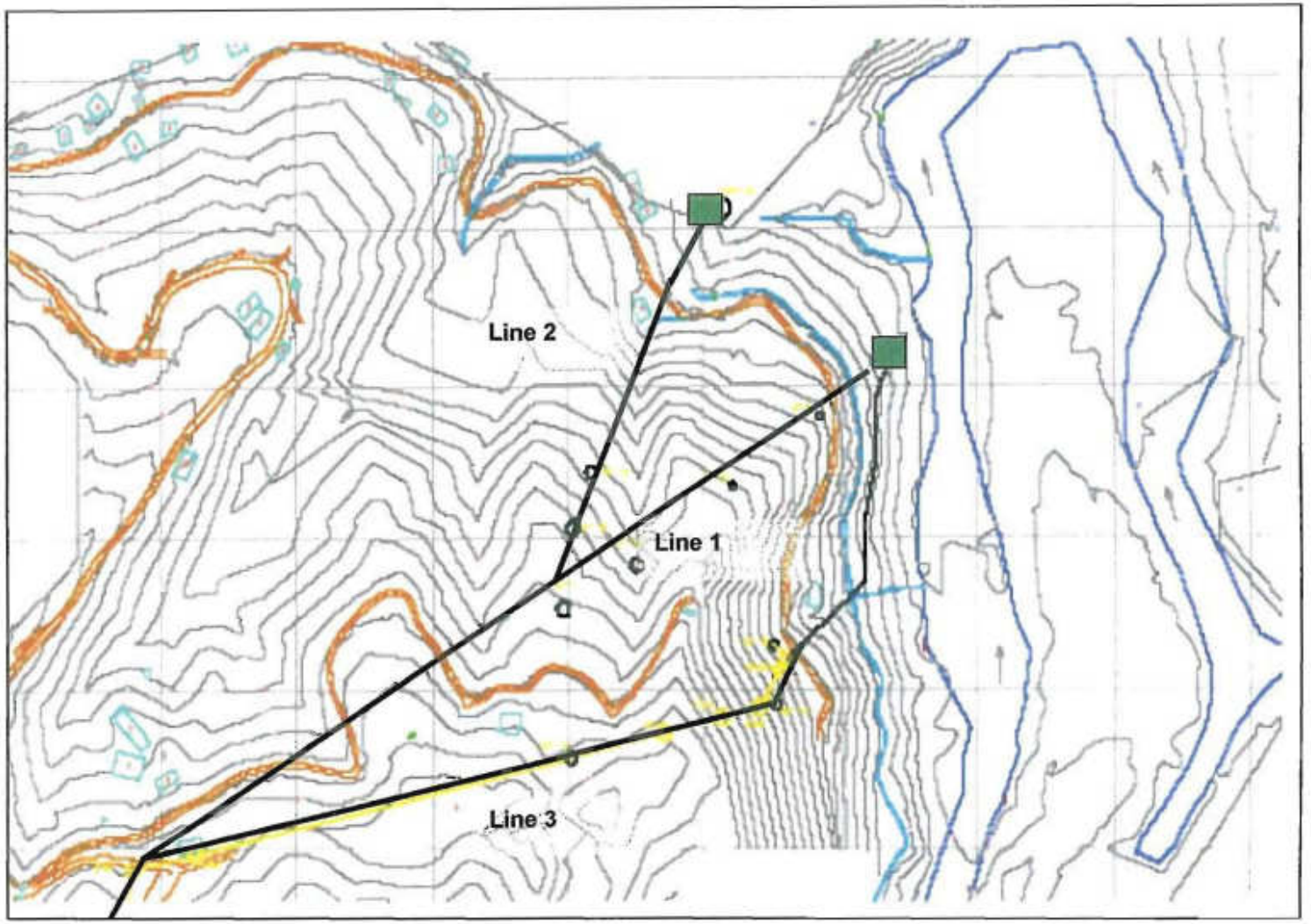


FIGURE 2.2	MORAGOLLA HYDROPOWER PROJECT **LAYOUT FOR ALTERNATIVE 2**



Power House Location

Line 1, 2 & 3 Tunnel Alignment

Figure 2.2 (a) Investigations made for Outlet Portal location of Tunnel

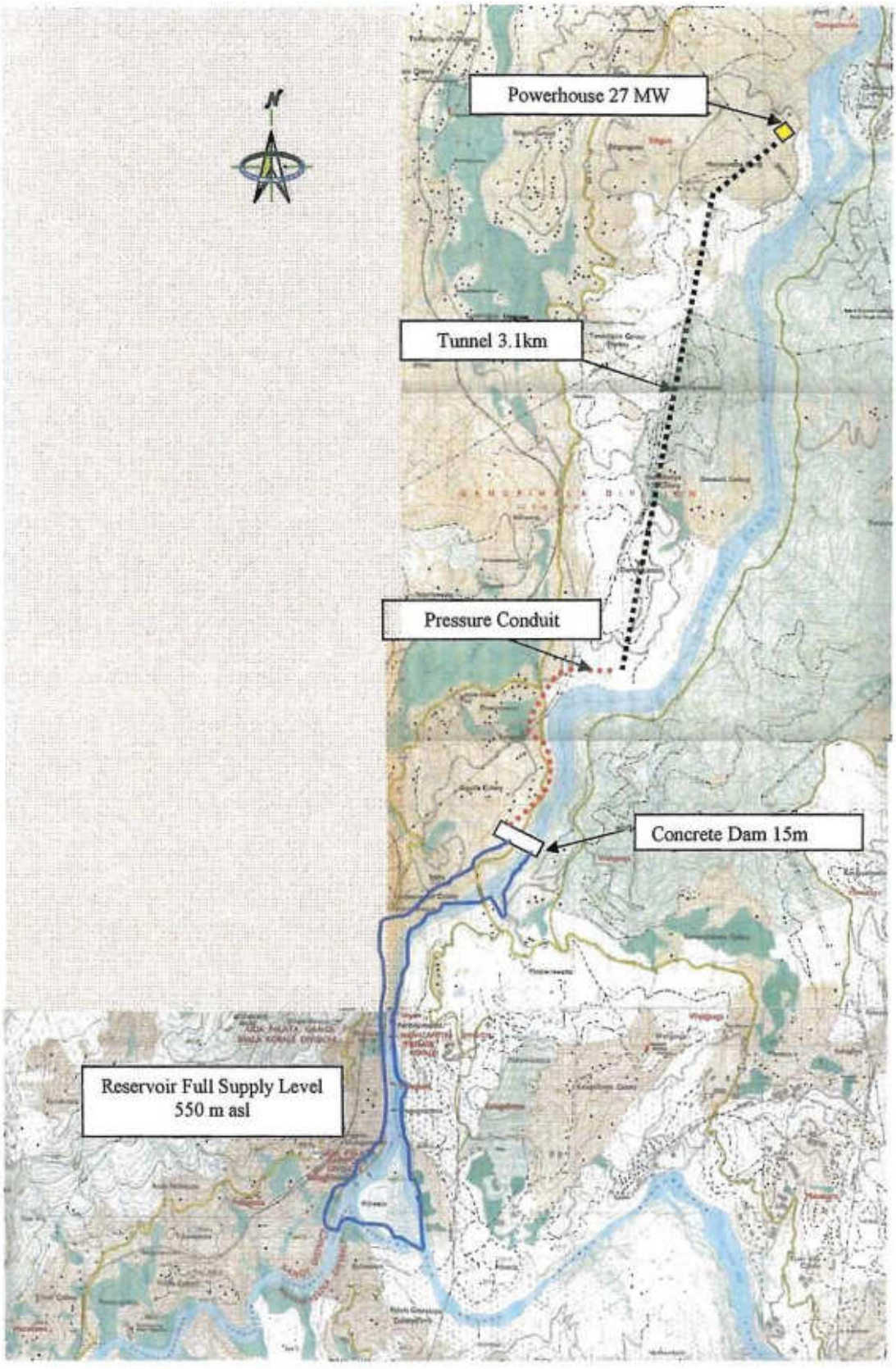


FIGURE 2.3	MORAGOLLA HYDROPOWER PROJECT **LAYOUT FOR ALTERNATIVE 3**

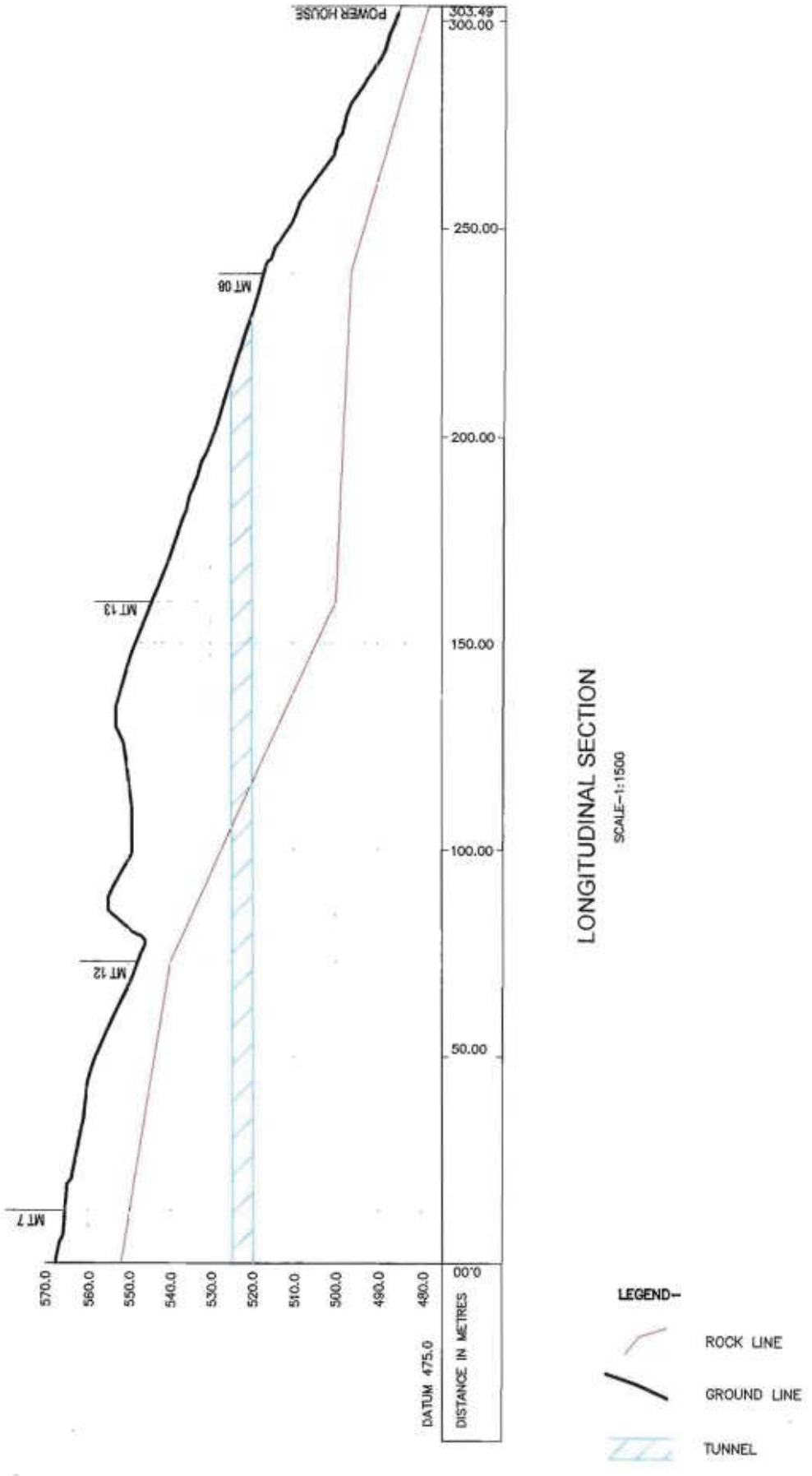
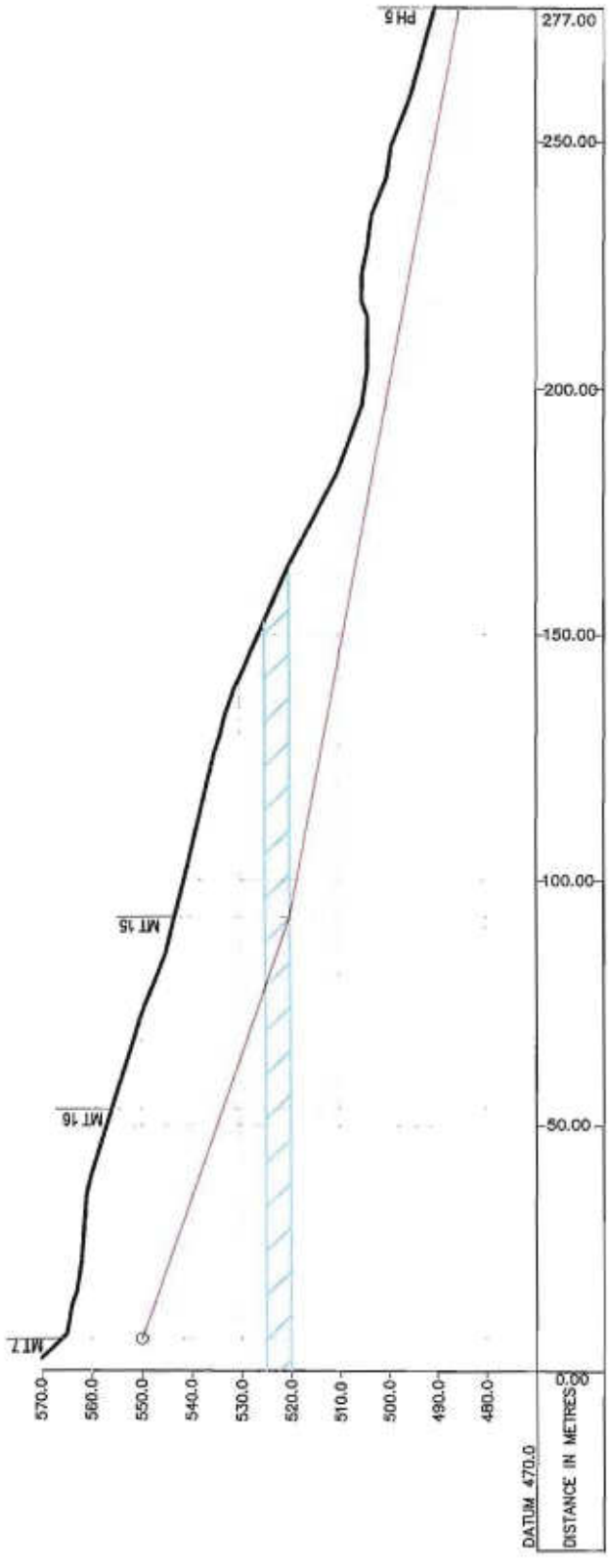


FIGURE 2.4

MORAGOLLA HYDROPOWER PROJECT

INVESTIGATIONS FOR OUTLET PORTAL OF TUNNEL :

ROCK LEVELS ALONG LINE 1



LONGITUDINAL SECTION

SCALE – 1:1500

LEGEND–

ROCK LINE

GROUND LINE

TUNNEL

FIGURE 2.5	MORAGOLLA HYDROPOWER PROJECT **INVESTIGATIONS FOR OUTLET PORTAL OF TUNNEL : ROCK LEVELS ALONG LINE 2**

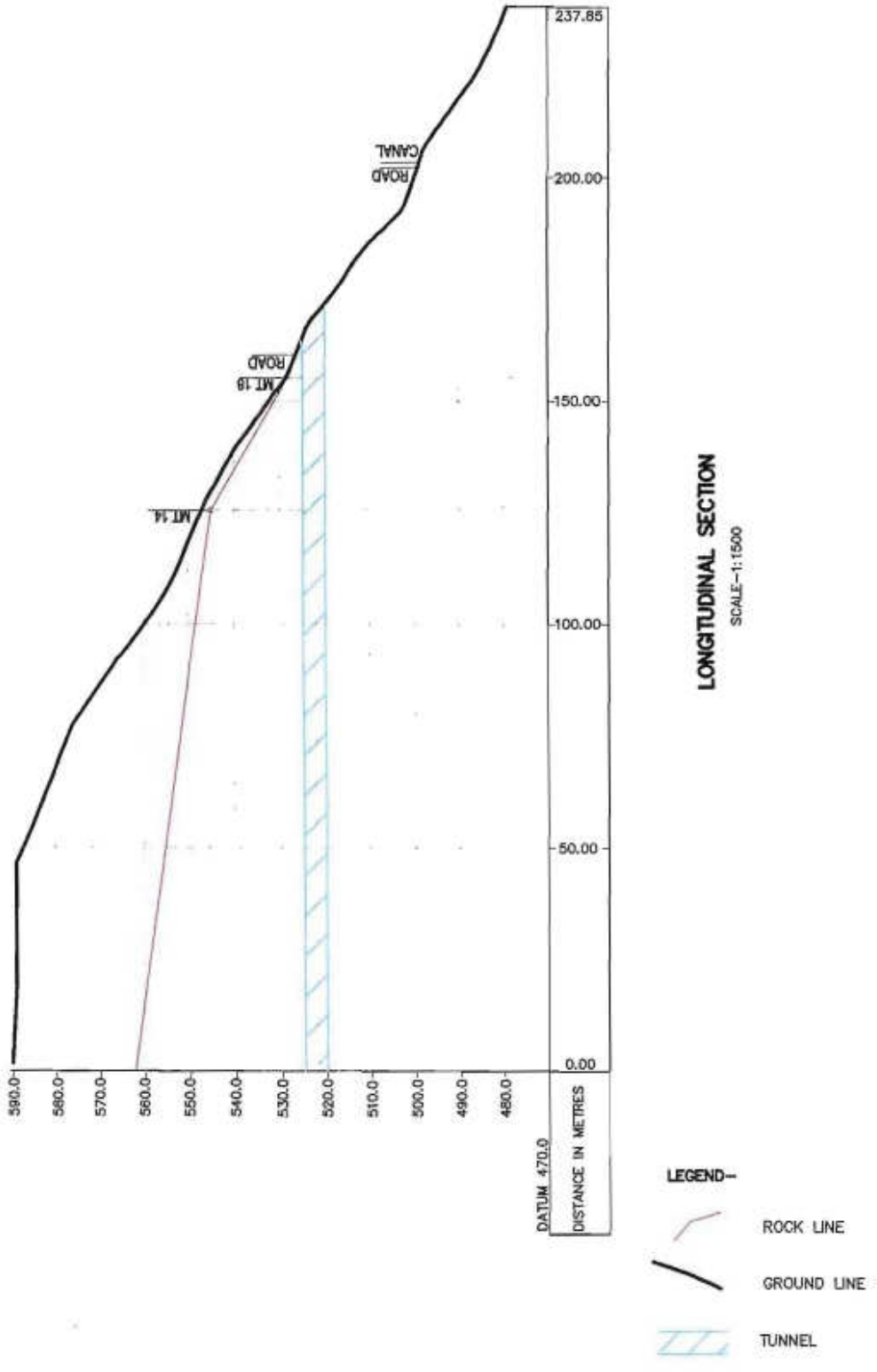


FIGURE 2.6	MORAGOLLA HYDROPOWER PROJECT **INVESTIGATIONS FOR OUTLET PORTAL OF TUNNEL : ROCK LEVELS ALONG LINE 3**

N

From Puttalam

Maha Oya

To Kurunegala

From Kurunegala

To Trincomalee

Mahaweli Ganga

Negambo

Ambepussa

Kegalle

A1

Kadugannawa

A5

Kandy

Peradeniya

Gampola

PROJECT AREA

Nawalapitiya

Karawanella

Yatiyantota

Ginigathhena

Kitulgala

Badulla

Kelani Ganga

Avissawella

Watawala

Nuwara-Eliya

COLOMBO

Kaduwela

A7

A4

Norton Bridge

Hatton

Bandarawela

Balangoda

Panadura

Rathnapura

Kalu Ganga

Kalutara

To Kalutara

Point Pedro

Jaffna

Bay

Mullaittivu

Mannar

Gulf Of Mannar

Vavuniya

Trincomalee

Anuradhapura

Bengal

Puttalam

Polonnaruwa

Dambulla

Chilaw

Negombo

Kandy

Badulla

COLOMBO

Nuwaraeliya

Panadura

Haputale

Ratnapura

Madampe

Ambalangoda

Nambantota

Galle

Tangalle

Matara

Indian

Ocean

LEGEND

HIGHWAYS	
RAILWAYS	
STREAMS	

0 10 20 30 40 50m

SCALE– 1:1000

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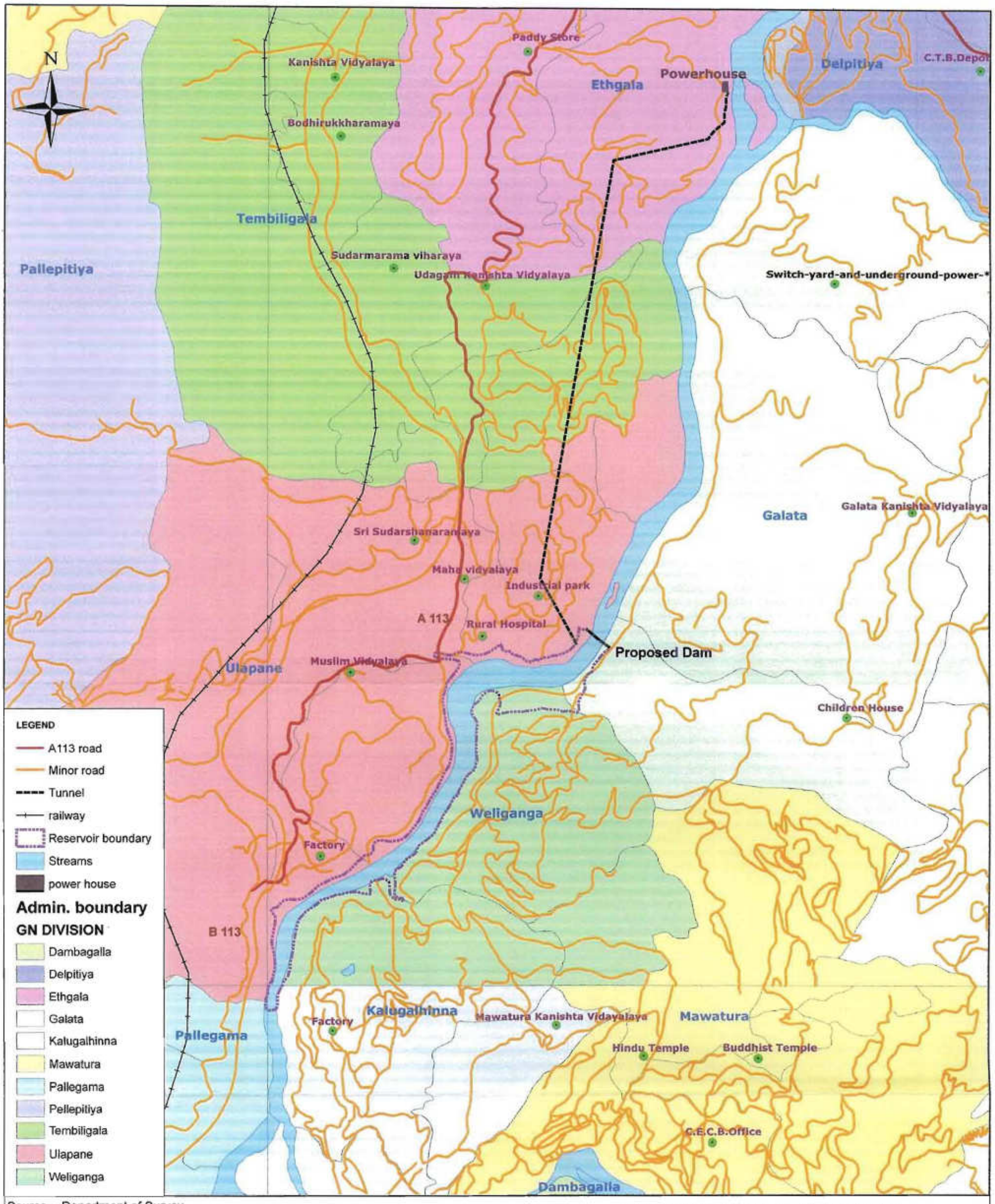
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.7

PROJECT AREA AND ACCESSIBILITY TO PROJECT AREA



Source - Department of Survey

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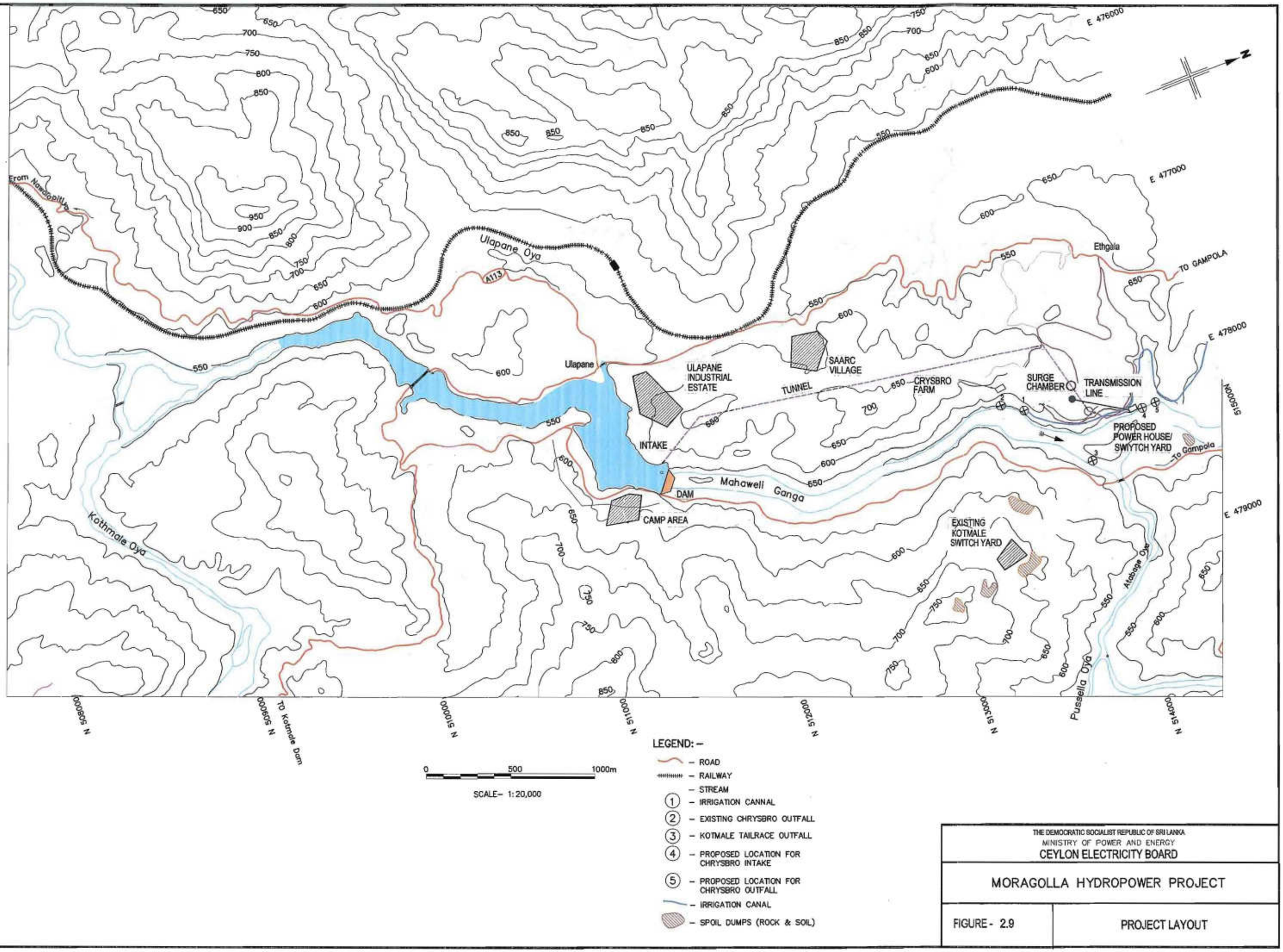
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE: 2.8 DESCRIPTION: PROJECT AREA WITH SURROUNDING DEVELOPMENTS



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MORAGOLLA HYDROPOWER PROJECT

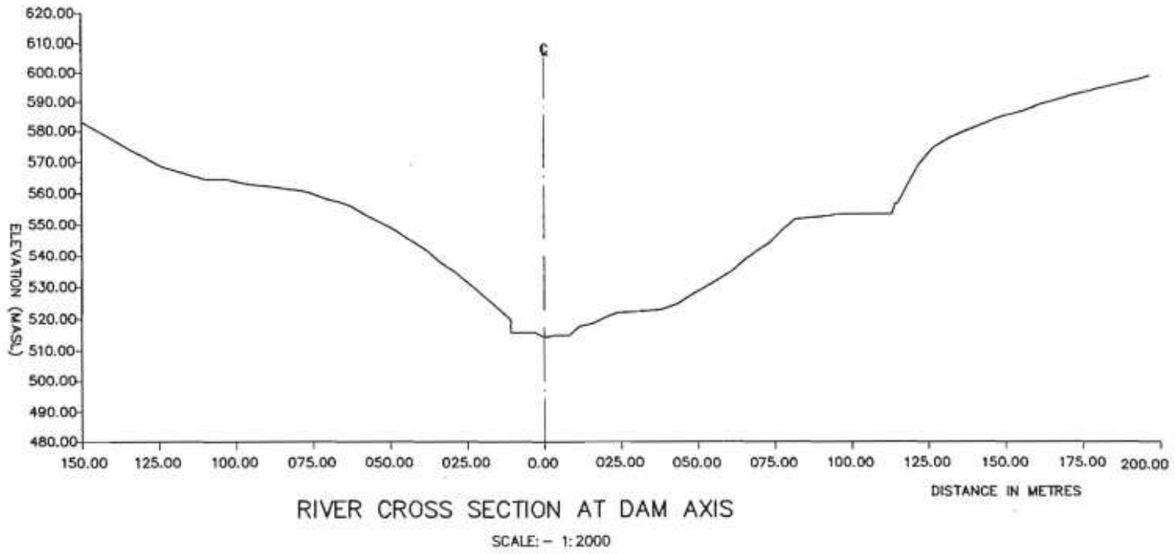
FIGURE - 2.9

PROJECT LAYOUT

FIGURE 2.10

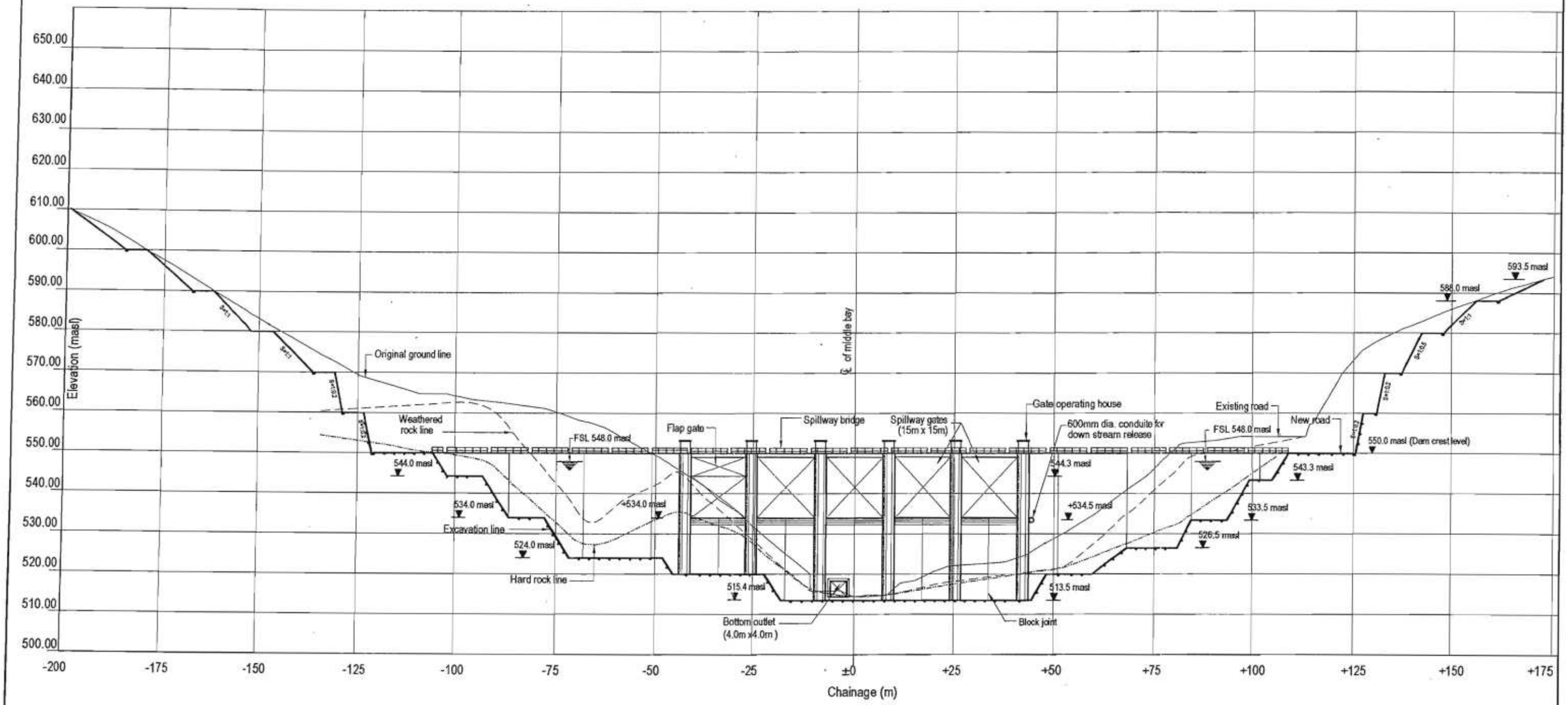
MORAGOLLA HYDROPOWER PROJECT

RIVER CROSS SECTION AT PROPOSED DAM SITE



RIVER CROSS SECTION AT DAM AXIS

SCALE:- 1:2000



VIEW FROM UPSTREAM

NOTES: –

1. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL

0 10 20 30 40 50m

SCALE: – 1:1000

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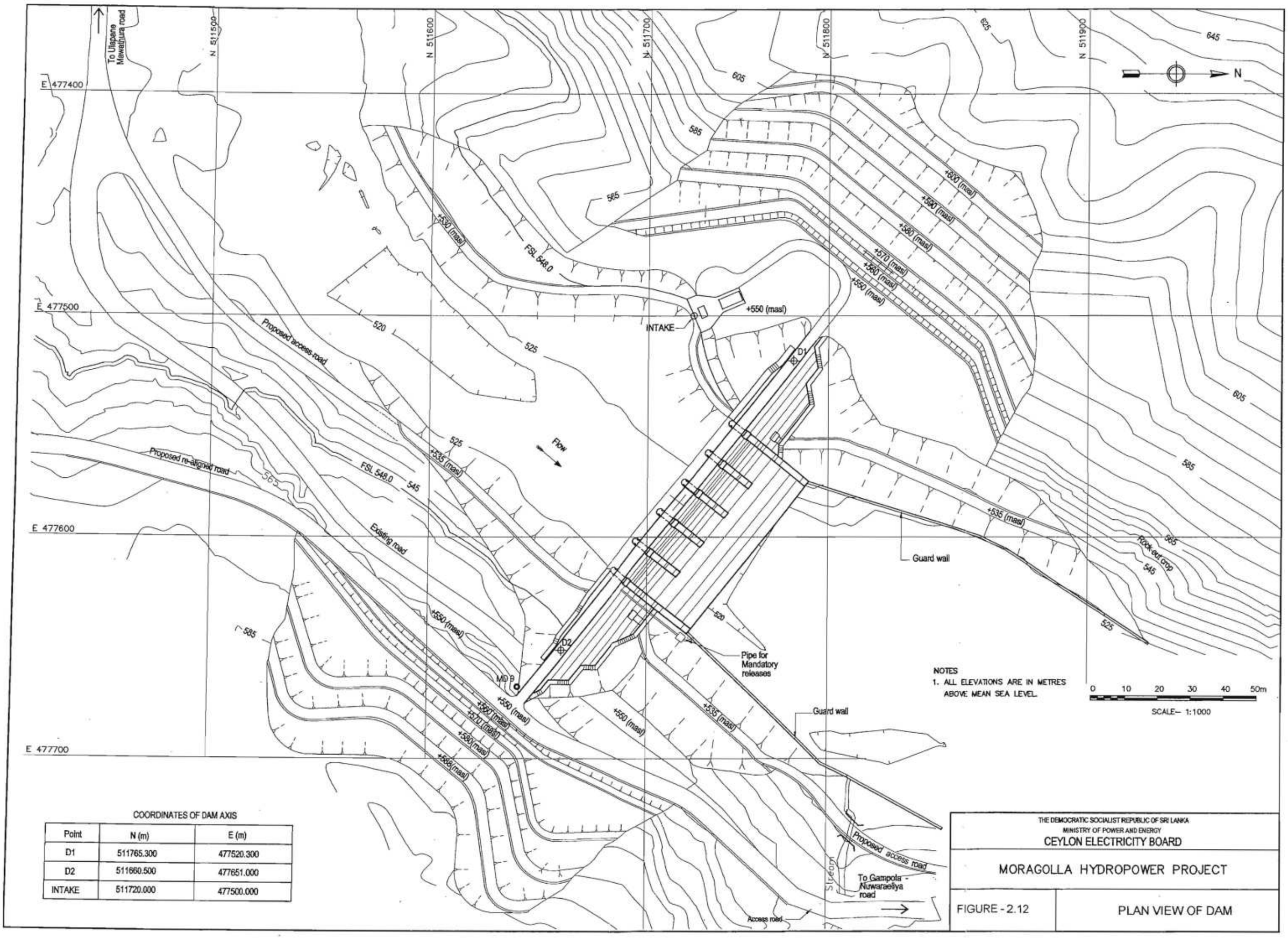
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.11	UPSTREAM PROFILE ALONG THE DAM AXIS



NOTES
1. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL.

0 10 20 30 40 50m

SCALE– 1:1000

COORDINATES OF DAM AXIS

Point	N (m)	E (m)
D1	511765.300	477520.300
D2	511660.500	477651.000
INTAKE	511720.000	477500.000

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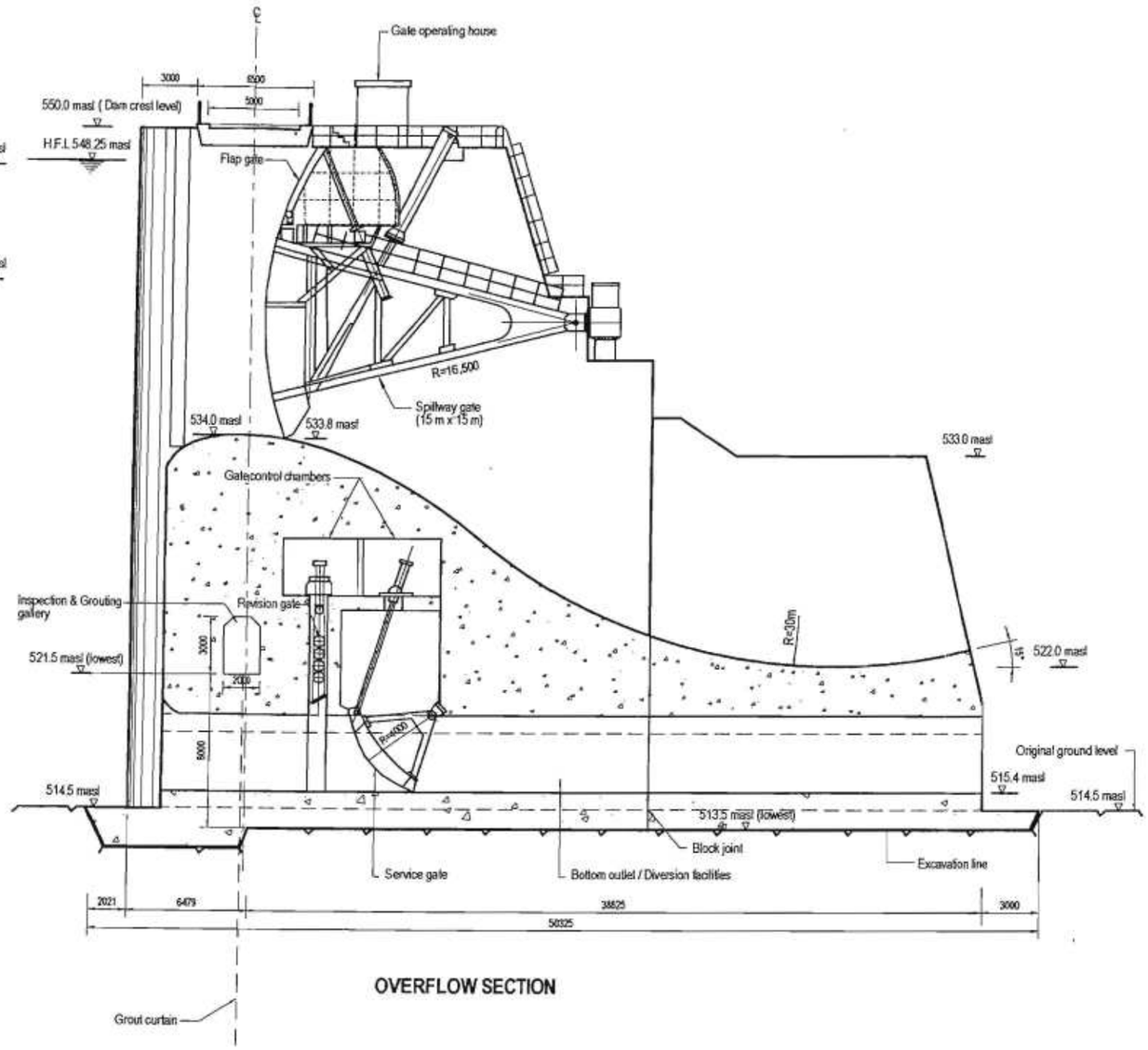
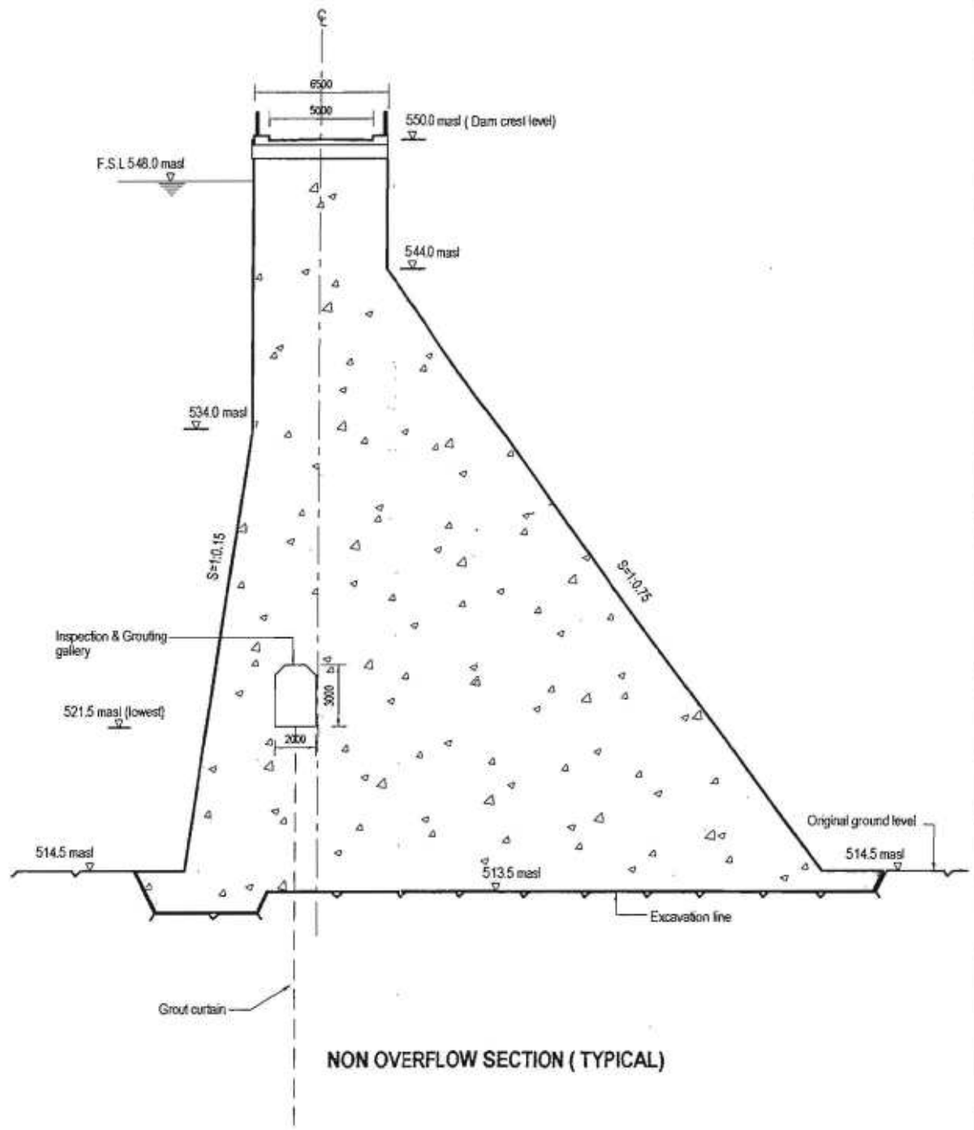
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.12

PLAN VIEW OF DAM



OVERFLOW SECTION



NON OVERFLOW SECTION (TYPICAL)

NOTES:–

1. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL.
2. ALL DIMENSIONS ARE IN MILLIMETRES.

0 3 6 9 12 15m

SCALE:– 1:300

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MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.13 | DAM CROSS SECTIONS



Note: Quarry No 01: Old Quarry site on the right bank of Kothmale Oya – 7° 03' 55"N, 80° 36' 00"E

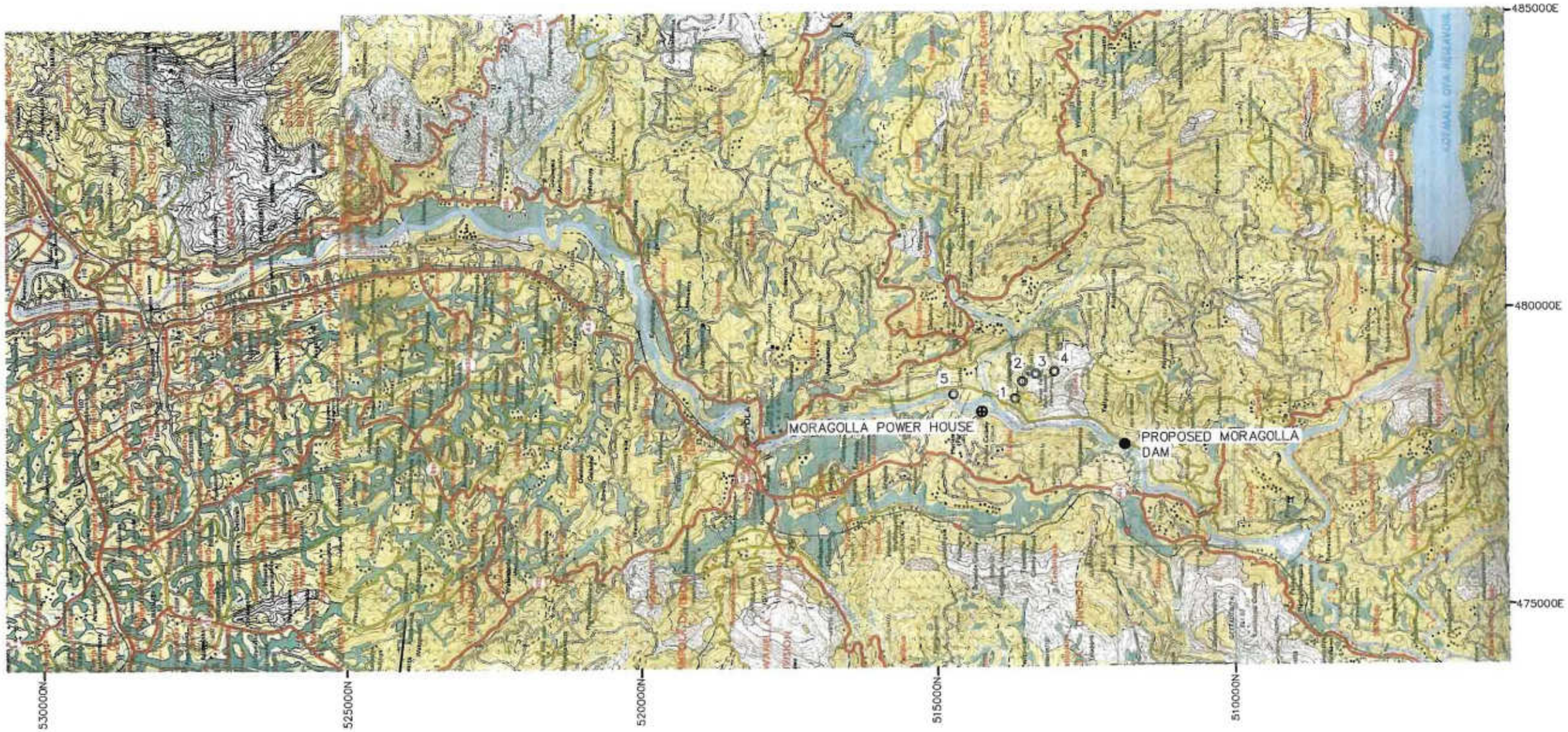
Quarry No 02: Old Quarry site on the left bank of Kothmale Oya – 7° 03' 21"N, 80° 35' 54"E

Quarry No 03: Existing Quarry site along Nawalapitiya- Thalawakele Road – 7° 02' 10"N, 80° 33' 33"E

Quarry No 04: Old Quarry site near Nuwara Elliya-Gampola Road – 7° 03' 00"N, 80° 41' 31"E

Figure 2.14 - Quarry site locations

N



SCALE - 1:80,000

LEGEND

- PROPOSED SPOIL DUMPS SITES (SITE Nos. 01 TO 05)

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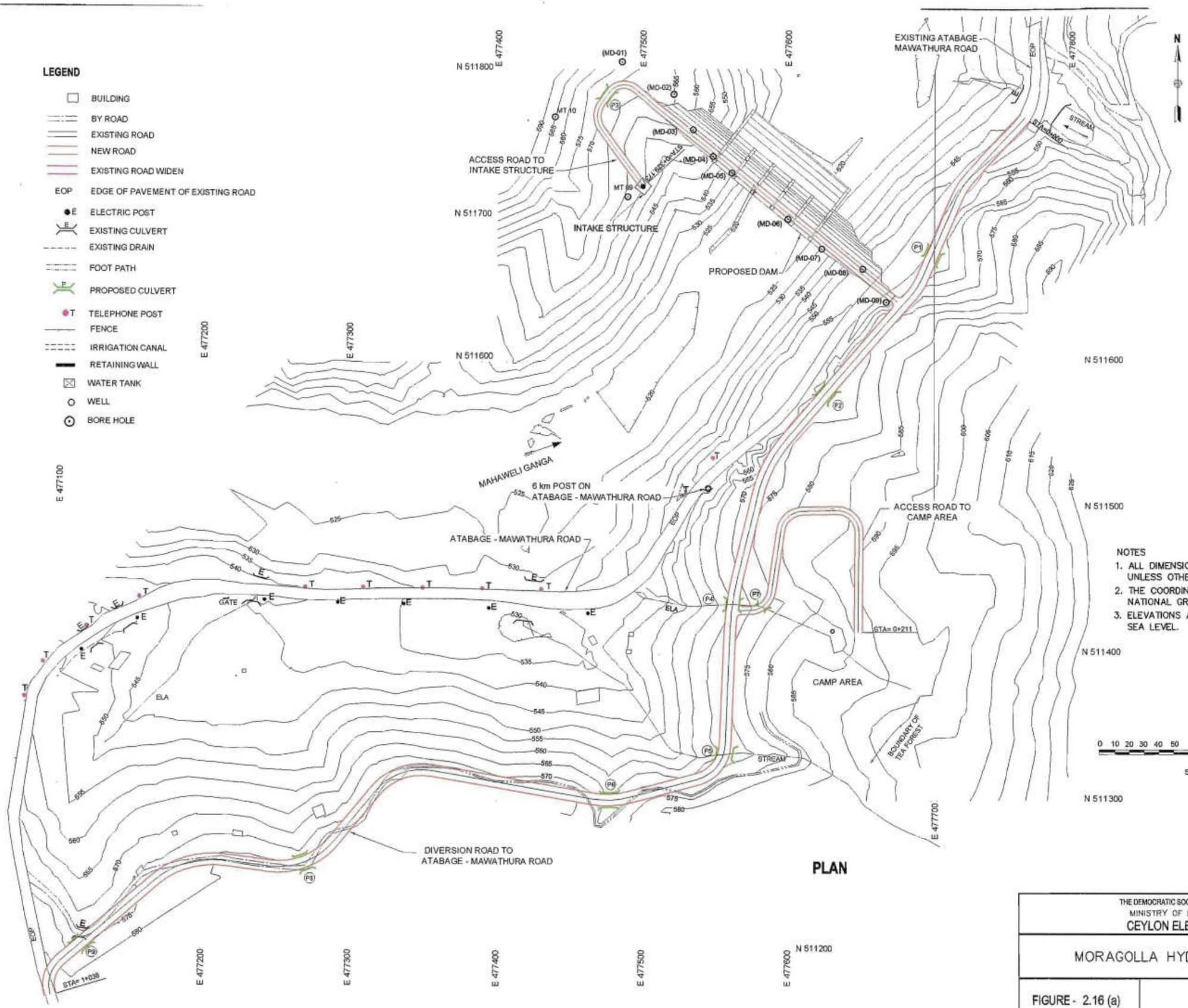
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.15 | SPOIL DUMPING SITES

LEGEND

- BUILDING
- BY ROAD
- EXISTING ROAD
- NEW ROAD
- EXISTING ROAD WIDEN
- EOP — EDGE OF PAVEMENT OF EXISTING ROAD
- E — ELECTRIC POST
- E — EXISTING CULVERT
- EXISTING DRAIN
- FOOT PATH
- P — PROPOSED CULVERT
- T — TELEPHONE POST
- FENCE
- IRRIGATION CANAL
- RETAINING WALL
- WATER TANK
- WELL
- BORE HOLE



NOTES

1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE STATED.
2. THE COORDINATE SYSTEM IS BASED ON THE NATIONAL GRID SYSTEM (GPS).
3. ELEVATIONS ARE BASED ON THE MEAN SEA LEVEL.

0 10 20 30 40 50 100 150m

SCALE- 1:2500

PLAN

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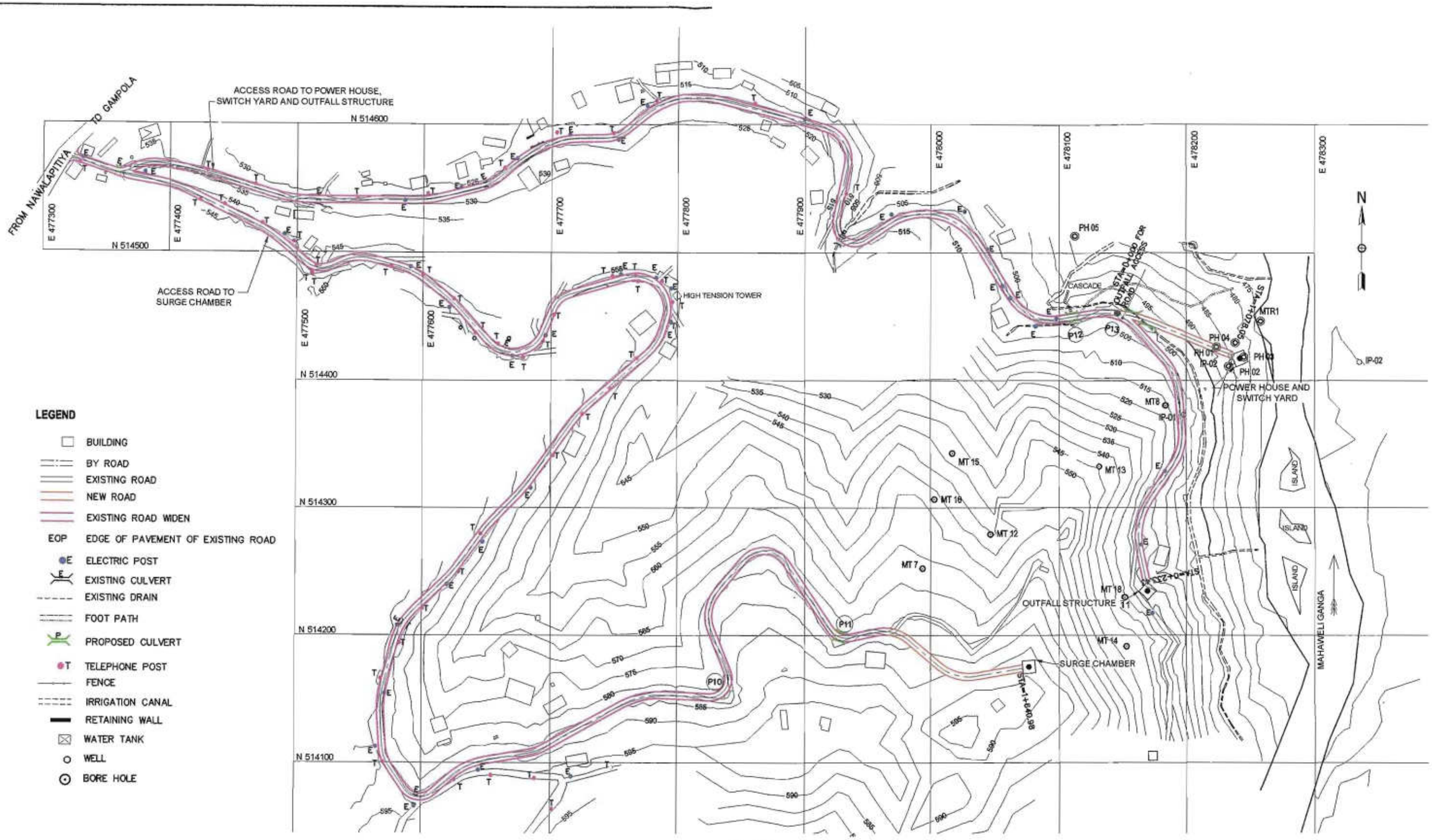
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.16 (a)	ROAD LAYOUT AT DAM SITE AREA



LEGEND

- BUILDING
- BY ROAD
- EXISTING ROAD
- NEW ROAD
- EXISTING ROAD WIDEN
- EOP — EDGE OF PAVEMENT OF EXISTING ROAD
- E — ELECTRIC POST
- EXISTING CULVERT
- EXISTING DRAIN
- FOOT PATH
- PROPOSED CULVERT
- T — TELEPHONE POST
- FENCE
- IRRIGATION CANAL
- RETAINING WALL
- WATER TANK
- WELL
- BORE HOLE

PLAN

NOTES

1. ALL DIMENSIONS ARE IN METERS, UNLESS OTHERWISE STATED.
2. THE COORDINATE SYSTEM IS BASED ON THE NATIONAL GRID SYSTEM (GPS).
3. ELEVATIONS ARE BASED ON THE MEAN SEA LEVEL.

0 20 40 60 80 100 120 140 160 180 200m

SCALE– 1:3000

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MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.16 (b)

ROAD LAYOUT AT POWER HOUSE SITE AREA

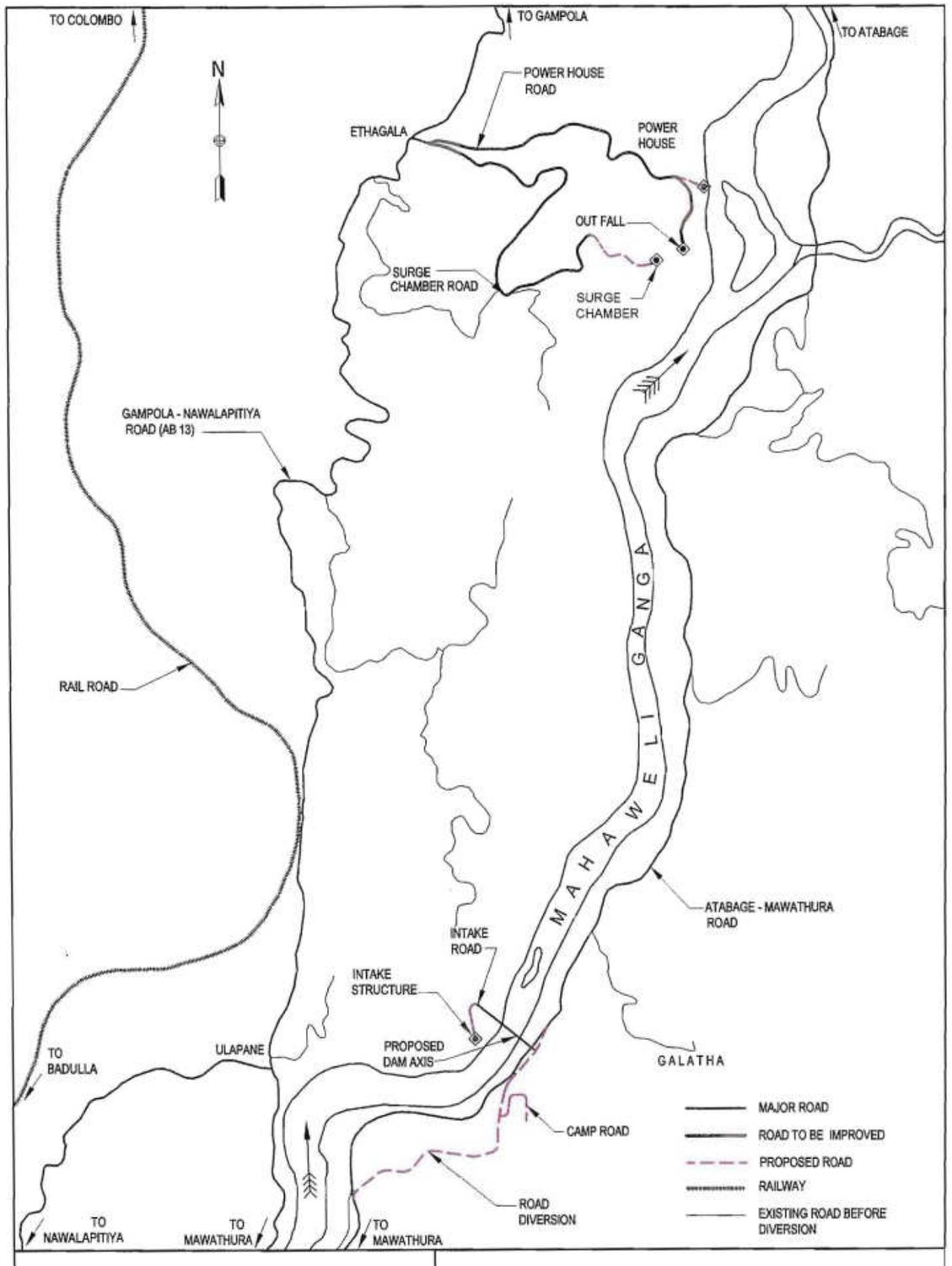
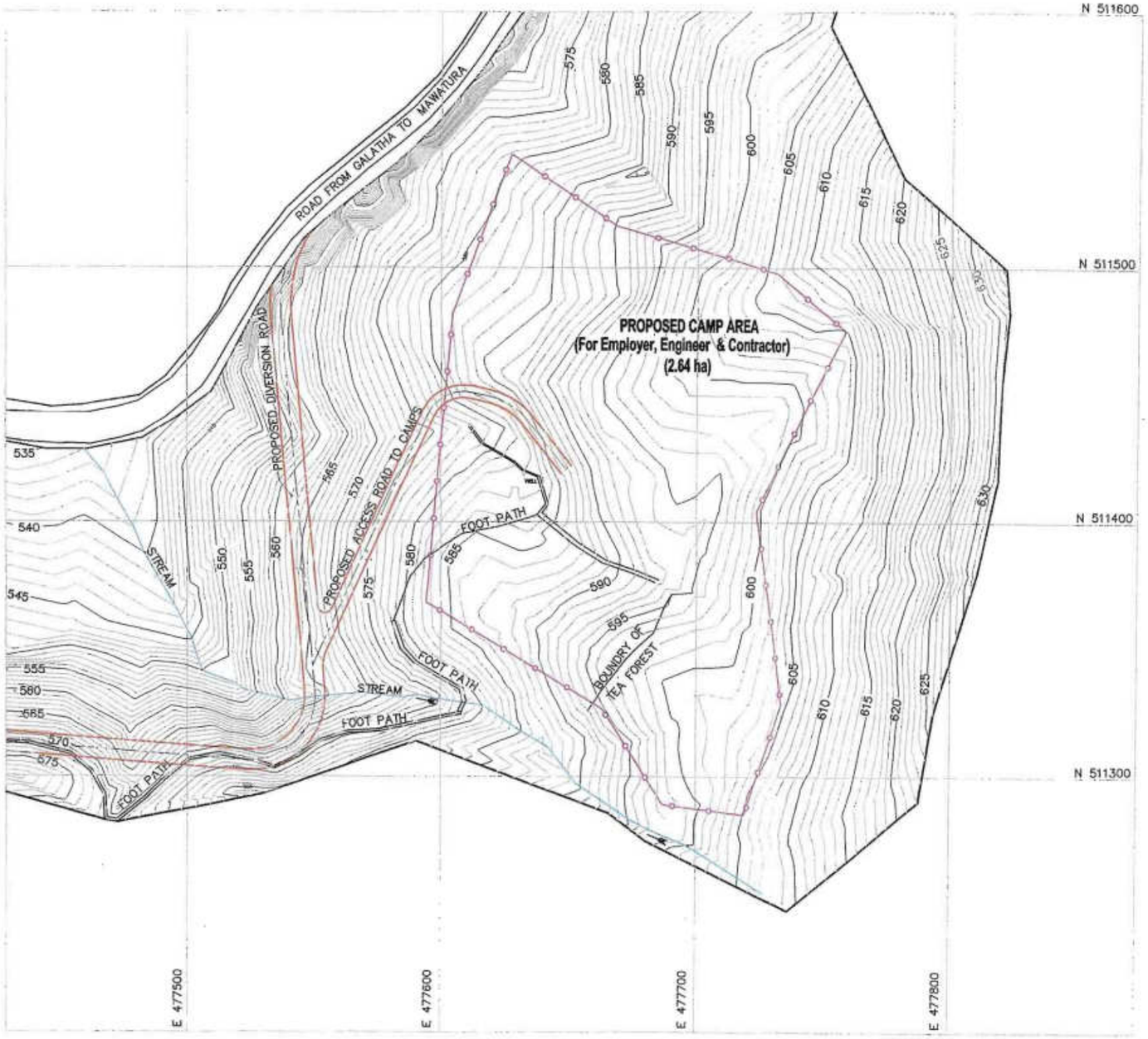


FIGURE 2.16(c)

MORAGOLLA HYDROPOWER PROJECT

ROAD LAYOUT - PROJECT AREA



NOTES:-

1. ALL CO-ORDINATES ARE W.R.T PIDURUTALAGALA 500,000N, 500,000E.
2. ALL ELEVATIONS ARE IN METERS ABOVE MEAN SEA LEVEL.

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MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.17	PROPOSED CAMP AREA

CONSTRUCTION PROGRAMME FOR THE MORAGOLLA HYDRO POWER PROJECT

ID	Task Name
1	Priperatory Works - Lot 1
2	Access Roads
3	Engineer's Camp
4	Resettlement works
5	Commencement of Main Civil Works
6	Main Civil Works - Lot 2
7	Mobilization
8	Temperory Facilities
9	Weir Construction
10	Coffer dam for 1st River diversion
11	Excavation of Left bank & river bed
12	Foundation Treatment
13	Concreting of left side
14	Coffer dam for 2nd River diversion
15	Excavation of right side
16	Foundation Treatment
17	Concreting of right side
18	Intake Facilities
19	Intake portal excavation
20	Intake concreting
21	Control house
22	Headrace tunnel
23	Portal excavation outfall
24	Headrace tunnel excavation from U/S
25	Headrace tunnel excavation from D/S
26	Tunnel invert concreting
27	Tunnel ligning concrete
28	Steel liner installation (140 m)
29	Steel liner concreting (140 m)
30	Surge chamber construction
31	Surge chamber excavation
32	Suge chamber concreting
33	Penstock Installation (185 m)
34	Preparatory works at Site
35	Installation of steel liner
36	Construction of anchor blocks and piers
37	Powerhouse Construction
38	Excavation
39	Concreting
40	Architectural works
41	Tailrace Construction
42	Excavation works
43	Lining works
44	Construction of Switch Yard
45	Excavation works
46	Concreting works
47	Hydromechanical Works - Lot 3
48	Intake Gates
49	Spillway Gates 1,2,3 & 4/embedded parts
50	Spillway Gate No.5
51	Electromechanical Works - Lot 4
52	Power House EM Works
53	Generating facilities
54	Substation facilities
55	Transmission Lines - Lot 5
56	Erection of transmission lines
57	Completion of Construction Works
58	Testing and Commissioning

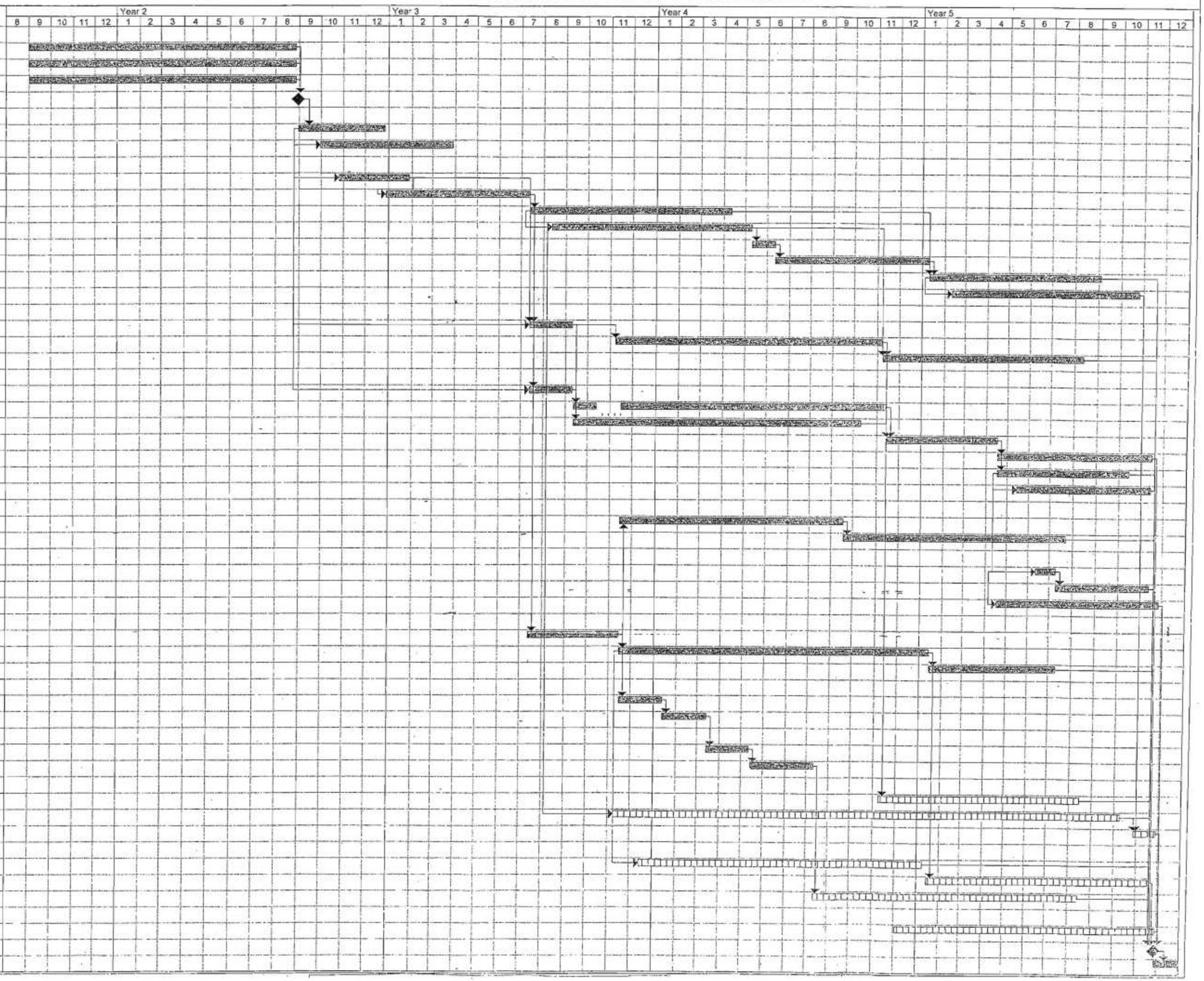
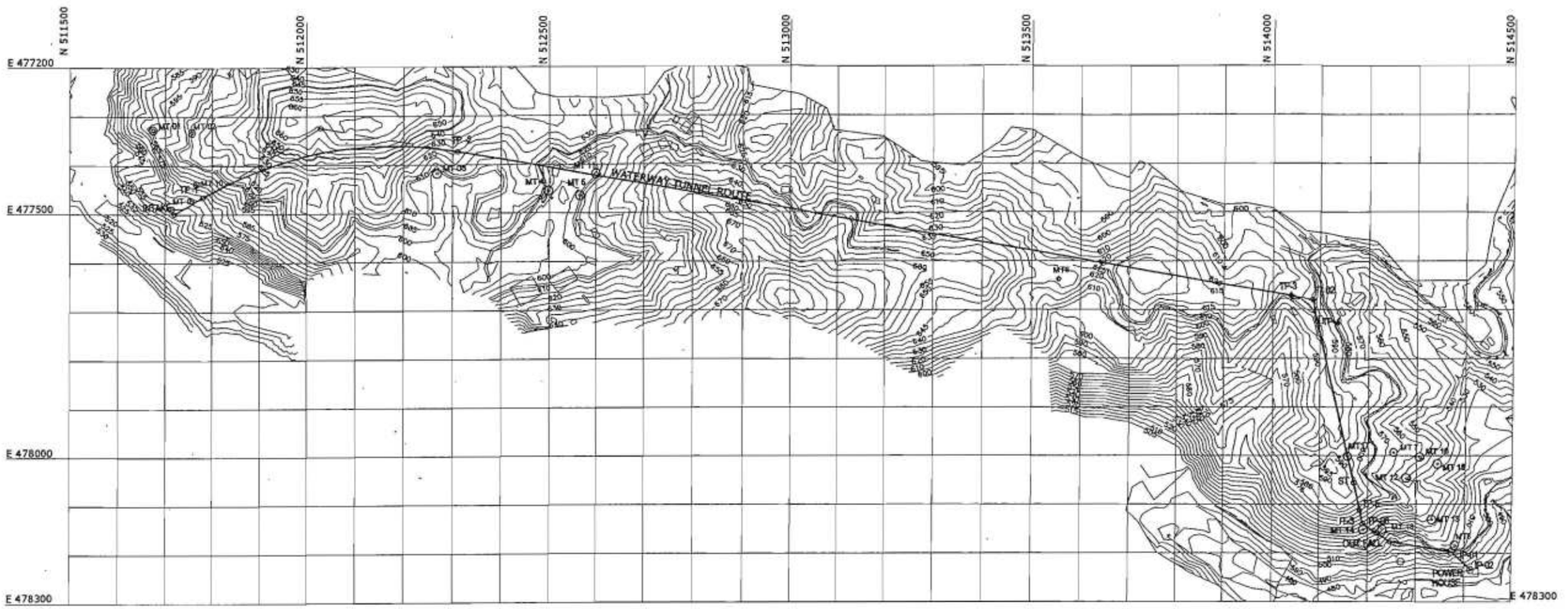
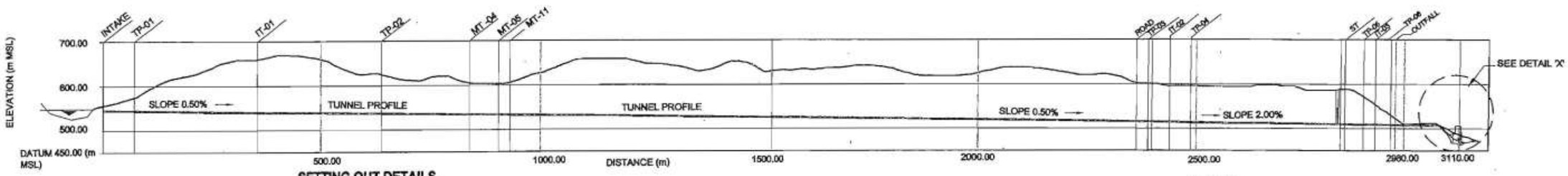


FIGURE 2.18 CONSTRUCTION PROGRAMME



PLAN

SCALE:-1:10,000

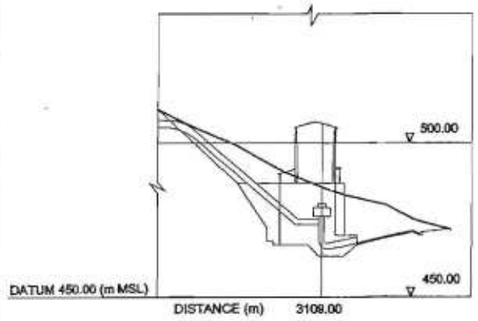


SETTING OUT DETAILS

POINT	NORTHING	EASTING	RADIUS (m)	STATION (m)	C/L ELEVATION (masl)
Intake	511,720.000	477,500.000		0.000	
End of Transition	-	-	-	30.000	528.250
TP-01	511,781.612	477,465.219	-	70.751	Uniform Gradient of 0.50%
IT-01	512,030.000	477,325.000	800.000	-	
TP-02	512,311.070	477,373.555	-	641.217	
TP-03	514,039.049	477,672.062	-	2394.722	
IT-02	514,085.000	477,680.000	70.000	-	
TP-04	514,095.377	477,725.463	-	2489.117	
ST	514,171.236	478,057.798	-	2830.000	514.250
TP-05	514,183.793	478,112.806	-	2851.963	Gradient Varies 0.1%-3.12%
IT-03	514,190.000	478,140.000	70.000	-	
TP-06	514,213.209	478,155.472	-	2905.049	
OUTFALL	514,245.536	478,177.024	-	2960.000	510.000
IP1	514,373.000	478,198.000	10.000	3045.457	505.820
IP2	514,414.500	478,235.500	10.000	3150.000	480.000
PH	514,414.524	478,235.485		3167.400	470.170

LONGITUDINAL PROFILE

SCALE:-1:10,000



DETAIL AT 'X'

SCALE:-1:2,000

0 25 50 75 100m

SCALE- 1:2000

0 100 200 300 400 500m

SCALE- 1:10,000

NOTES

1. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL.
2. ALL CO-ORDINATES ARE W.R.T. NATIONAL GRID (GPS).

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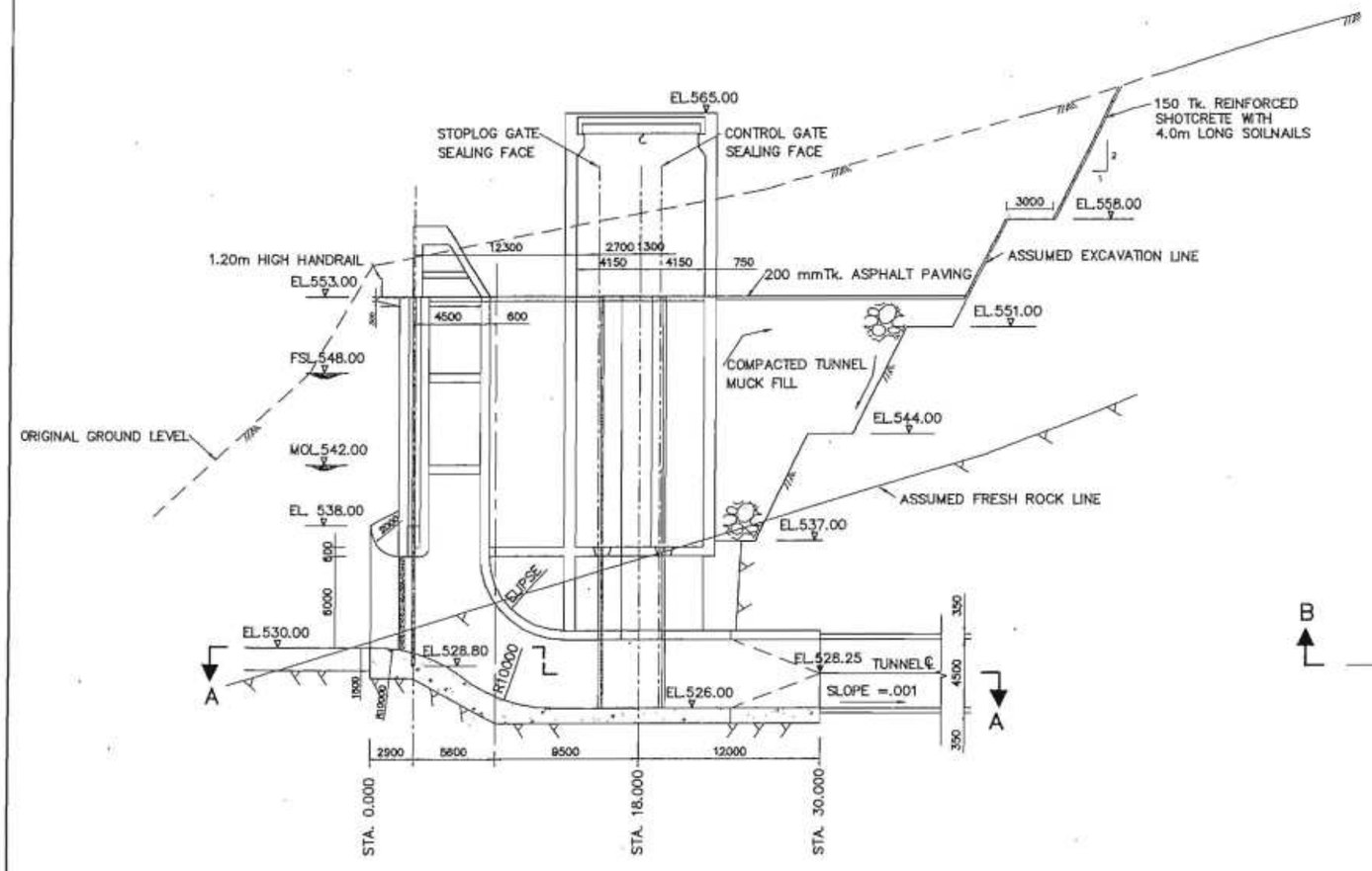
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

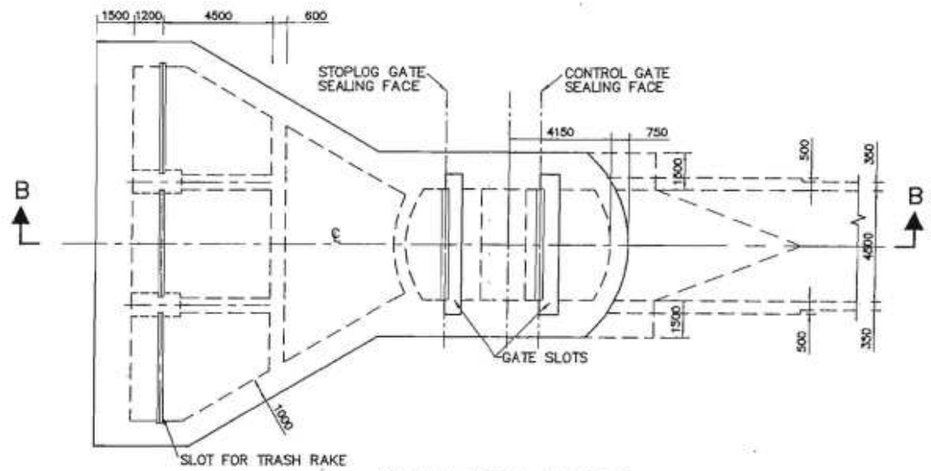
FIGURE - 2.19

WATERWAY-PLAN AND PROFILE



SECTION B–B

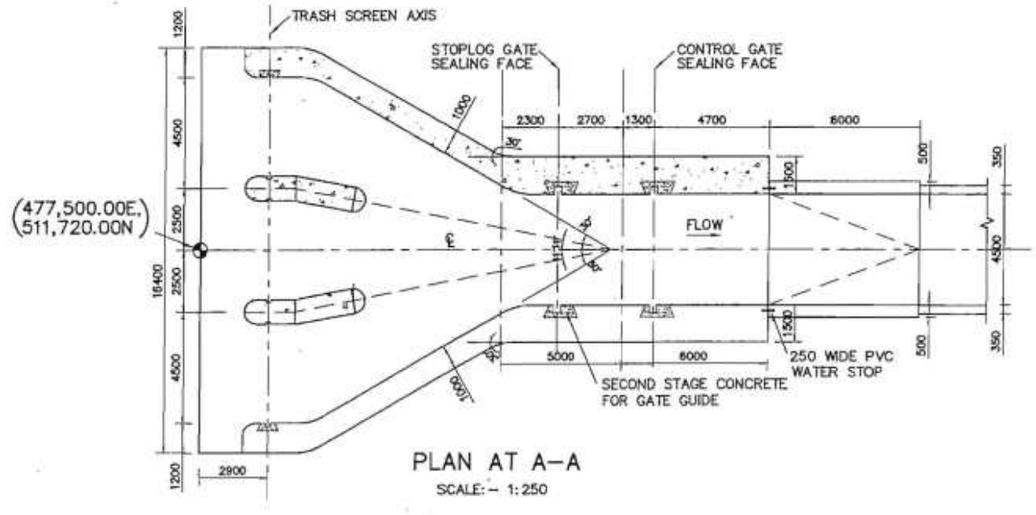
SCALE:– 1:400



PLAN AT EL. 553.00

SCALE:– 1:250

SCALE:– 1:250



PLAN AT A–A

SCALE:– 1:250

NOTES:–

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES UNLESS OTHERWISE SHOWN.

0 2.5 5 7.5 10m

SCALE– 1:250

0 5 10 15 20m

SCALE– 1:400

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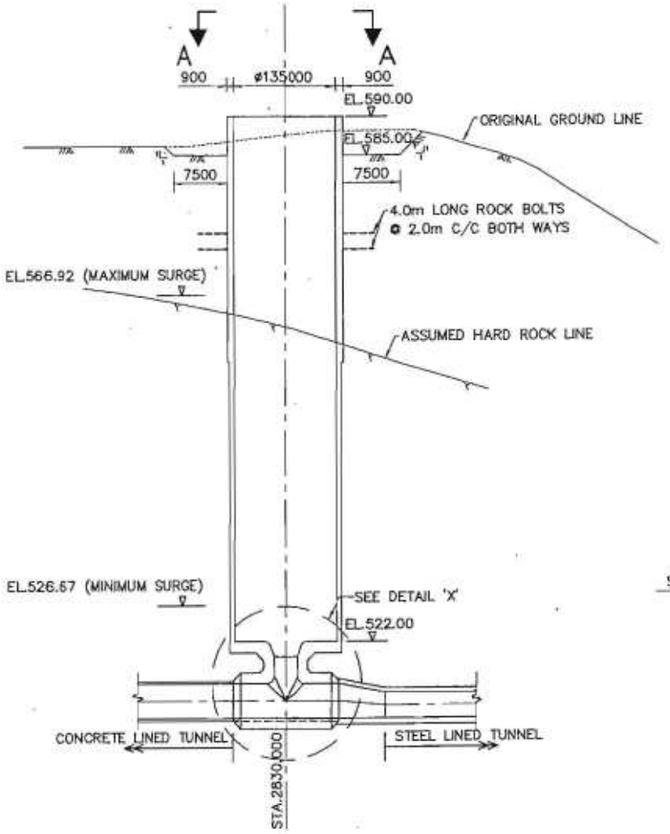
MORAGOLLA HYDROPOWER PROJECT

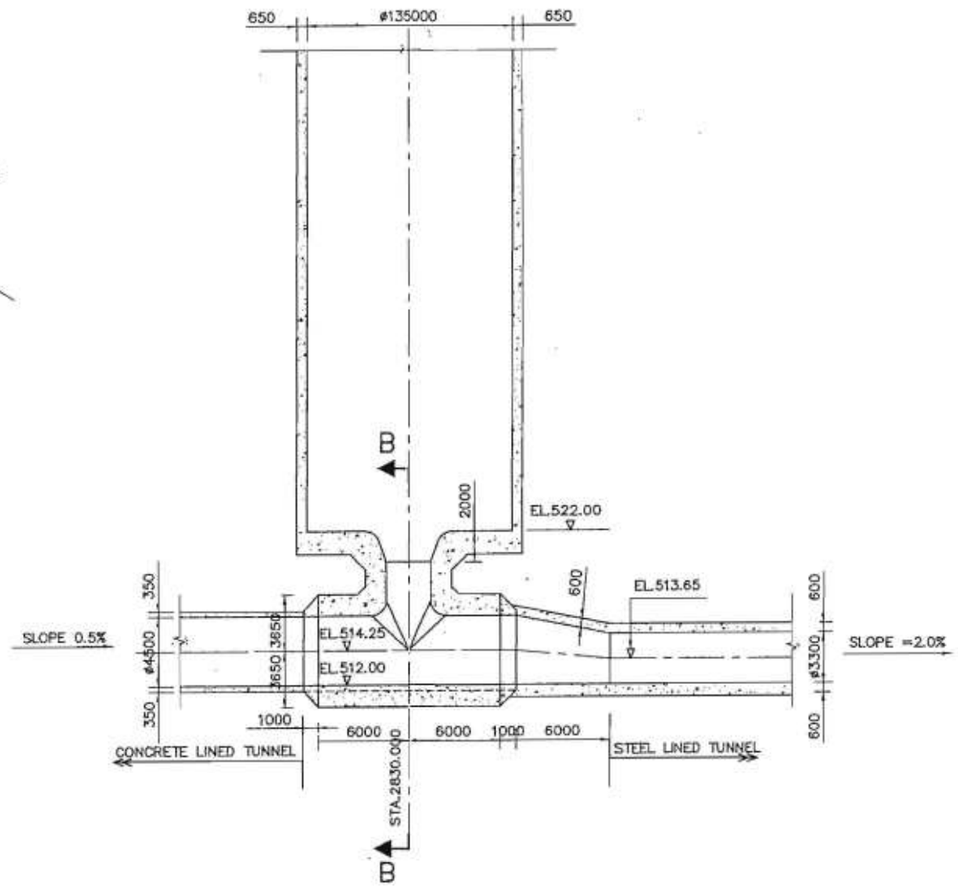
FIGURE - 2.20

WATERWAY
INTAKE-PLAN AND SECTIONS



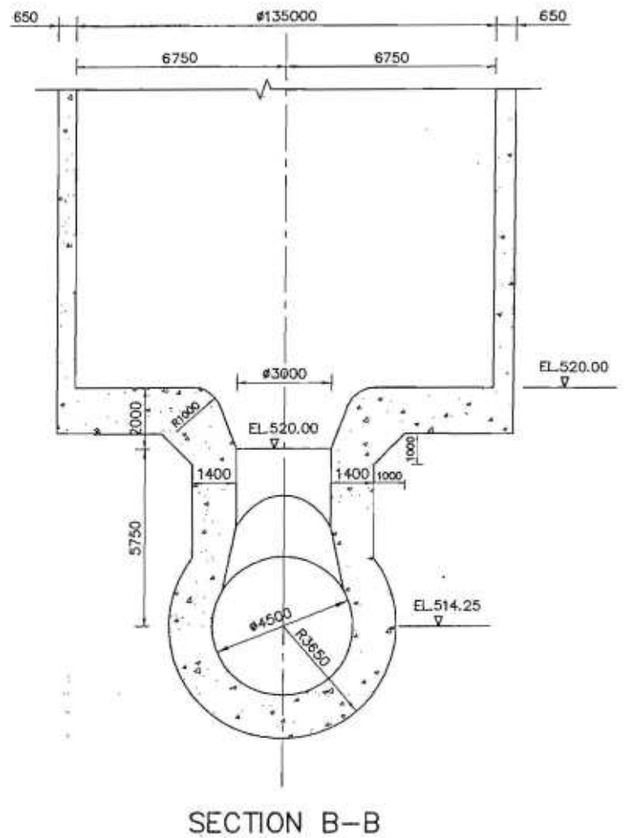
SECTION C–C

SCALE:– 1:800



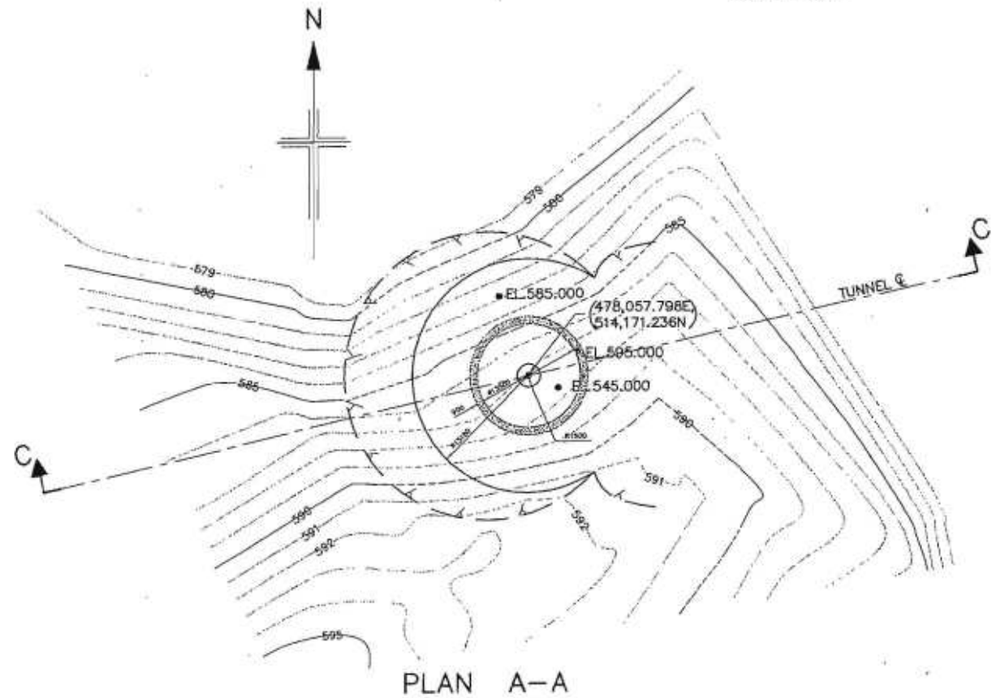
DETAIL AT X

SCALE:– 1:400



SECTION B–B

SCALE:– 1:200



PLAN A–A

SCALE:– 1:800

NOTES:–

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES UNLESS OTHERWISE SHOWN.

0 2m 4m 6m 8m 10m

SCALE:– 1:200

0 5m 10m 15m 20m

SCALE:– 1:400

0 10m 20m 30m 40m

SCALE:– 1:800.

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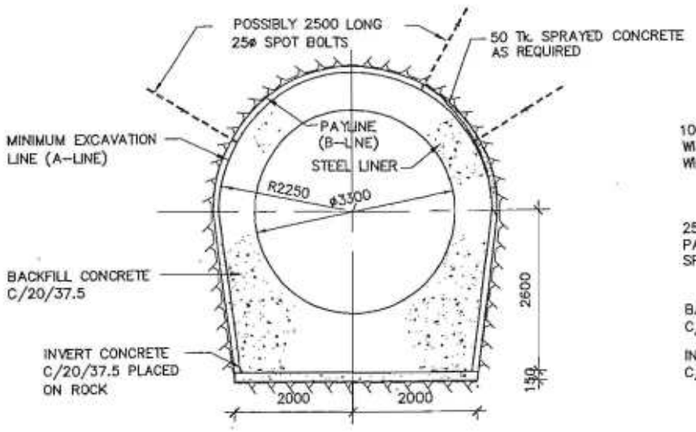
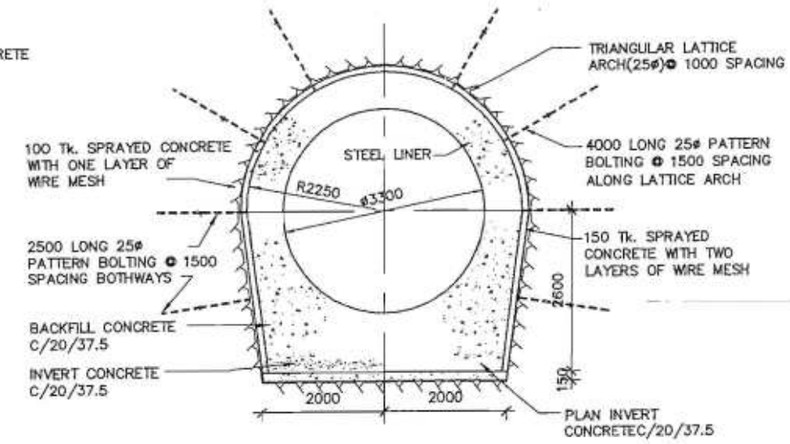
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.21	WATERWAY-SURGE SHAFT



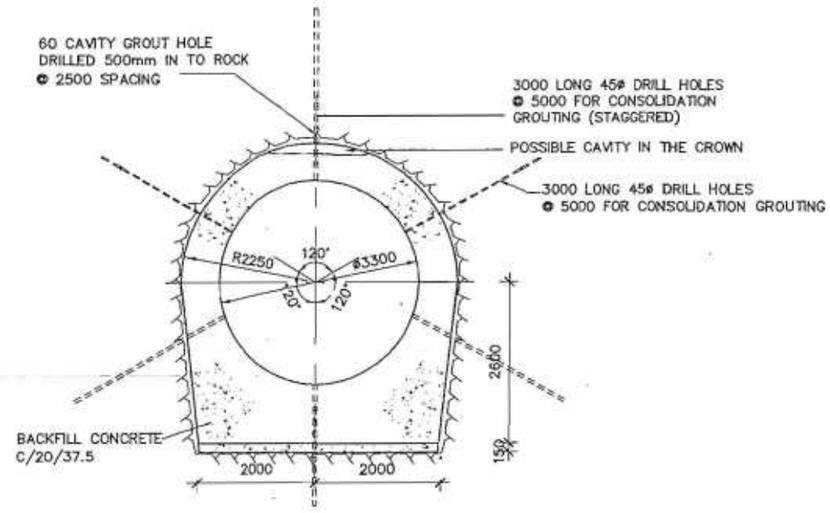
CLASS 1 CLASS 11

SCALE:-1:100



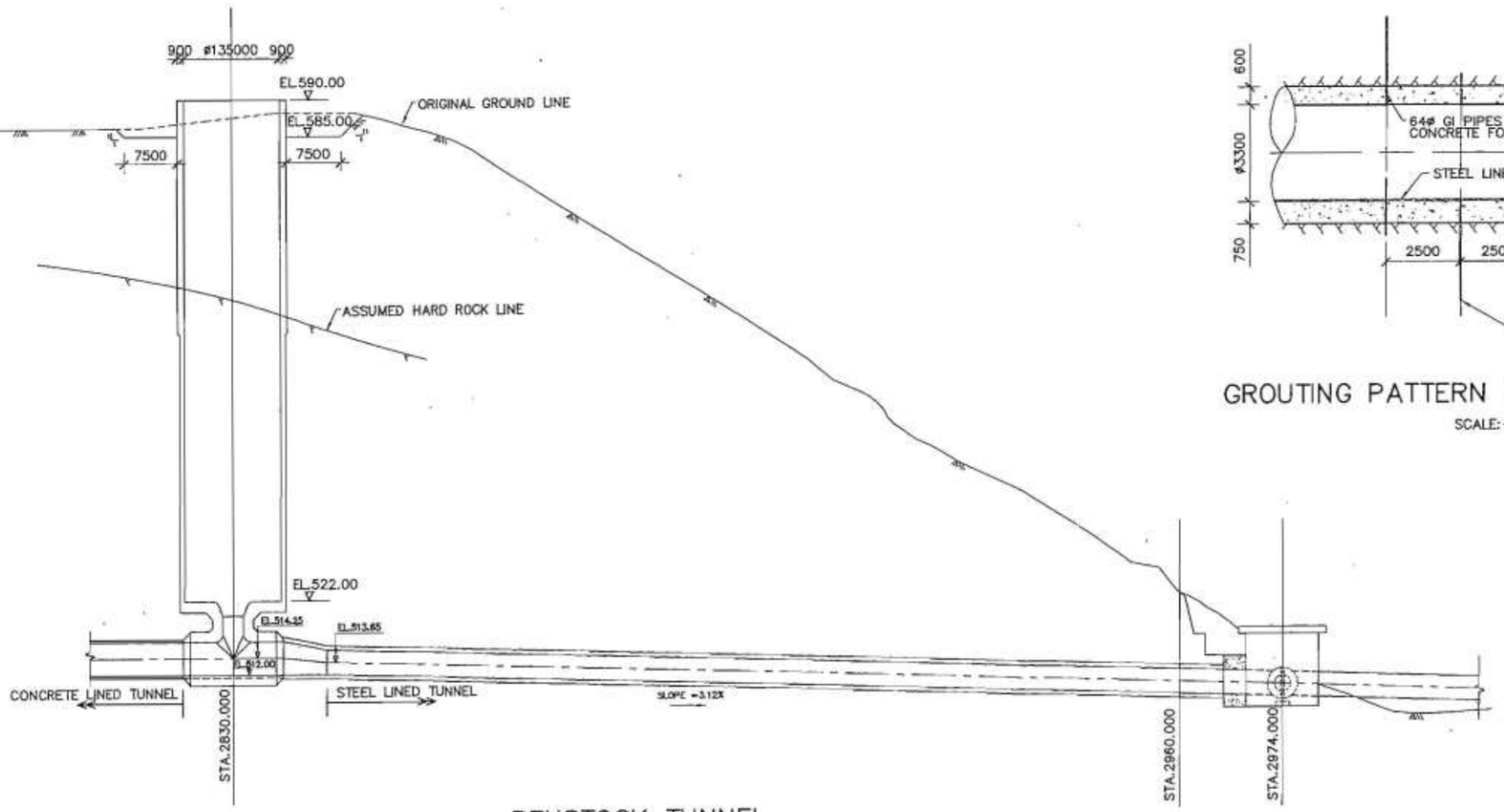
CLASS 111 CLASS 1V

SCALE:-1:100



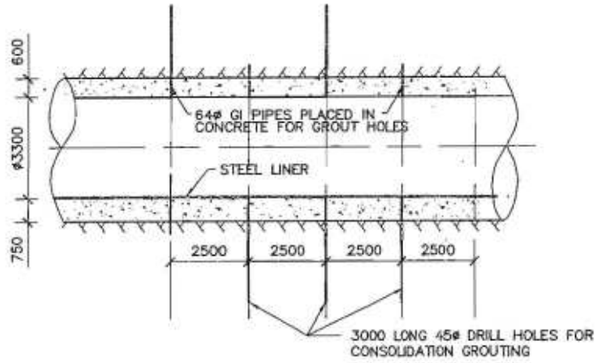
CONCRETE AND GROUTING

SCALE:-1:100



PENSTOCK TUNNEL
LONGITUDINAL PROFILE

SCALE:- 1:800



GROUTING PATTERN OF WATERWAY TUNNEL

SCALE:-1:200

NOTES:-

1. ALL DIMENSIONS ARE IN MILLIMETRES AND ALL LEVELS ARE IN METRES UNLESS OTHERWISE SHOWN.
2. GROUTING SEQUENCE
   - 2.1 CONTACT GROUTING BETWEEN STEEL LINING AND CONCRETE.
   - 2.2 CAVITY GROUTING BETWEEN CONCRETE AND ROCK SURFACE (CROWN ONLY).
   - 2.3 CONSOLIDATION GROUTING.

0 1m 2m 3m 4m
SCALE:- 1:100

0 2m 4m 6m 8m 10m
SCALE:- 1:200

0 10 20 30 40m
SCALE:- 1:800

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MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.22

WATERWAY PENSTOCK TUNNEL



PLAN

SCALE:– 1:750

NOTES:-

1. ALL ELEVATIONS ARE IN METRES W.R.T MEAN SEA LEVEL.
2. ALL CO-ORDINATTES ARE IN METRES W.R.T DATUM 300,000E,300,000N PIDURUTALAGALA.
2. CO-ORDINATES OF PI (478,235.485E,514,414.524N).

0 10 20 30 40m

SCALE– 1:750

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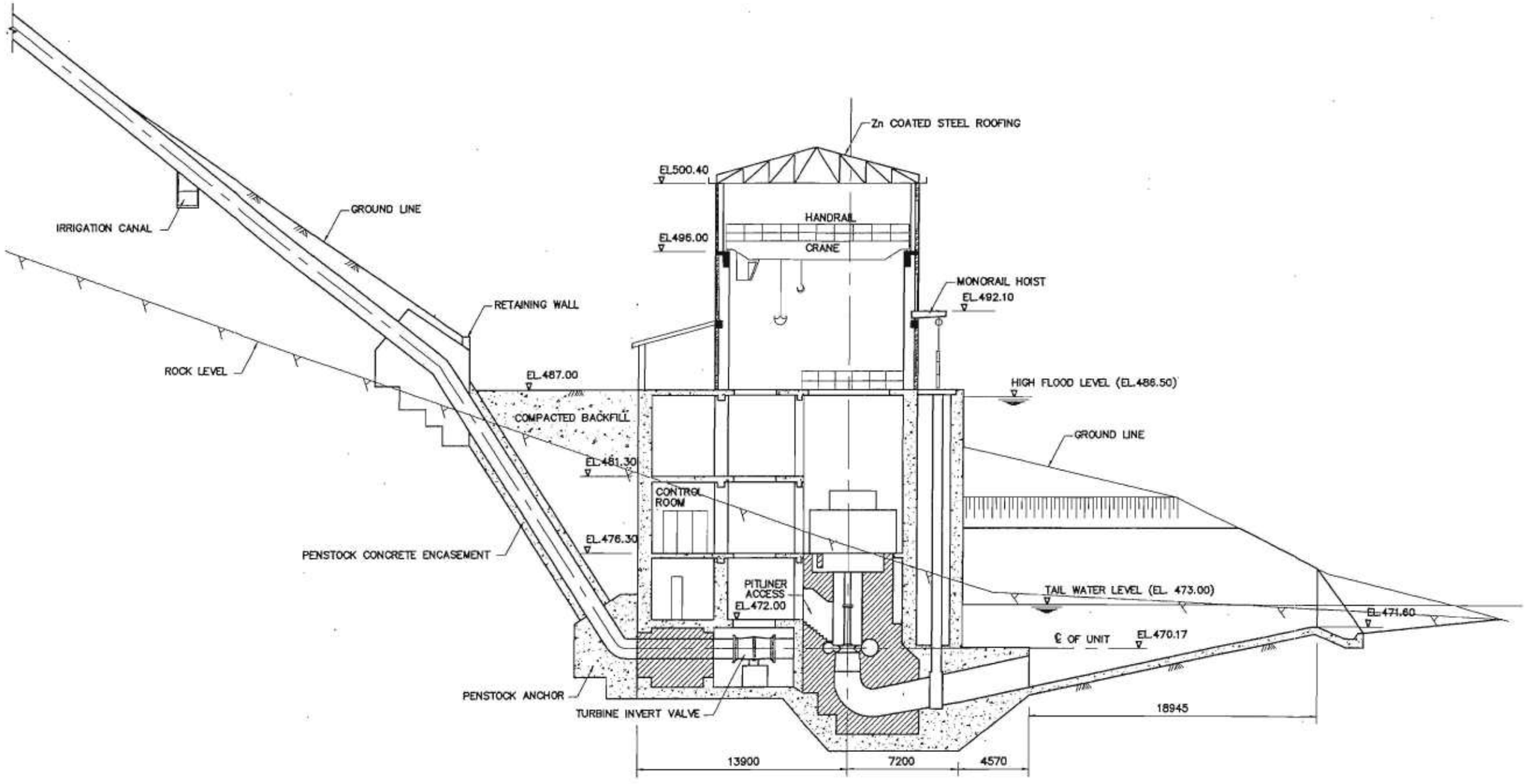
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.23

LAYOUT OF POWER HOUSE AND SWITCH YARD



SECTIONAL ELEVATION

SCALE:- 1: 300

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL.

0 3 6 9 12 15m

SCALE:- 1:300

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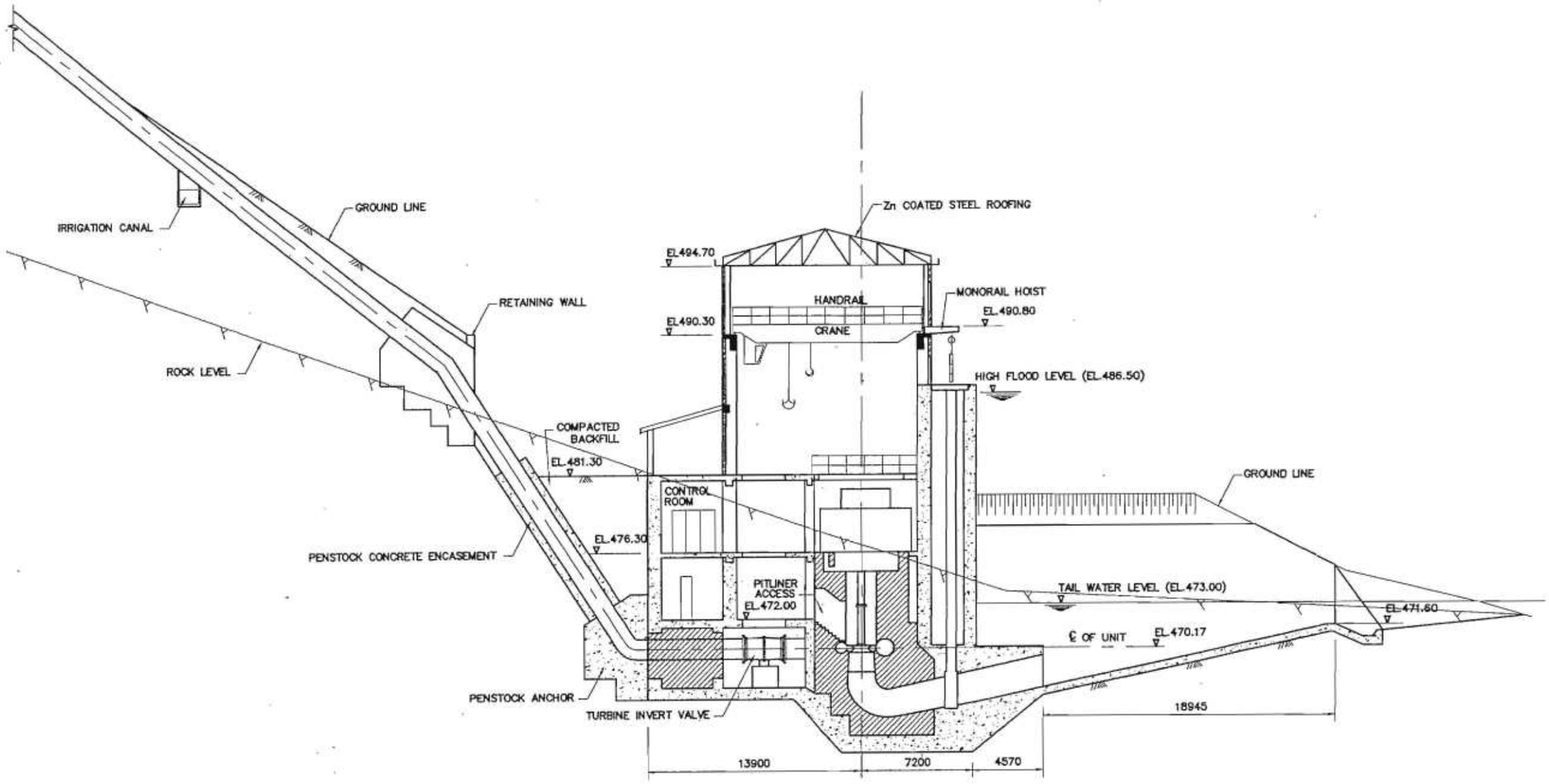
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.24 a	POWER HOUSE SECTIONAL ELEVATION



SECTIONAL ELEVATION

SCALE:-1:300

NOTES

1. ALL DIMENSIONS ARE IN MILLIMETRES.
2. ALL ELEVATIONS ARE IN METRES ABOVE MEAN SEA LEVEL.

0 3 6 9 12 15m

SCALE:- 1:300

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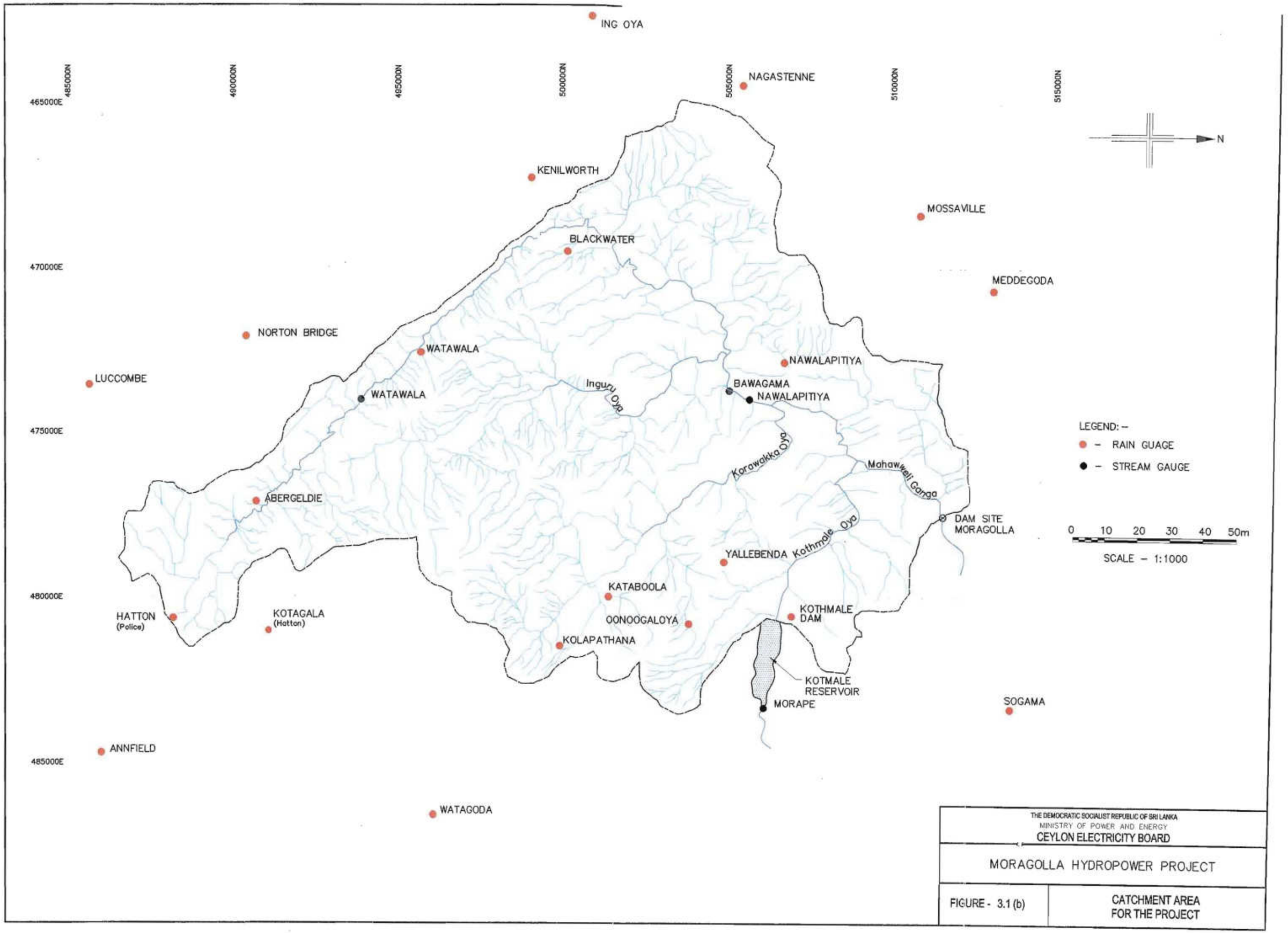
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 2.24 b

POWER HOUSE
SECTIONAL ELEVATION
(ALTERNATIVE DESIGN)



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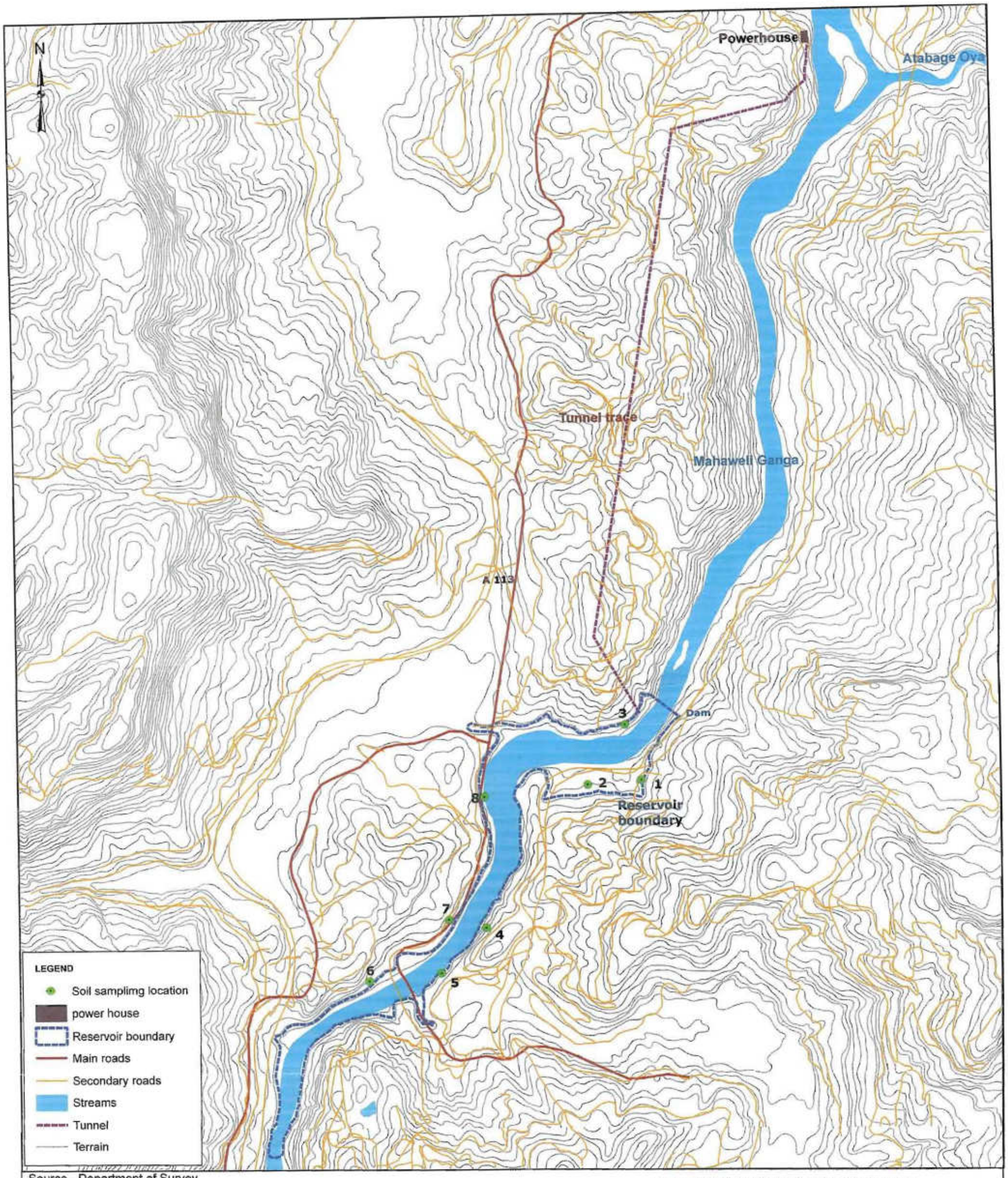
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3.1 (b) | CATCHMENT AREA FOR THE PROJECT



Source - Department of Survey

Details of Soil Sampling		
Loc. No	Easting	Northing
1	477503	511396
2	477286	511379
3	477438	511621
4	476873	510807
5	476691	510622
6	476401	510591
7	476724	510841
8	476871	511335

0.4 0.2 0 0.4 Kilometers

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MORAGOLLA HYDROPOWER PROJECT

FIGURE:3.3(a) DESCRIPTION:SOIL SAMPLE TESTING LOCATION

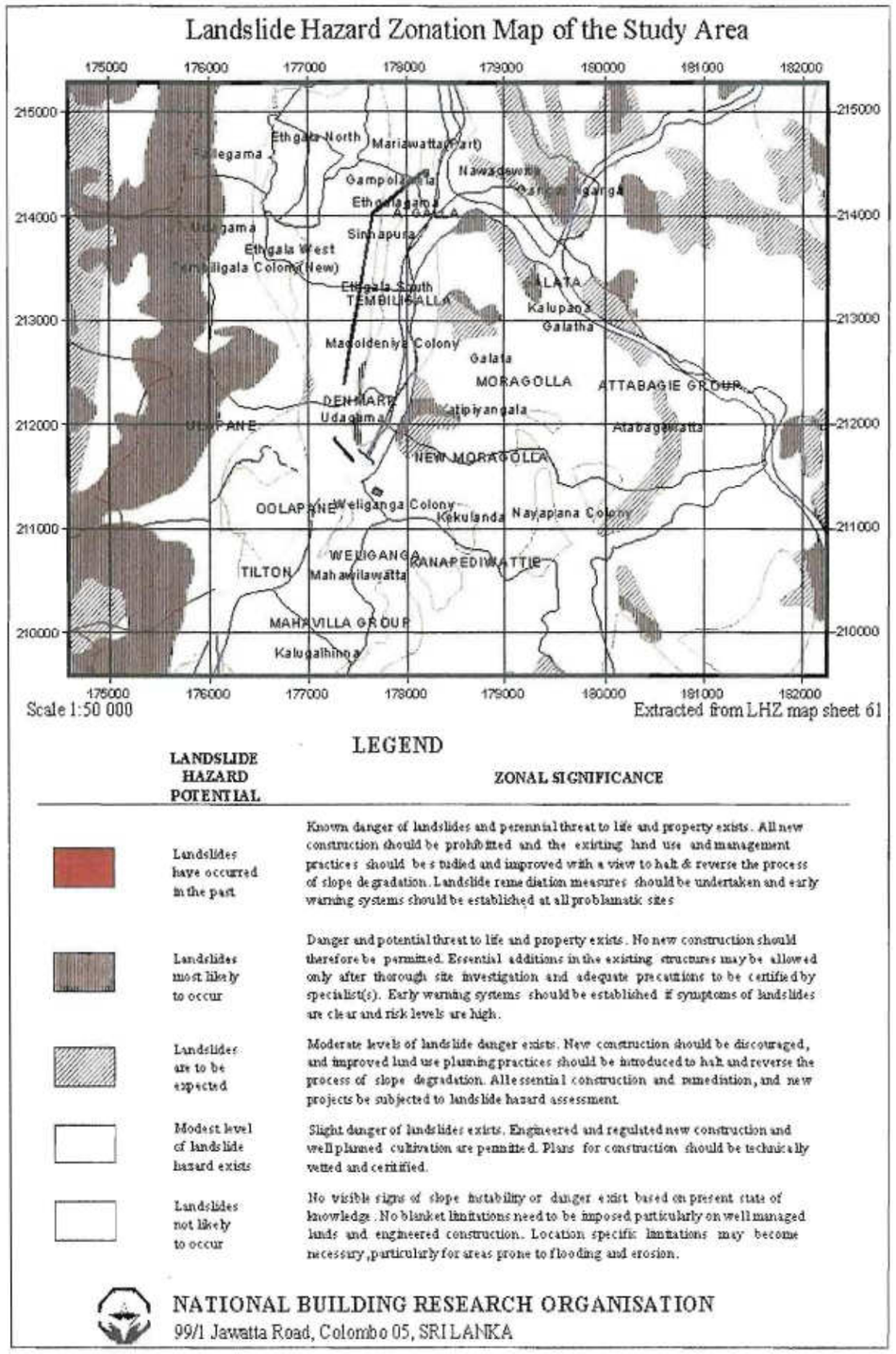


Figure 3.2 Landslide Hazard Zonation Map for the Project Area

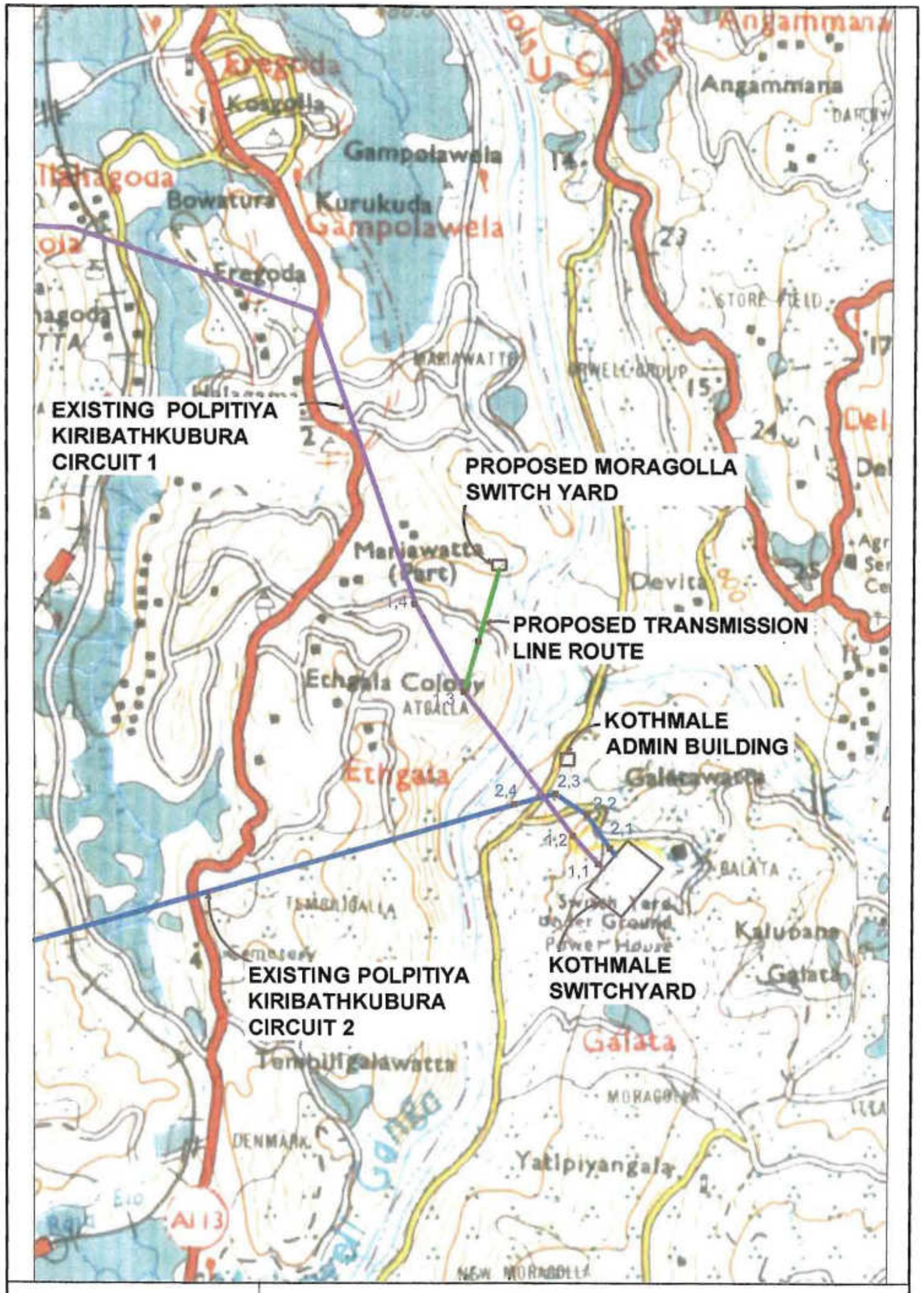
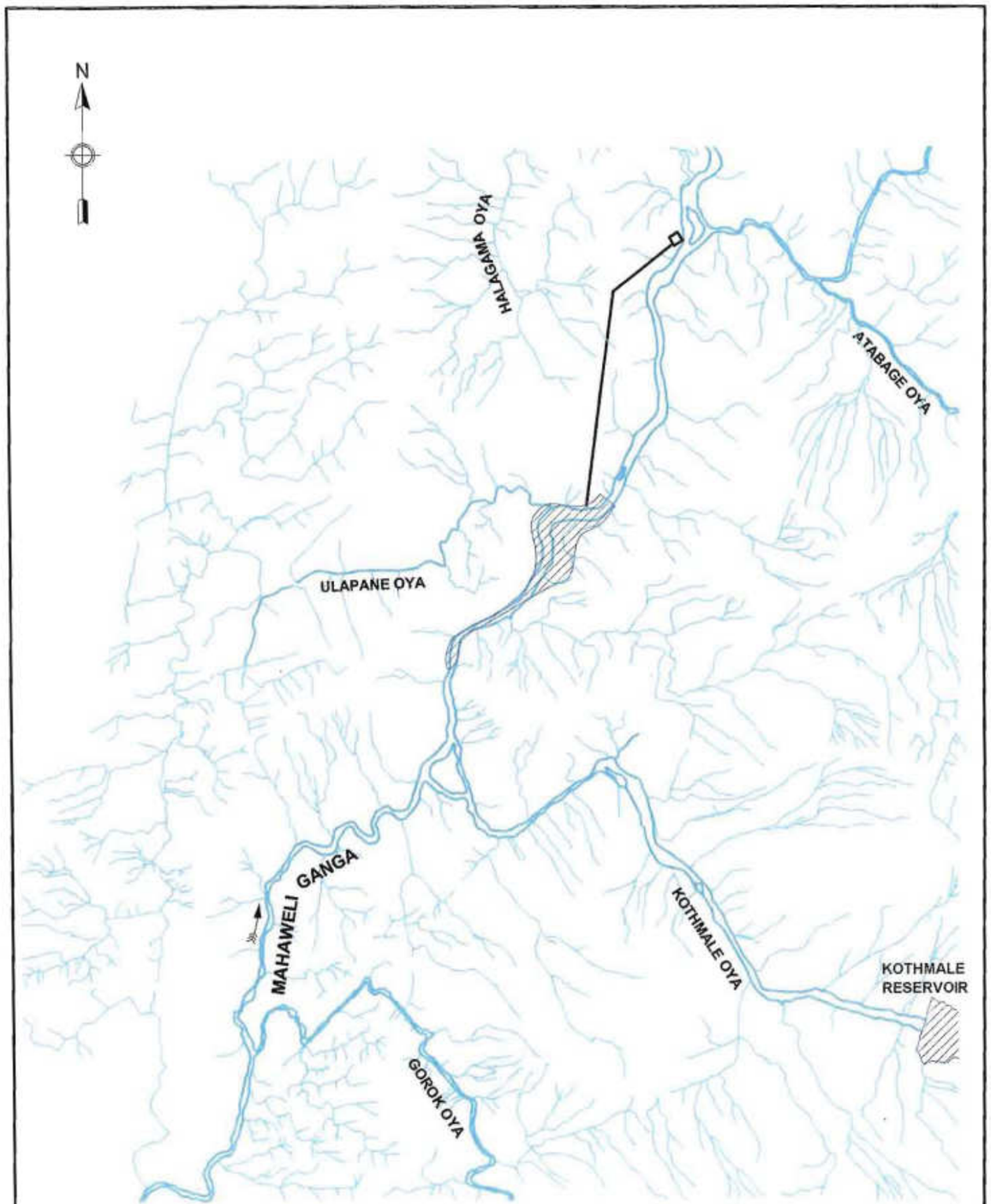
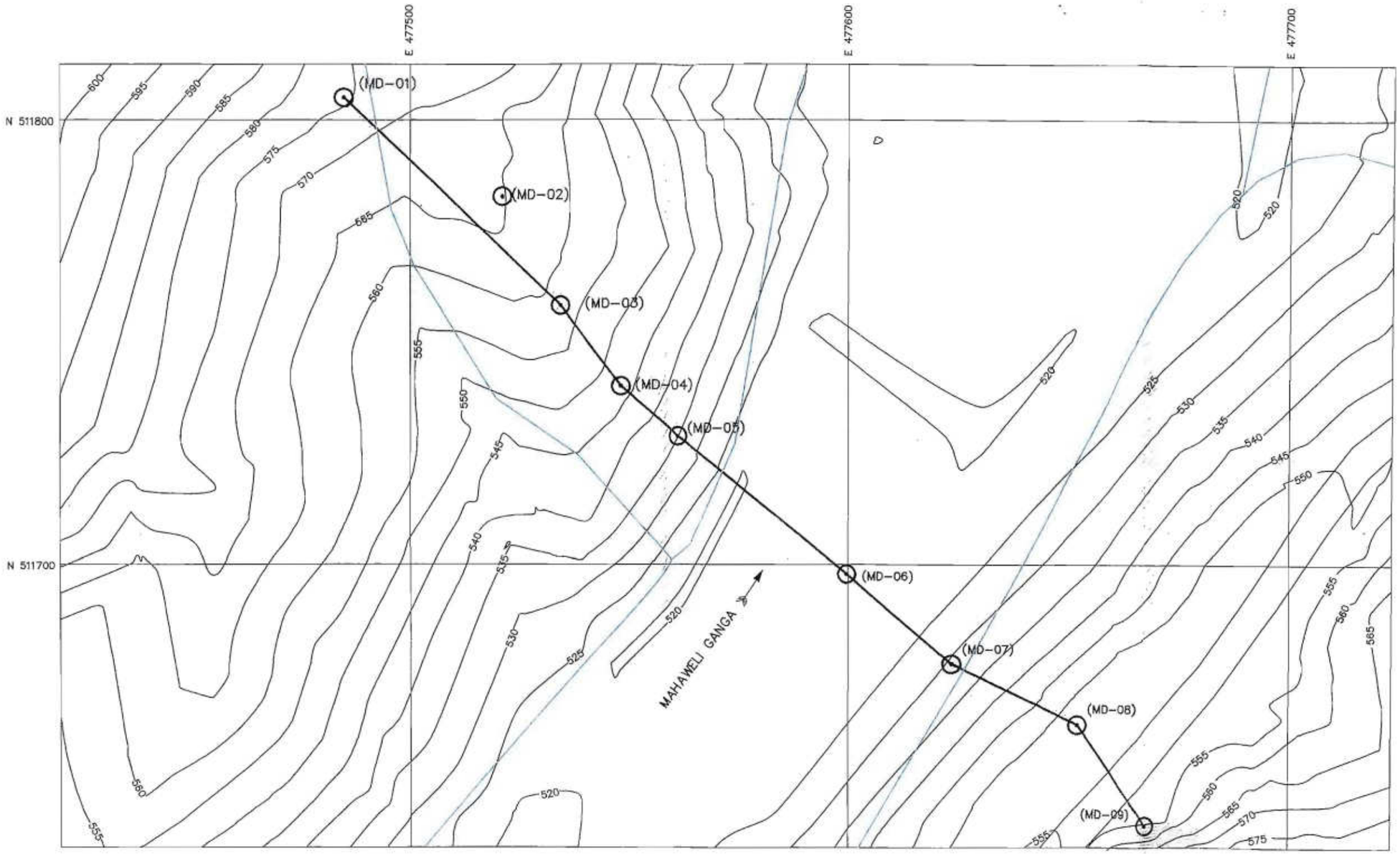


FIG 2.25	PROPOSED TRANSMISSION LINE FROM MORAGOLLA SWITCHYARD SCALE 1:20,000



SCALE: – 1:50,000

FIGURE 3.1 (a)	MORAGOLLA HYDROPOWER PROJECT **DRAINAGE PATTERN OF THE PROJECT AREA**



BORE HOLE LOCATIONS AT THE DAM SITE

SCALE: - 1:1000

0 10 20 30 40 50m

SCALE: - 1:1000

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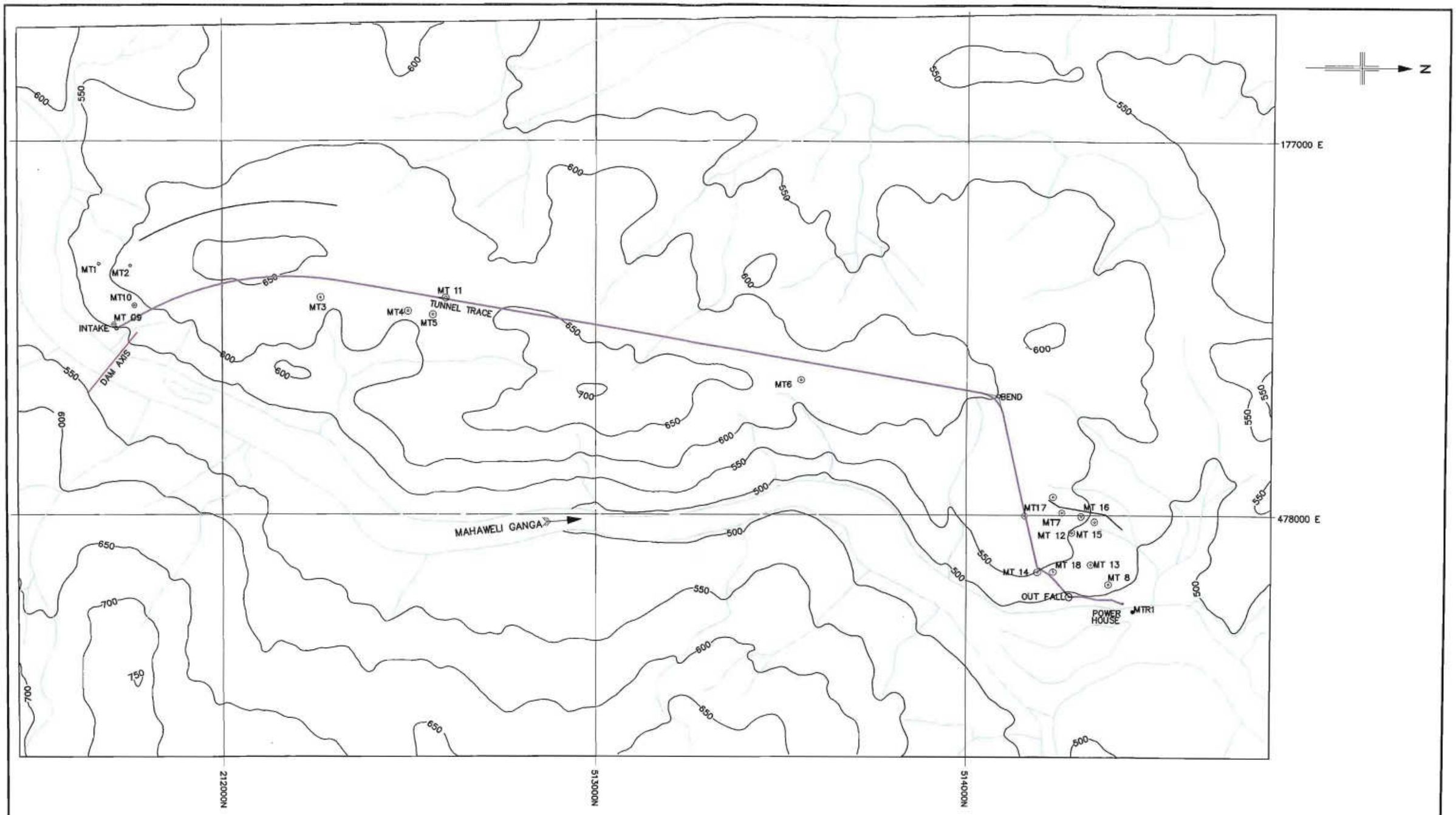
MORAGOLLA HYDROPOWER PROJECT	
FIGURE - 3.3 (b)-1	. BORE HOLE TESTING LOCATIONS



BORE HOLE LOCATIONS ALONG THE TUNNEL

SCALE: – 1: 10,000

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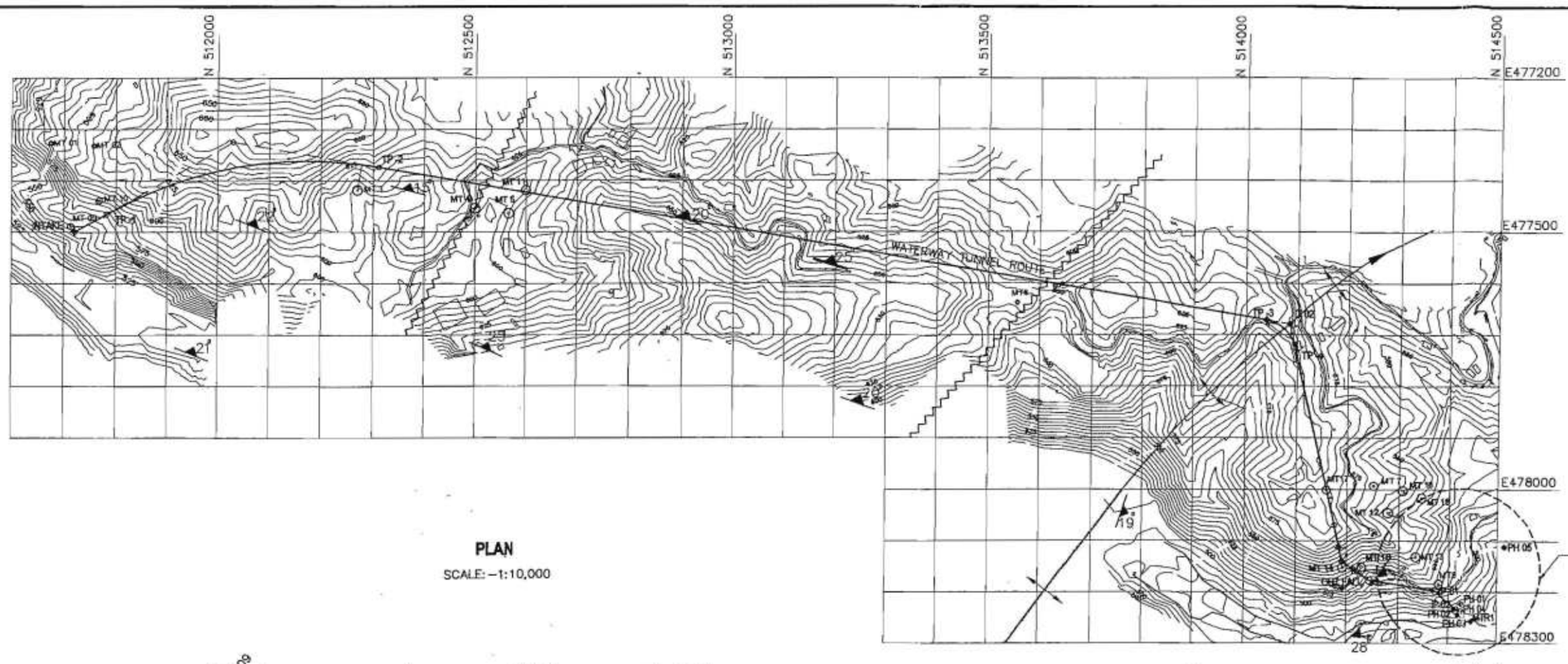
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

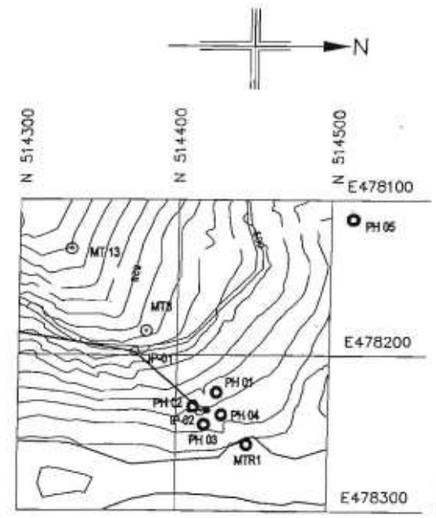
MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3.3 (b)-2	. BORE HOLE TESTING LOCATIONS



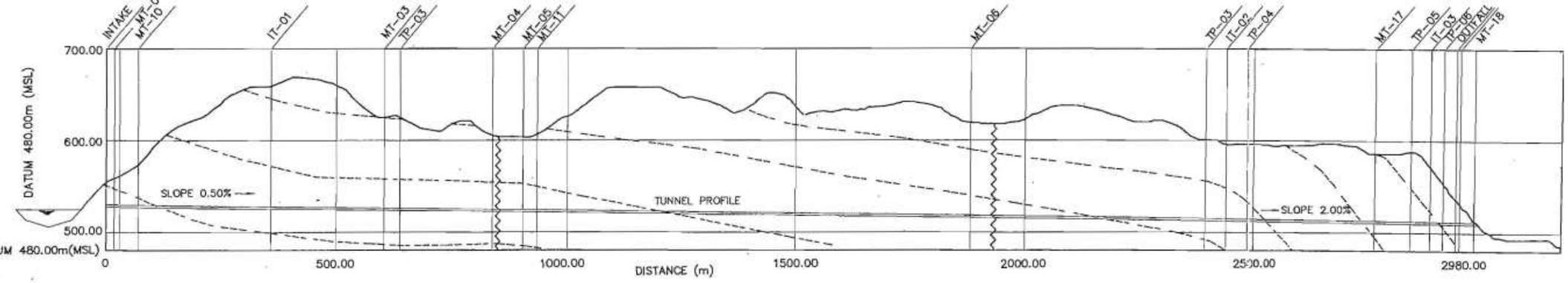
PLAN

SCALE: – 1:10,000



DETAIL AT 'A'

SCALE: – 1: 4,000



ORIENTATION	330°	010									068	030
(CSIR CLASSIFICATION ADOPTED IN PROJECT)	1V+111	1+11	111	1V	111	1+11	111	1V	111	1+11		111+1V
SECTION LENGTH (M)	100	600	175	50	175	800	100	50	100	730		100

ROCK MASS CLASS	LENGTH OF SECTION	RELATIVE LENGTH
1+11	600+800+730=2130	71
111	350+200=550	19
111+1V	100+100=200	7
1V	50+50=100	3
	TOTAL LENGTH=2980	100

LONGITUDINAL PROFILE

SCALE: – VERTICAL –1: 5,000
HORZONTAL – 1: 10,000

LEGEND

- 30° FOLIATION, DIP IN DIGREES
- FOLIATION TREND LINES (IN SECTIONS)
- PHOTO LINEAMENT
- ANTICLINAL AXIS
- DRILL HOLE

0 40 80 120 160 200m
SCALE: – 1: 4,000

0 50 100 150 200 250m
SCALE: – 1: 5,000

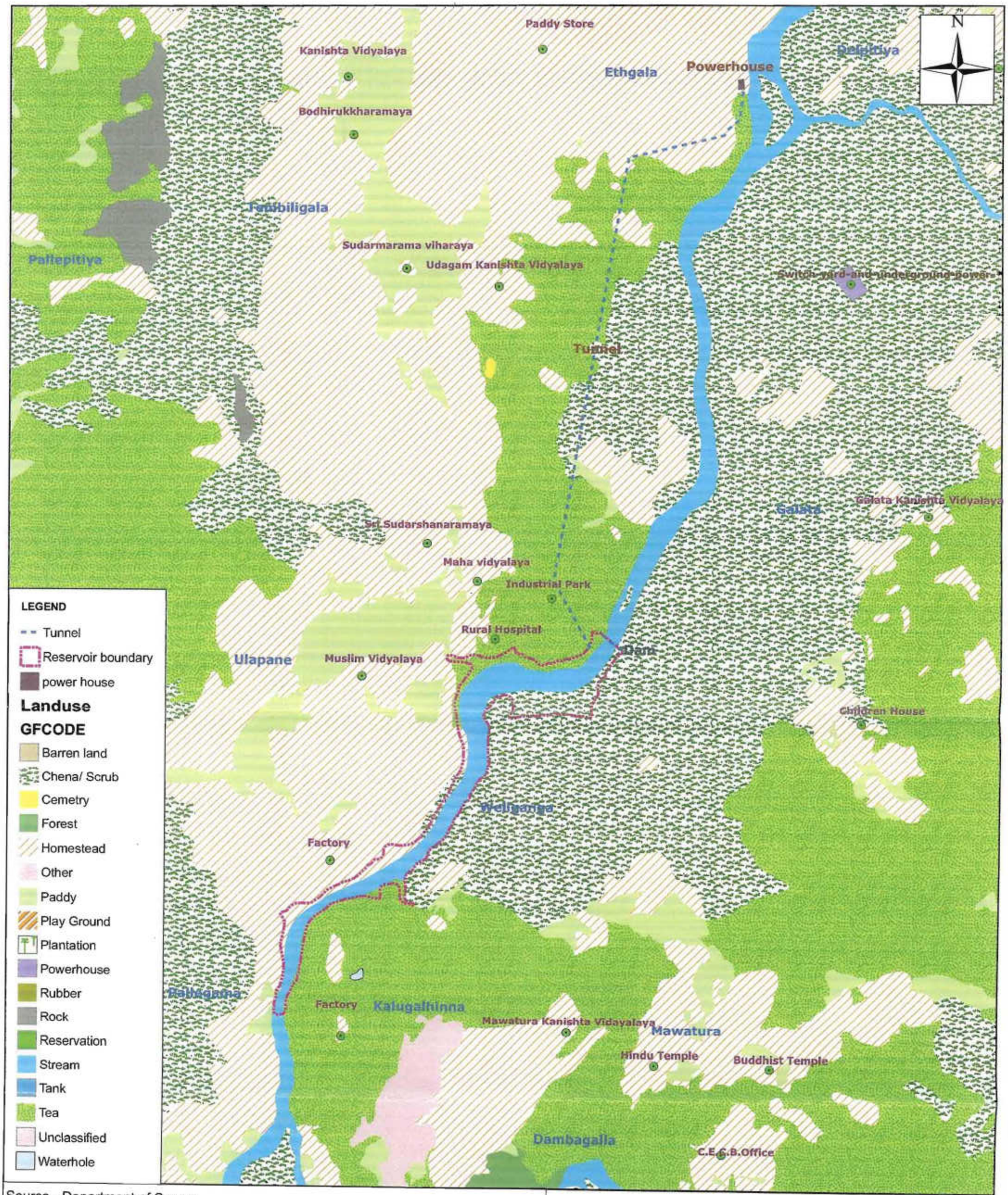
0 100 200 300 400 500m
SCALE: – 1: 10,000

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3.3 (b)-4

WATERWAY-GEOLOGICAL SECTION ALONG TUNNEL TRACE

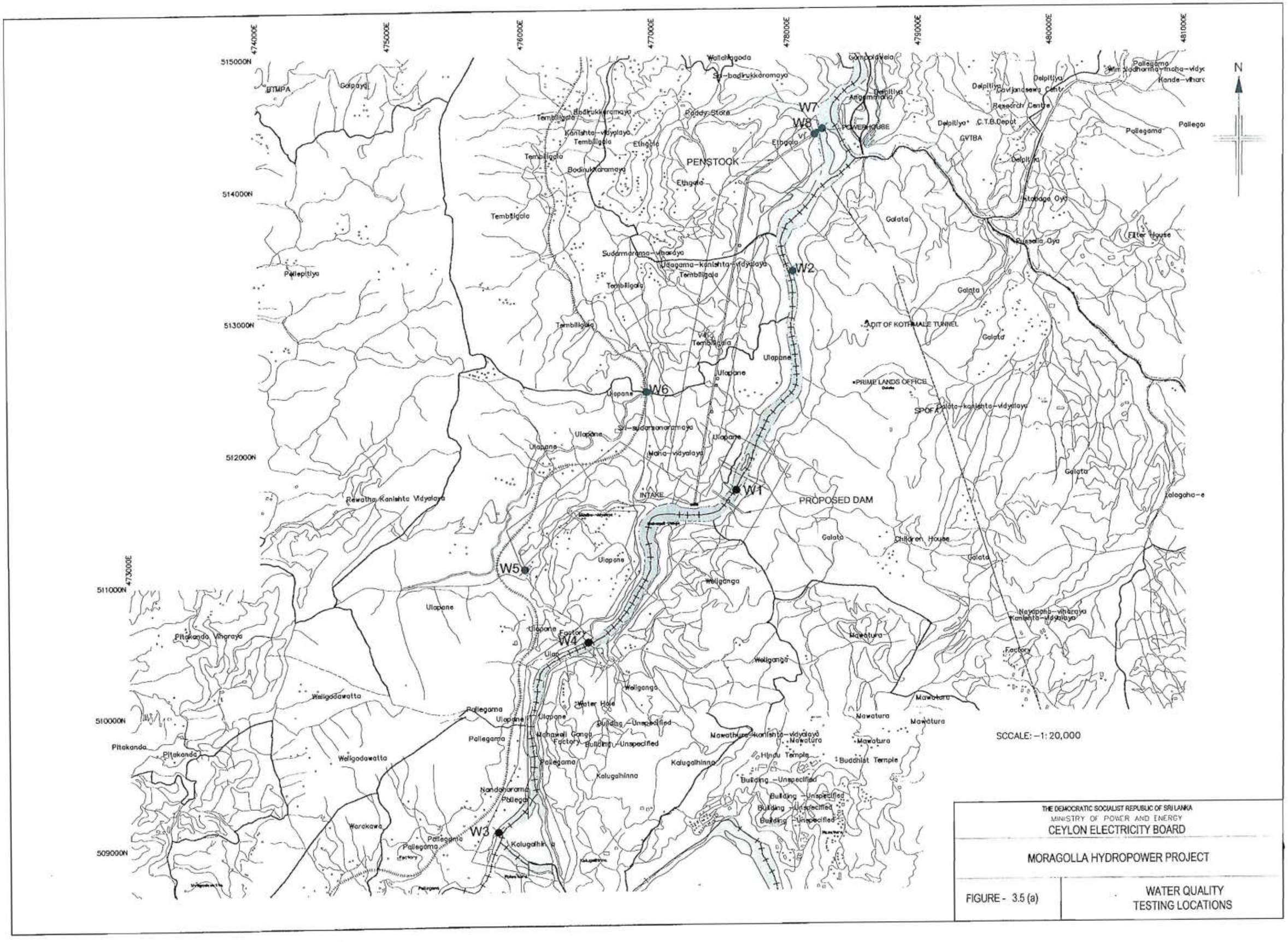


Source - Department of Survey

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE: 3.4	DESCRIPTION: LANDUSE MAP

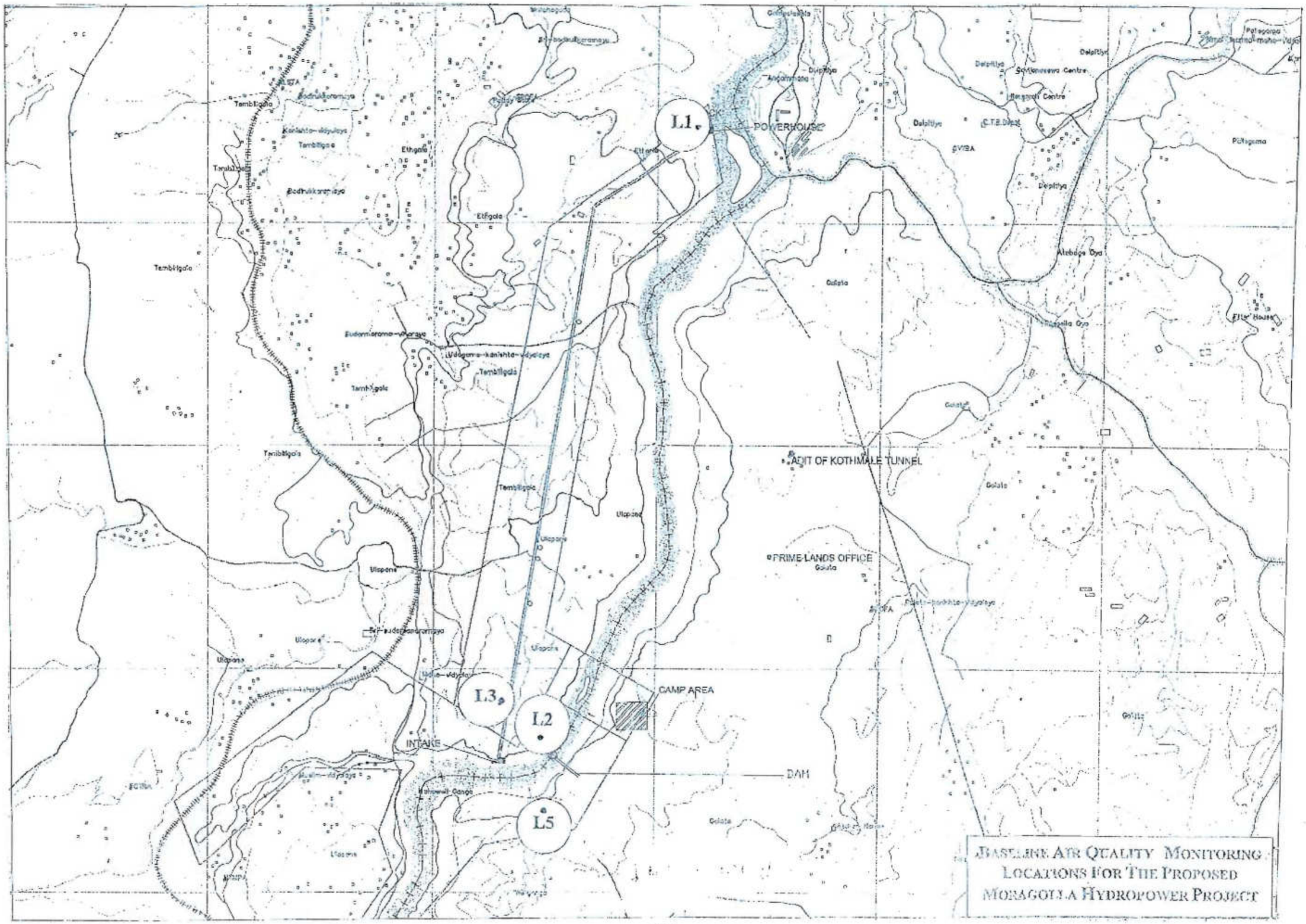


THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

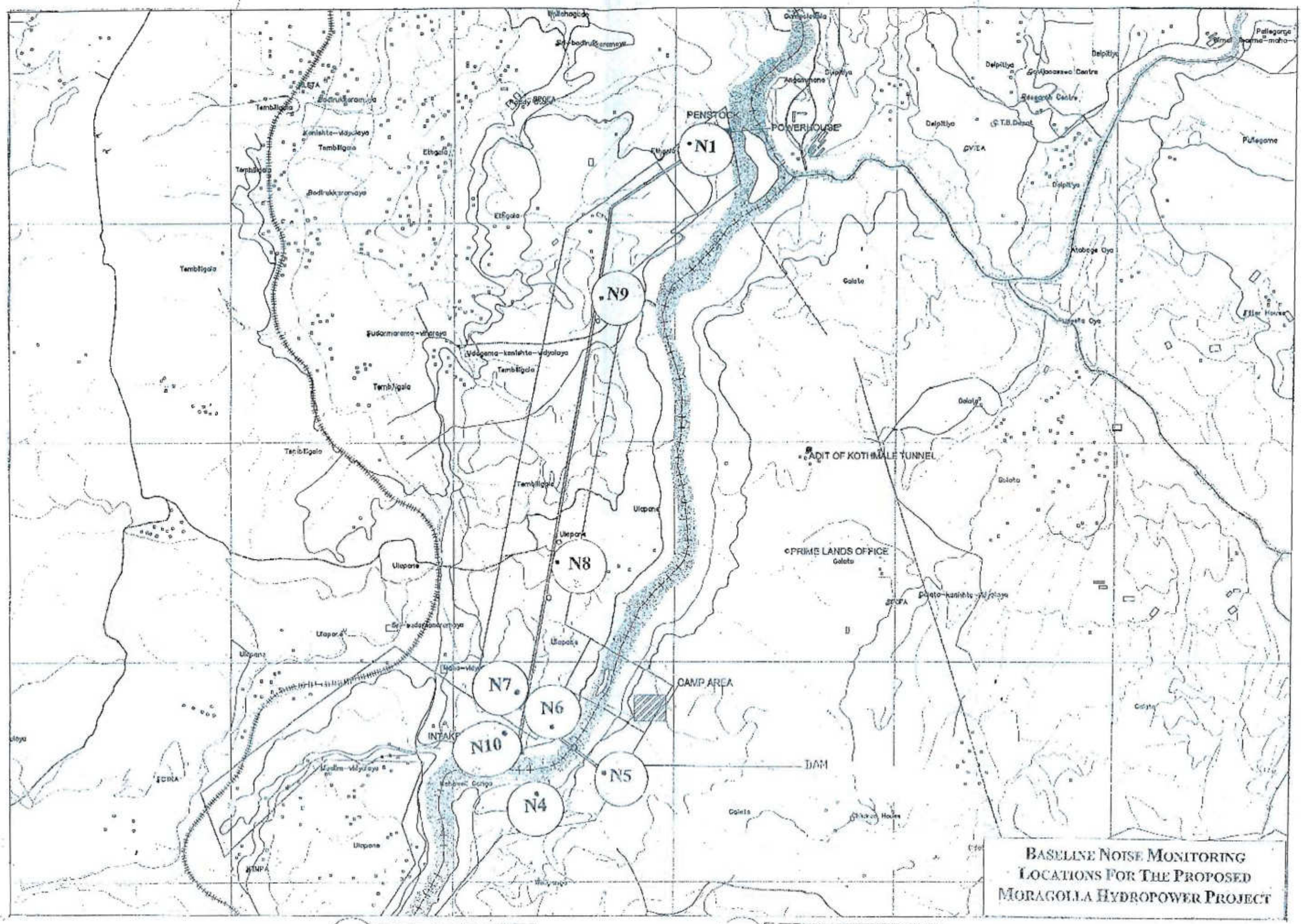
FIGURE - 3.5 (a)

WATER QUALITY TESTING LOCATIONS



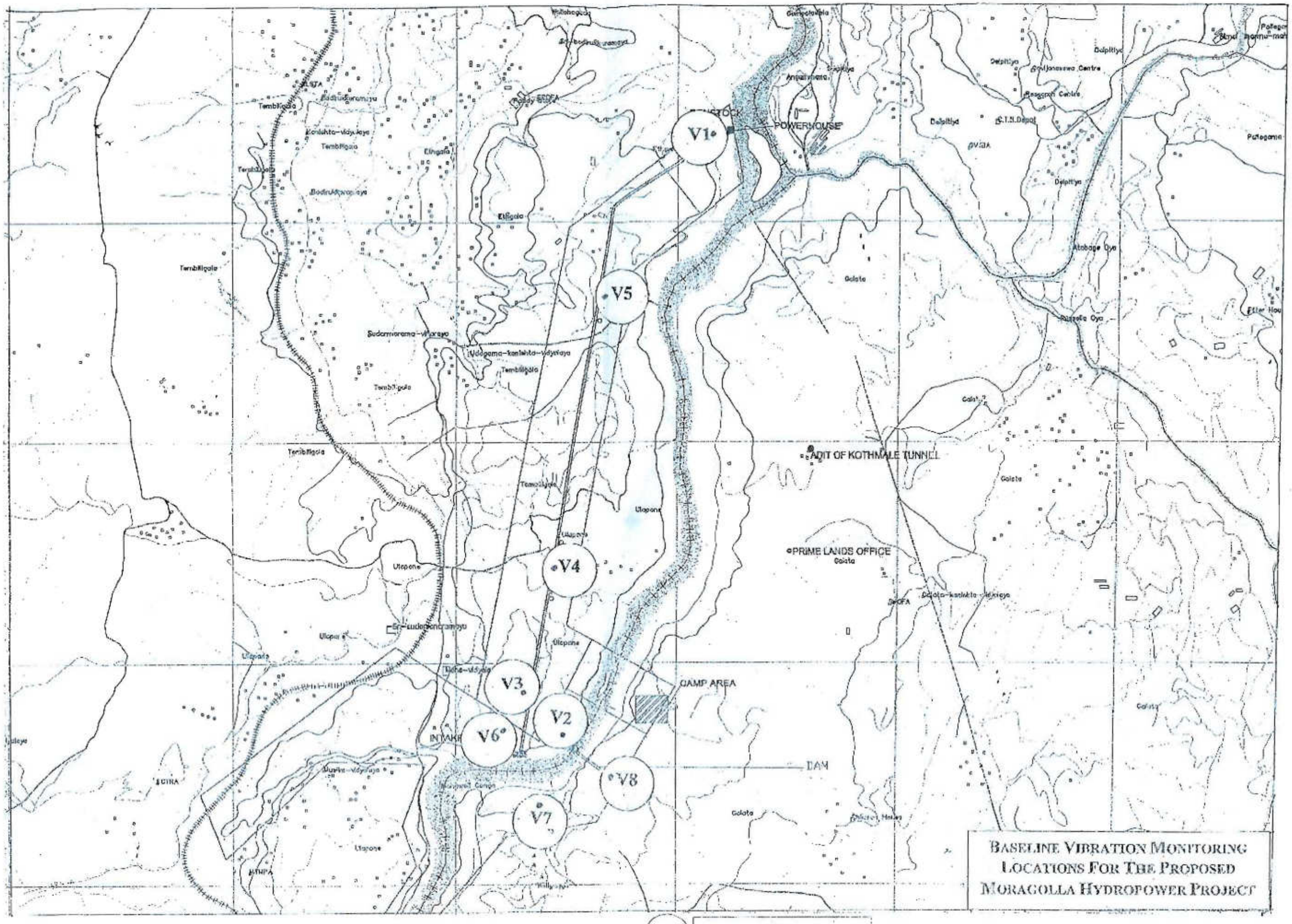
L4 Quarry Site

FIGURE - 3·5 (b)



BASELINE NOISE MONITORING LOCATIONS FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3-5 (c)



BASELINE VIBRATION MONITORING LOCATIONS FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3·5 (d)

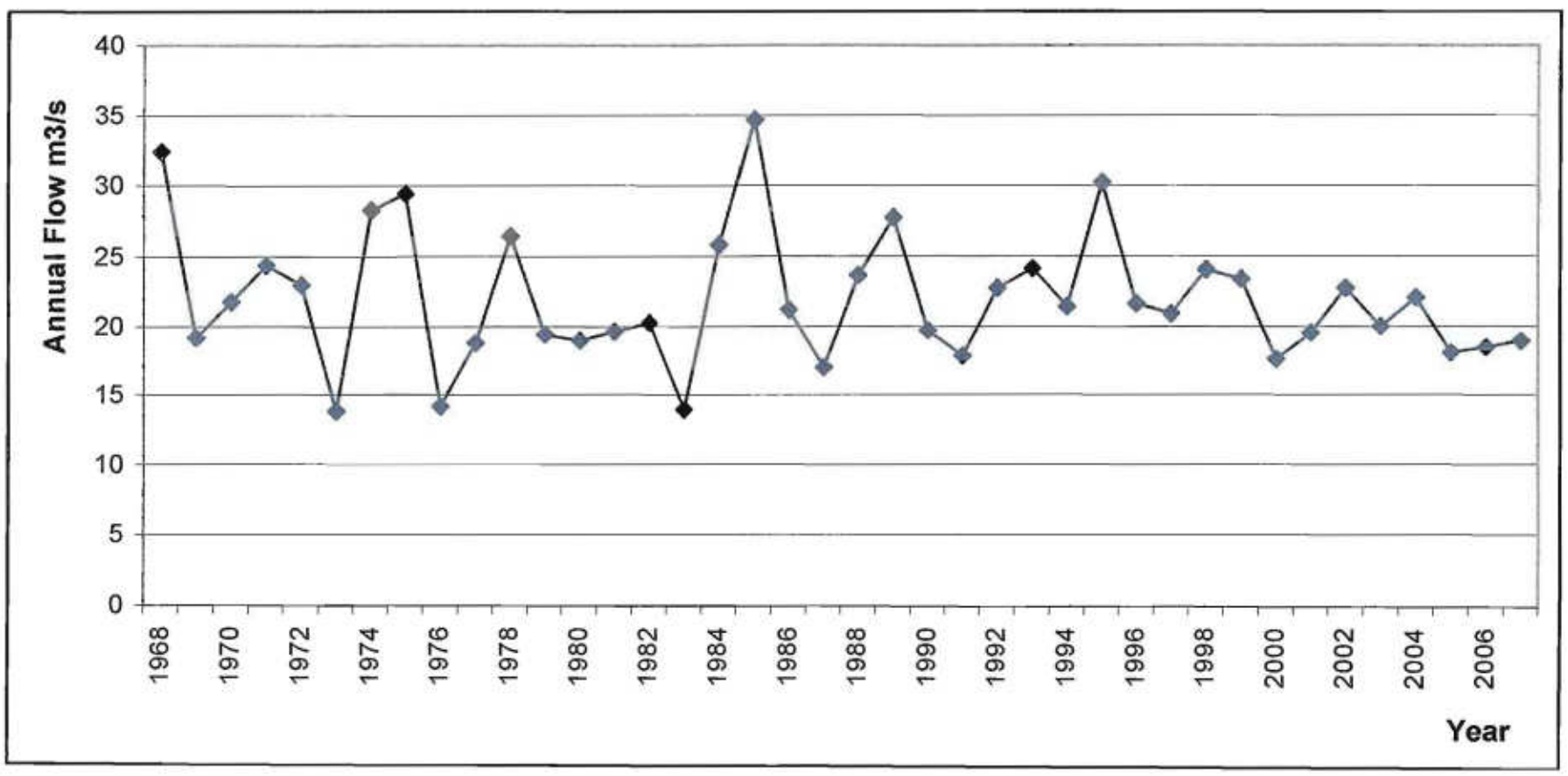


Figure 3.6 Variation of Annual Flow at Dam site

509000N
510000N
511000N
512000N
513000N
514000N
515000N
476000E
477000E
478000E
N
To Nawalapitiya
Muslim School
M
Mosque
Ulapane (Shouth) G N
Bathing Place
Bridge
Kotmale Oya
Bathing Places
Mahawila Watta JEDB
Shanty Houses
Dispensary
Pallewela
Kalugalathinna G N
Kalugalathinna
Sri Gangarama Vihara
Badrakali Devale
Community Hall
Bathing Places & Sand Mining
Weligama Colony
Wellgama School
17-Colony
Proposed Road Diversion
G N Wellganga Office
Proposed Residence Camp
Proposed Dam
Location of Occasional Fires
Mahaweli Ganga
Proposed Reservoir
Post Office
Hospital
Sinhalese School
Training Centre
Ulapane Temple
Udagama Temple
Ulapane (North) G N
Sarc Village
Ulapane Industrial Estate
Community Forest
L R C Land
Udagama G N
Udagama School
Sinhapura G.N
Ethgala Junction
To Gampola
Proposed Road to Surge Chamber
Tunnel
L R C Tea Plant
Denmark Colony
Hadabima Colony
Crysbro Industry
Existing Transmission Tower
Proposed Surge Chamber
Proposed Transmission Line
Proposed Power House/switch Yard
Dunhida Irrigation Canal
Gampolawela G.N
River Reservation
Police Check Point
Hadabima Farm
Galatha G.N
Bathing Places
Metal Crusher
Maganegama
To Kandy
Navadewita G.N
Army Camp
Tea Plantation L R C
Community Forest
G N Mawatura
Kekulanda G.N
Land Sale
Mahaweli Colony
Existing Kotmale Power House
Mahaweli Reservation
Tea Plantion L R C

LEGEND

- COMMUNITY FOREST
- ABANDONED FOREST
- TEA PLANTATION
- ABANDONED TEA/ TEA
- DISTURBED PLANTATION FOREST
- PLANTATION FOREST
- FOREST
- HOMEGARDEN
- PADDY
- RIVERINE VEGETATION
- RUBBER
- WOOD, BRUSHWOOD, SCRUB, CHENA
- RIVER/STREAM
- PROPOSED RESERVOIR
- AREAS OF HOMESTEADS/LANDS AFFECTED (EXCLUDES ROAD WIDENING ARES IN ETHGALA)
- SAND MINING LOCATIONS

① – IRRIGATION CANNAL
② – CHRYSBRO OUTFALL
③ – TAILRACE OUTFALL OF EXISTING KOTHMALE PROJECT
④ – WATER DROP

SCALE – 0 0.5 1 KM

NOT TO BE SCALED

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE - 3.7

COMMUNITY MAP AND LAND-USE PATTERN OF THE PROJECT AREA

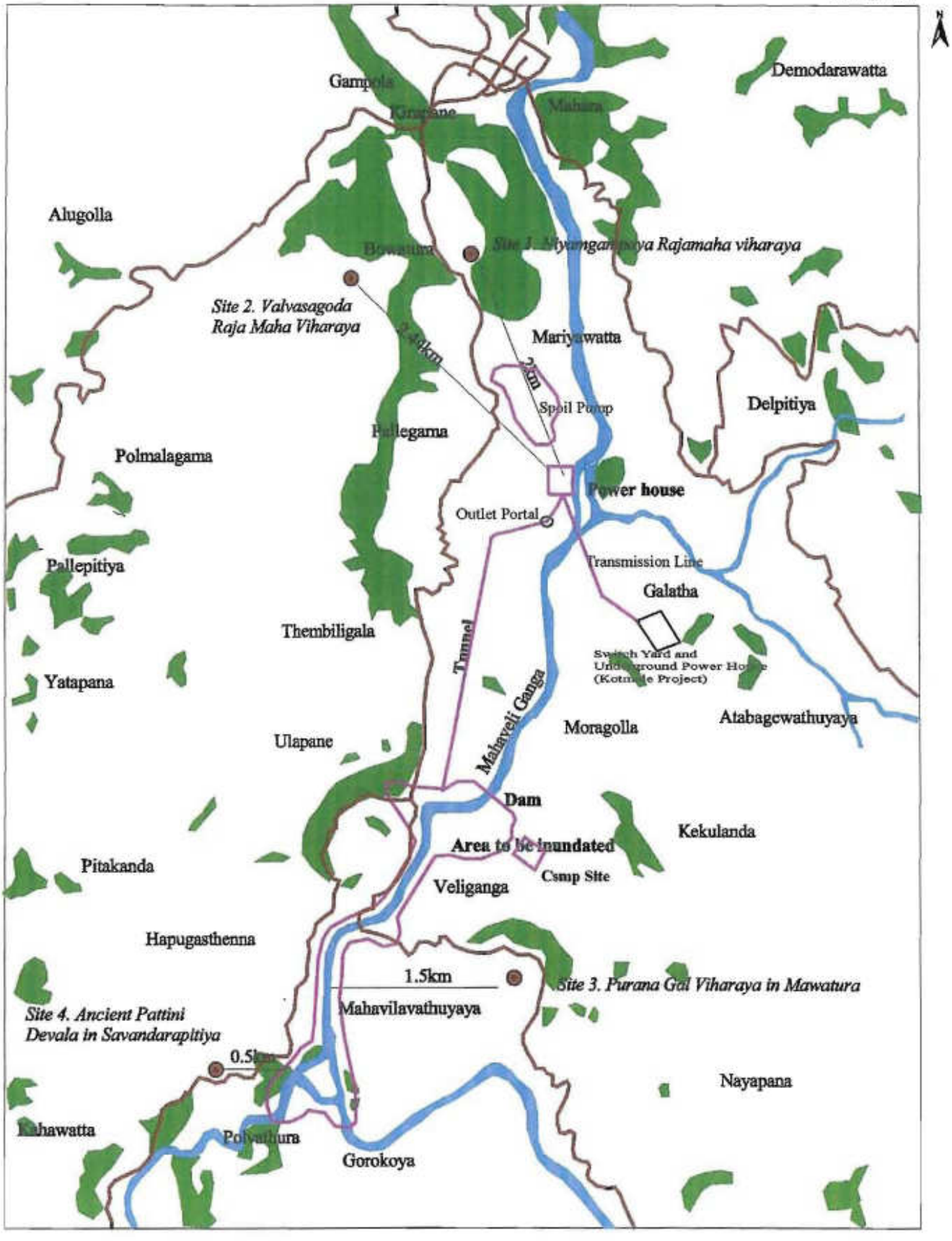


Figure 3.8 Archaeological Sites within 5 km buffer zone

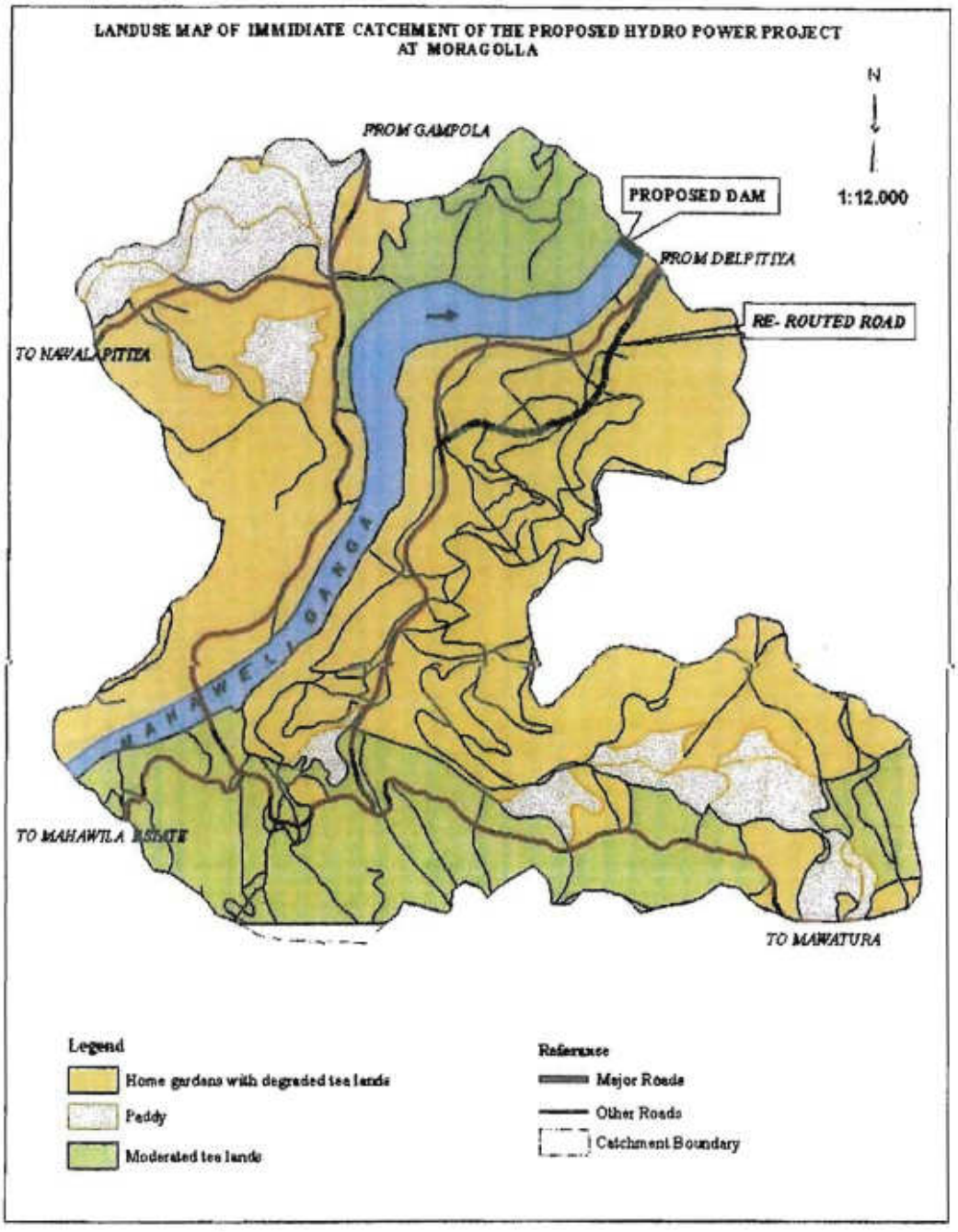


Figure 4.1 Land use map of the immediate catchment (for soil conservation plan)

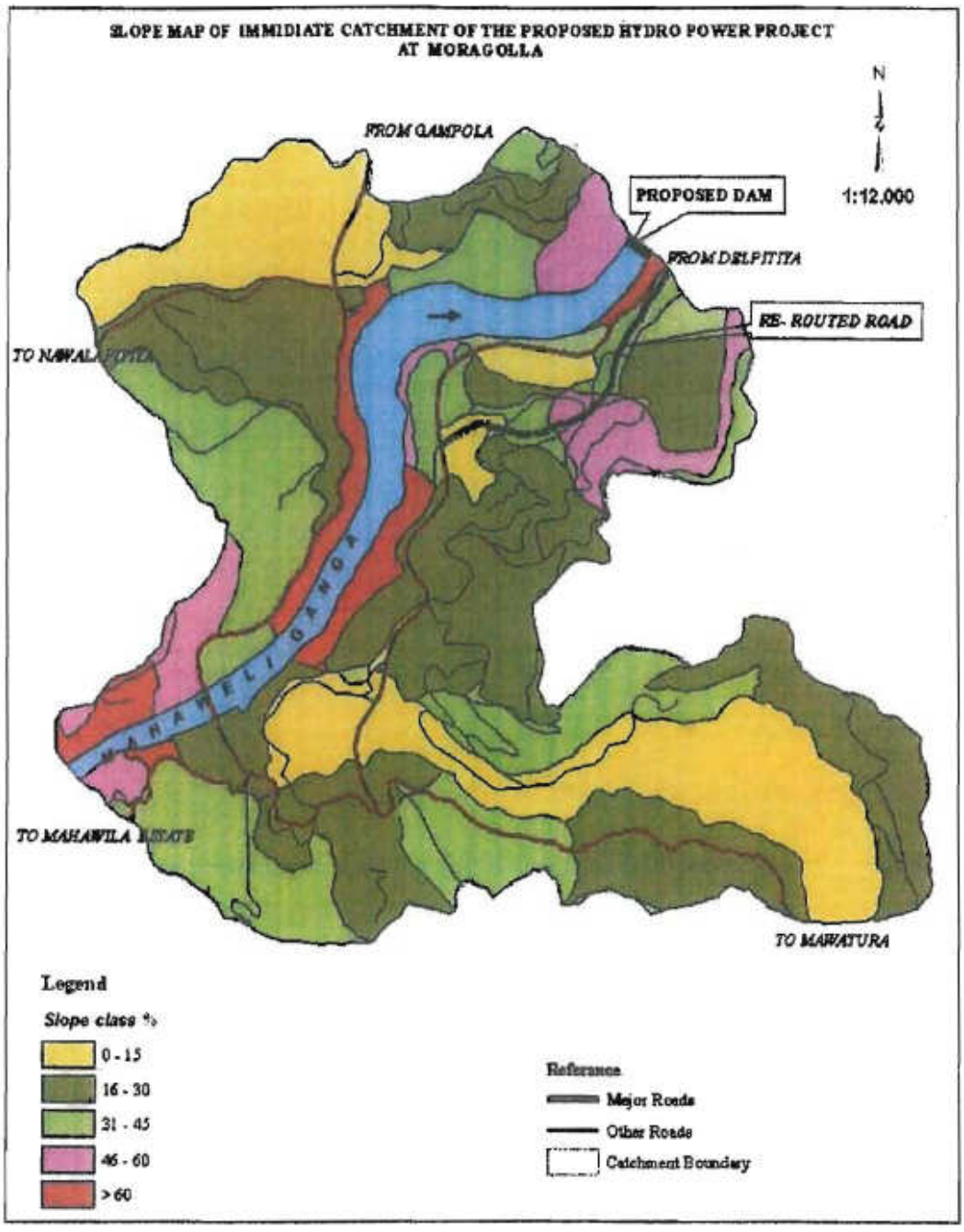
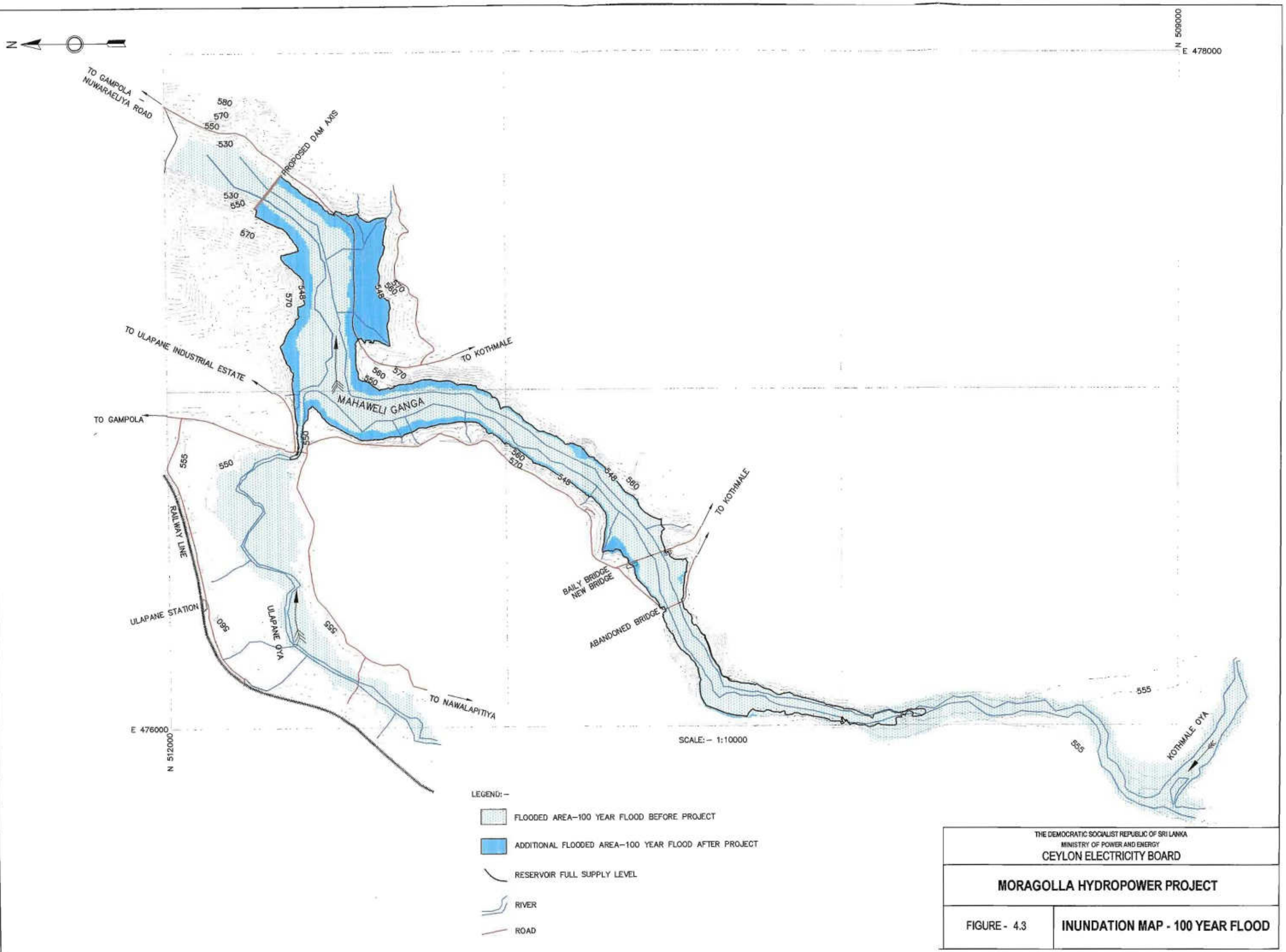


Figure 4.2 slope map of the immediate catchment (for soil conservation plan)



THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

MORAGOLLA HYDROPOWER PROJECT

FIGURE - 4.3

INUNDATION MAP - 100 YEAR FLOOD

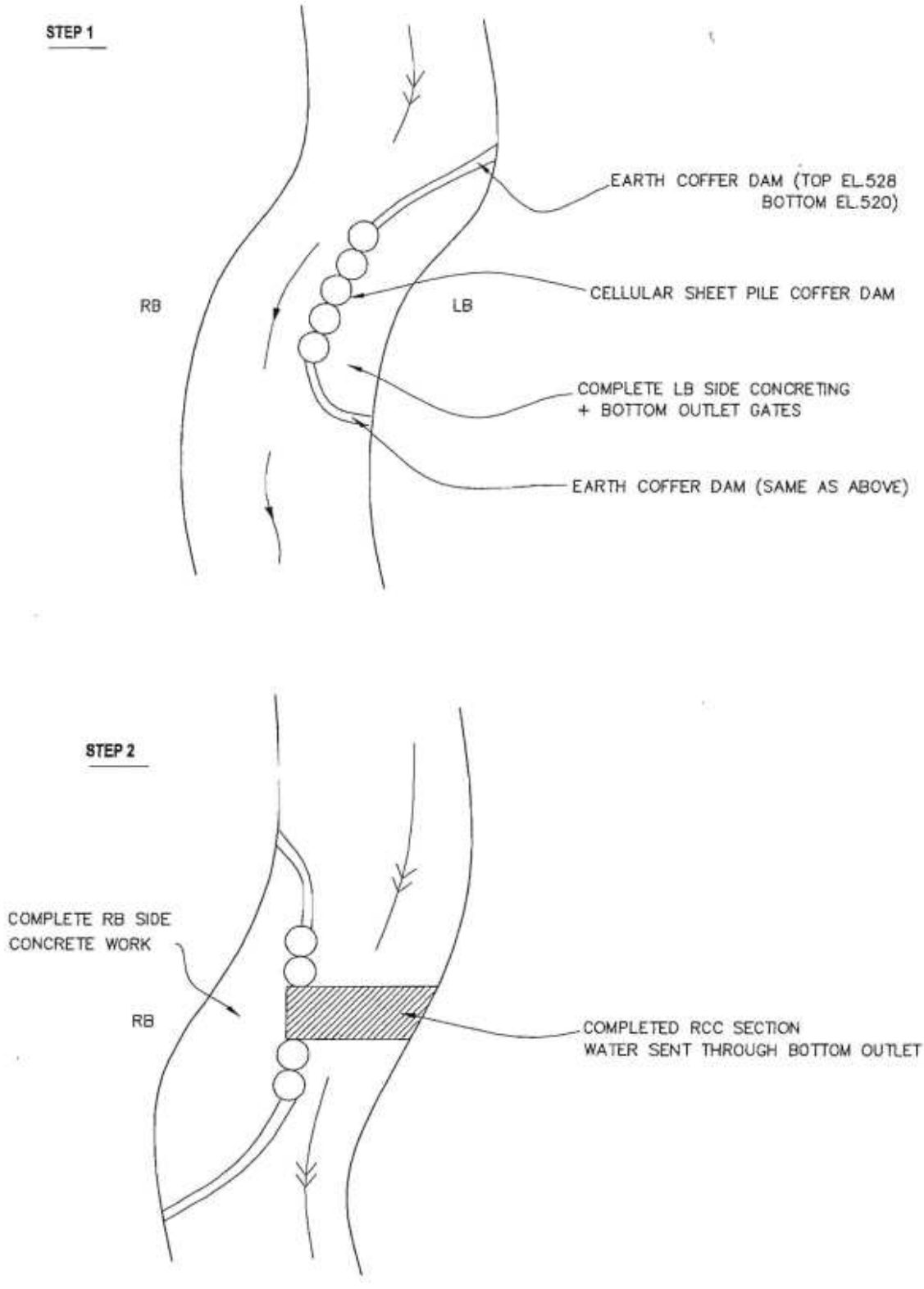


FIGURE 4.4	MORAGOLLA HYDROPOWER PROJECT **METHOD OF RIVER DIVERSION**

THE DEMOCRATIC SOCIALIST REPUBLIC OF SRI LANKA
MINISTRY OF POWER AND ENERGY
CEYLON ELECTRICITY BOARD

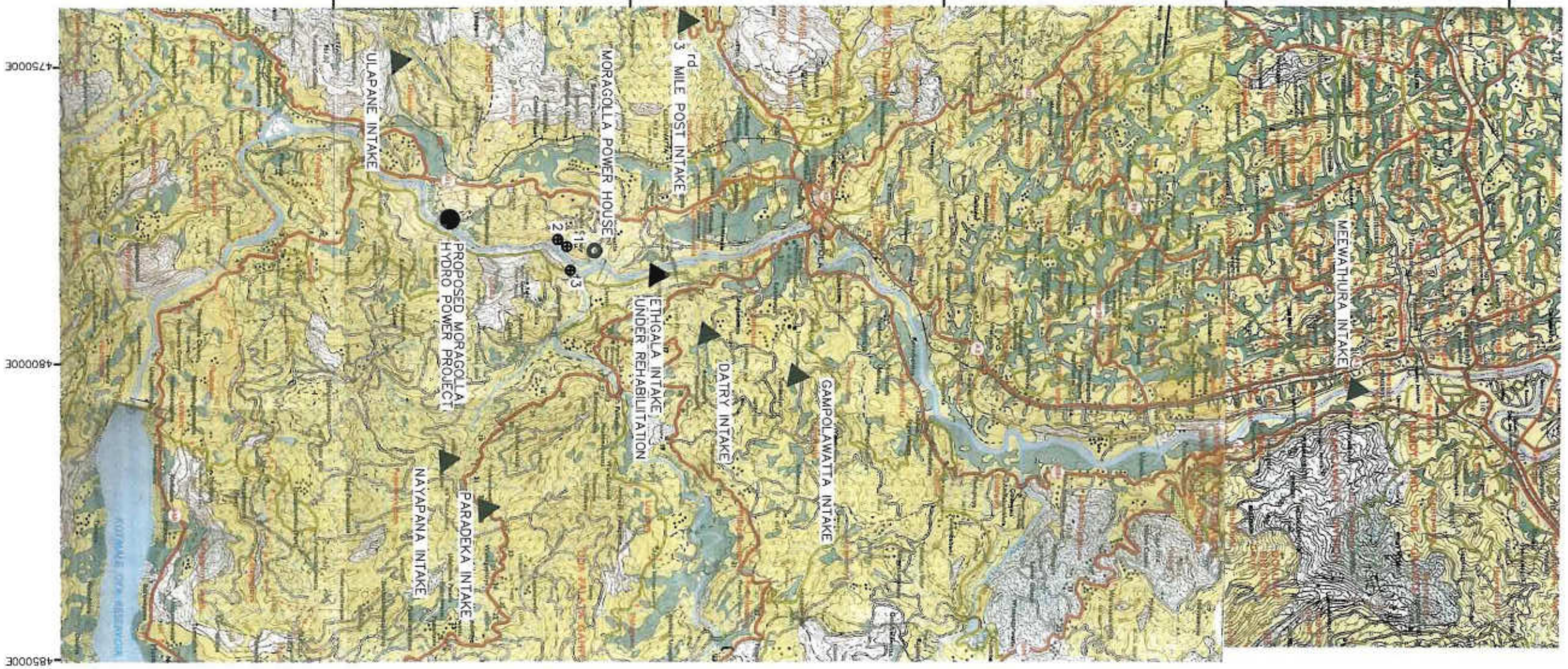
MORAGOLLA HYDROPOWER PROJECT

WATER INTAKE
LOCATIONS OF GAMPOLA
WATER SUPPLY SCHEME OF NWS & DB

FIGURE - 4.5

⊕ 1 IRRIGATION CANAL INTAKE
⊕ 2 CRYSBRO OUTFALL
⊕ 3 KOTMALE TAILRACE OUTFALL

SCALE - 1:80,000



APPENDICES

APPENDIX A

List of letters received from stakeholder organisations

List of letters received from stakeholder organizations (mainly from state sector) with regard to the approval and other details with regard to the Project.

1. Participants list at the meeting held with public officials of stakeholder organizations
2. Letter ADGM/P&P/MHP/127/2010 dated 22.03.2010 of Additional General Manager (Policy & Planning), NWS&DB
3. Letter PM/MOGL EIA dated 24.02.2010 with regard to the Memorandum of Understanding (MOU) between the CEB and the NWS & DB
4. Letter HW/KOT G/22 dated 04.03.2010 of Engineer in Charge, Kothmale, MASL
5. Letter RDA/ES/BD (XVIV) dated 06.10.2009 of Director, Engineering Services, RDA
6. Letter Env/526(Kanii)Moragolla dated 04.10.2009 of Director General, Irrigation Dept.
7. Letter කේ/ඊඩී/11/ජ.වි.වනපෘති dated 22.09.2009 of Regional Officer, Forest Dept.
8. Letter dated 11.08.2009 of Director/ Geology, GSMB
9. Letter ගඉකෝ/ප්‍රාලේ2/1/1/2009/1 of 07.08.2009 of Divisional Secretary, Ganga Ihala Korale
10. Letter RDA/ES/H/CP dated 03.08.2009 of Director/Highway Designs, RDA
11. Letter ප්‍රාලේ/උප/1/5/11/27 of 27.07.2009 of Divisional Secretary, Udapalatha, Gampola
12. Letter ED/TS/MH/MORA/14 of 18.06.2009 of Director General, MASL.
13. Letter ගඉකෝ/ප්‍රාලේ2/1/2009/1 of 25.06.2009 of Divisional Secretary, Ganga Ihala Korale
14. Letter ප්‍රාලේ/උප/1/5/11/27 of 19.06.2009 of Divisional Secretary, Udapalatha, Gampola
15. Letter 17/CP/N/UDA/1 of 11.06.2009 of Deputy Director General (P1) – Zone II, UDA
16. Letter ගඉකෝ/ප්‍රාලේ2/1/2009/1 of 20.03.2009 of Divisional Secretary, Ganga Ihala Korale
17. Letter LE 1479 of 29.09.2009 of Director Environment Management, BOI of Sri Lanka
18. Letter 109/12/01/71 of 30.06.2009 of Regional Director, Regional Industry Service Centre – Central Province
19. Letter dated 15.06.2009 of Chairman, Farms Pride (Pvt.) Ltd.

Partcipants at the Meeting held with the public officials on 04th June 2009 at Kothmale Resort

No.	Name	Organization	Designation
1.	H. P. N. Senarathne	CEB	Area Electrical Engineer
2.	B. G. D. Bandara	Ganga Ihala PS	Environmental Officer
3.	Lt. Col. A. R. Obeysekera	.....-Rifle Corps	Commanding Officer
4.	W. M. Ranbanda	Ulapane PS	Chief Clerk
5.	P. S. F. Siriwardene	CECB	Deputy General Manager
6.	T. D. G. Prasna.....	GN, Gampolawela	Grama Niladari
7.	K. A. S. Keselwalakanda	GN, Ulapane North	Grama Niladari
8.	G. K. Udeshika	GN, ...	Grama Niladari
9.	P. G. N. Asanka	GN, Kalugakhinna	Grama Niladari
10.	.....Herath	Ministry of Industrial Development	.....
11.	.....	.....	.....
12.	T. M. P. K. Thilakarathne	Kothmale PH, CEB	Kothmale PH, CE
13.	R. S. Rathnayake	GN, Ulapane North	.....
14.	T. D. Wickramarathne	CECB	Additional General Manager
15.	E. P. Rajapakse	NWS&DB	Eng (SP)
16.	J. M. A. Jayasundera	CECB	Member, Socialogy team
17.	C. P. Sandurath	GS	Weliganga
18.	D. M. Vijitharathne Kumari	GS	Nawadevita
19.	W. A. Chandrathileka	....., MASL-Kothmale Dam	CE
20.	W. M. T. Weerasekera	HO&M-MASL	EIC/DD(...)
21.	C. H. Devendra	ID	Regional Director, Irrigation
22.	A. A. P. Deshapriya	ID	CIE
23.	K. G. Chandradasa	ID	EA
24.	P. M. C. G. K. Abeyrathne	CEB	Electrical Superintendent, Moragolla
25.	B. M. N. Balasooriya	DS Office, Udapalatha	Divisional Secretary
26.	S. P. K. Bodimanna	DS Office, Udapalatha	Asst. Divisional Secretary
27.	G. M. S. Menike	DS Office, Udapalatha	Landuse Planning Assistant
28.	S. H. Midigaspe	CEB	Chief Engineer (GP & D)
29.	Rohitha Gunawardene	CEB	Environmental Officer
30.	N. A. Mudannayake	CEB	Electrical Engineer (GP & D)

Ceylon Electricity Board	CEB
Central Engineering Consultancy Bureau	CECB
Pradeshiya Sabha	PS
Grama Niladari	GN
Divisional Secretary	DS
Irrigation Dept.	ID
Mahaweli Authority of Sri Lanka	MASL
National Water Supply & Drainage Board	NWS&DB

Feasibility Study for Moragolla Hydro Power Project

Special conference for Public Officials – Kotmale Holiday Resort, Kotmale

Date :- 4th June 2009

List of Participants

No.	Name	Organization	Designation	Signature
01	H.P.N. Senarathne	CEB	Area Electrical Engineer	[signature]
02	B.G.D. Bandara	Ganga Thala Pradesh	Envio: Officer	[signature]
03	Lt Col A R Ebegesabu	Sheya Saba Co - Rifle Corps	Commanding Officer	[signature]
04	W.M. Ram Banda	Udapalatha P/S	Chief Clerk	[signature]
05	PSF Sanwardane	CECB	Deputy General Manager	[signature]
06	T.D.G. Prasanna	Grama Niladari	Gampolawela	[signature] 0722[illegible]
07	[illegible]	[illegible]	[illegible]	[signature]
08	[illegible]	[illegible]	[illegible]	[signature]
09	[illegible]	[illegible]	[illegible]	[signature]
10	[illegible]	Ministry of Industry	[illegible]	[signature]
11	[illegible]	[illegible]	[illegible]	[signature]
12	T.M.P.K. Tilakaratna	Kotmale PH	C.E	[signature]
13	[illegible]	[illegible]	[illegible]	[signature]
14	T.A. Wickremarathna	CECB	AGM (CE)	[signature]
15	E.P. Rajapaksa	NWSDB	Eng (SP)	[signature]
16	[illegible]	[illegible]	[illegible]	[signature]
17	C.P. Sandurath	G.S	Waliganga	[signature] 072/395
18	[illegible]	G.S	[illegible]	[signature]
19	W.A. Chandrallal	Ka MASL - Kot Dam	Civil Engineer	[signature]

No.	Name	Organization	Designation	Signature
20	W.M.T Weerakoon	HAOM - MASL	PFC / DD (MAP)	[signature]
21	C.H. Devendra	Irrigation Dept.	RDI	C.H. D[signature]
22	A.A.P Deshapriya	Irrigation Department	CIE	[signature]
23	K.G. Chandradasa	Irrigation Dept	E.A	[signature]
24	P.M.I.G.K. Alagaratha	E.S. Moragaha - CEB	ES	[signature]
25	B.M.N Balasooriya	D.S. Office Udapalatha	Divi. secret.	[signature]
26	S.P.K. Bodimanna	D.S office - Udapalatha	Asst. Div. Secretary	[signature]
27	M.M.S. Menike	D.S. Office Udapalatha	Land use planning Assistant	[signature]
28	S.H. Midugaspe	C.E.B	C.E (GPED)	[signature]
29	Rohith Gunawardhana	CEB	EO	[signature]
30	N.A. Mudanayake	CEB	EE (GPED)	[signature]
31				
32				
33				
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41				

From: ... CEB

ජාතික ජල සම්පාදන හා ජලාපවහන මණ්ඩලය
தேசிய நீர் வழங்கல் வடிகாலமைப்புச் சபை
National Water Supply & Drainage Board

Chairman Tel: 2634488 Fax: 2611234
Vice Chairman Tel: 2635863 Fax: 2634034
Head Office Tel: 2638246, 2638256, 2638259, 2638260, 2611569, 2637195, 2637194, 2624526
P.O. Box 14
General Manager 2636439
Working Director Tel: 2636901 Fax: 2611590
Hunting No.: 2638999 Fax: 2636449, 2635999 E-mail: nwsdbch@sltnet.lk
Galle Road

M. No ADGM/P&P/MHP/127/2010

Your No

Date 22.03.2010

Deputy General Manager (Transmission and Generation Planning),
Ceylon Electricity Board,
50, Sir Chittampalam A Gardiner Mw,
P.O.Box 540,
Colombo 02.

P. G. M.
30 MAR
C.E.B.

CE (Gen. Plan. & Design)
30 MAR
C.E.B.

Dear Sir,

Subject: Moragolla Hydro Power Project

This refers to your letter no PM/MOGL/ES dated 25th February 2010 regarding the above mentioned hydro power project.

The National Water Supply and Drainage Board (NWSDB) hereby grant the approval for the Moragolla Hydro Power Project, subject to the conditions on the signed Memorandum of Understanding (original copy attached) furnished by the Ceylon Electricity Board with the National Water Supply and Drainage Board.

Your cooperation in this regard is greatly appreciated.

Thanking You.

Yours faithfully,

D.N.J. Ferdinando
Additional General Manager (Policy & Planning)

Encl

Original copy of Memorandum of Understanding.

Cc.
General Manager, CEB - f.i.pl.
Addl.GM. (N/C), NWSDB - f.i.pl.
DGM (Central), NWSDB - f.i.pl

MINISTRY OF MAHAWELI DEVELOPMENT & POWER

ලංකා විදුලිබල මණ්ඩලය
(1969 අංක 17 දරන පාර්ලිමේන්තු පනතින් ස්ථාපිතයි.)
இலங்கை மின்சாரச் சபை
(1969 ம் ஆண்டின் 17 ஆம் இல. பாராளுமன்ற அதிகாரச் சட்டத்தின் பிரகாரம் ஸ்தாபிக்கப்பட்டது)

CEYLON ELECTRICITY BOARD
(Established by Act of Parliament No. 17 of 1969)

50, ශ්‍රීමත් චිත්තම්පලම් ඒ. ගාඩිනර් මාවත
තැ. පෙ. 540, කොළඹ 2, ශ්‍රී ලංකාව.
50, சேர் சித்தம்பலம் ஏ. கார்டினர் மாவத்தை
த. பெ. 540, கொழும்பு 2, ஸ்ரீ லங்கா

50, Sir Chittampalam A. Gardiner Mawatha,
P. O. Box 540, Colombo 2, Sri Lanka

TELEFAX 94-1-449572 Telegrams 'KILOWATTS' Telex 321068 CE

Chairman 2324044 / 2324[illegible] | Vice Chairman 2422297 | General Manager 2325340 / 2326933 | Head Office 2324471-8 | Colombo Electricity Supply [illegible]

My No. PM MOGL EIA | Your No. ADGM P&P MHP 127 2009 | Date 24.02.2010

General Manager

National Water Supply and Drainage Board

P.O.Box 14.

Mount Laviniya.

Dear Sir!

Memorandum of Understanding with the National Water Supply and Drainage Board

Moragolla Hydro Power Project

I do hereby agree to fully comply with the following conditions and set my hands and the seal of the company on the .....Twenty Fourth..... day of ..... February, Two Thousand and Ten..... In the

(Date) (Month) (Year)

Capacity of ...Additional General Manager (Transmission)...of ...Ceylon Electricity Board...at

(Designation) (Company Name)

....Colombo.....Sri Lanka

(Place)

1. I understand that the structural arrangement that is provided to convey the river flow into the penstock shall from water storage upstream and such storage shall interrupt the natural flow regime during dry weather period when the hydropower generation is optimized. Therefore, such structural arrangement shall be incorporated with a bottom outlet (draw off arrangement) which could be used to release water at critical situations.
2. I abide by the condition that the water supply should be treated as a similar priority to electricity supply. Hence, I hereby assure that the NWSDB's right to obtain water for present or future water supply schemes from up / down stream or both.

3. I will not implement subsequent structural modifications that shall increase the water storage capacity upstream, without prior agreement with the National Water Supply and Drainage Board (NWSDB).
4. Proper structural drawing to a suitable scale will be furnished to you to visualize the cross section of the structure to be constructed across the river, before the construction commences.
5. All steps – up transformers will be provided with contingency arrangement built – in at site to direct all coolant oils, chemical etc. to sufficiently protected water collection pit so that it could be removed from site for safe disposing elsewhere.
6. All body metal components in contact with high velocity raw water flow will not contain metals, which are identified and given in Sri Lankan Standards as hazardous heavy metals. (Eg. Pb, Zn, Cr, Cd, Ni, ...)
7. All used lubricants/bearing fluids through bearing will be collected in a sufficiently protected container for safe storage and removal from the site.
8. All the mechanical seals and respective standards shall not be affected to bacteriological and chemical parameter of the water quality of the discharge of the proposed hydro power project.
9. Periodical chemical testing of raw water before and after the generator shall be carried out by ourselves as directed by the NWSDB, which would be required to maintain safe quality of raw water in par with present treatment facility and quality of treated water.

Thanking You,
Yours faithfully,

	Ceylon Electricity Board	National Water Supply & Drainage Board
Signature		
Name of the Chief Executive Officer	R. J. Gunawardena	D. N. J. Ferdinando
Designation	Addl. General Manager (Transmission)	Addl. General Manager (Policy & Planning)

Company Name	Ceylon Electricity Board	National Water Supply & Drainage Board
Witness:	1. Signature:- A. S. T. L Name :- AD Tillekeratne NIC No:- 5968805411V Address:-5th Floor. Tr. & Gen. Planning g Branch. Ceylon Electricity Board. Sir CA Gardiner Mw., Colombo 02 Date:- 25/01/2010	1. Signature:- T.D.P Name :- T. D. Peiris NIC No :- 737830260V Address :- P&P section National Water Supply & Drainage Board, Ratmalana. Date :- 18/03/2010
	2. Signature:- KVSM Name :- KVSM Kudaligama NIC No :- 725231636V Address :-5th Floor. Moragolla Hydropower Project. Tr. & Gen. Planning Branch. Ceylon Electricity Board. Sir CA Gardiner Mw., Colombo 02 Date:- 24/02/2010	2. Signature:- Sukha Name :- T. Sukhakaran NIC No :- 751640951V Address :- P & P Section National Water Supply & Drainage Board Rakmalana Date :- 18.03.2010

270

HW/KOT G/22
EIC'S Office
Kotmale
04/03/2010

Mrs. P.S.F. Siriwardene
Deputy General Manager
(Water Resources -1)
CECB
Colombo,

Dear Sir/Madam,

Moragolla Hydropower Project EIA study

Reference to your letter CB/WR/WRM/P-05 dated 18th Feb. 2010. As I said on the day that I met you, Geological Science & Mining Bureau (GSMB) has given recommendation only for IML-C without affecting membrane of the dam, i.e. very small quantity of rubble can be extracted under this condition. If you go for large scale blasting, EIA report is essential. And other thing is that there is no possibility to allow transport the material across the dam.

AS far as the water supply for farms pride Pvt. Ltd is concerned, as per the agreement stipulated with MASL in 1999, we have allowed them to extract maximum raw water from the Kotmale Oya is up to 50,000 gallons.

I am sending this for your information.

Yours sincerely,

Eng. W.M.J. Weerasekera
EIC
Kotmale

W. M. J. WEERASEKERA
Engineer
O. & M. Division
Mahaweli Authority
Kotmale Project
MAWATURA

Copy : Director (HW) - for your information pl.
Digana

Water Resources Unit
Received on 04/3/10
Letter Number 74

RDA/ES/BD (XVIV)

මාර්ග සංවර්ධන අධිකාරිය
வீதி அபிவிருத்தி அதிகாரசபை
Road Development Authority

"සෙත්සිරිපාය" බත්තරමුල්ල.
"செத்சிறிபாய" பத்தரமுல்லை.
"Sethsiripaya", Battaramulla,
Sri Lanka.

මගේ අංකය / எனது இல. / My No. .....

ඔබේ අංකය / உமது இல. / Your No. .....

6th October, 2009

දිනය / திகதி / Date .....

238

Mr. T.D. Wickramarathna
Additional General Manager (Water Resources)
415, Bauddhaloka Mawatha
Colombo 07.

Moragolla Hydropower Project – Ulapane Feasibility Study
Bridge over Mahaweli Ganga on Ulapane – Mawathura Road

This refers to your letter no. CB/DGM(WR)/781/1 dated 09th July 2009 stating that a low dam is proposed to be constructed about 1.8 km downstream of this Ulapane Bridge and the reservoir will have its full supply level at 548 MSL and requesting our observations about any implications to the bridge as a result of constructing this reservoir .

I wish to inform you that as shown in the attached drawing the entire foundations for the piers and abutments are on spread footing that are founded on bed rock. But during the construction it was noted that at some places the sound rock was not encountered and it was compelled to stop on weathered rock layers. As indicted by you, the FSL of the reservoir (548 MSL) has been marked in the attached drawing and in case of this situation since there would be a possibility to erode the soil overburden in foundation areas it was decided to protect the ground surface around the abutment and piers under the submerged area with a rubble paving using cement sand mortar as per the detail available in the attached drawing. This protection has been provided upto a level of about 1.0 m above the FSL of the reservoir. This has been drawn in a copy of a construction drawing of the above bridge and is attached herewith. Further, it is presumed that CEB would bear the cost for this additional work.

Director/Engineering Services
ROAD DEVELOPMENT AUTHORITY

Copies to:	D/Highways Designs	-	f.i.pl.
	DD/BD	-	f, i.pl.
	PD/CP	-	f.i.pl.

	Chairman	General Manager	Director Admin.	Director Finance	Director MM&C	General
දුරකථන / தொலைபேசி / Telephone	2862767	2862795	2865243	2864799	2864804	2871821-30
ෆැක්ස් / பெக்ஸ் / Fax	2864801	2872272	2865844	4402427, 2865841	2862297	
ඊ-මේල් / ஈ-மெயில் / E-mail	chairman@sltnet.lk		admrda@sltnet.lk		dmmc@sltnet.lk	admrda@sltnet.lk

වාරිමාර්ග දෙපාර්තමේන්තුව
நீர்ப்பாசனத் திணைக்களம்
IRRIGATION DEPARTMENT

230, බෞද්ධාලෝක මාවත, කොළඹ 07
230, பௌத்தாலோக வீதி, கொழும்பு 07.
230, Bauddhaloka Mawatha, Colombo 07 SRI LANKA
තැ. පෙ. 1138 த. பெட்டி P.O. Box

අධ්‍යක්ෂ ජනරාල් பணிப்பாளர் நாயகம் Director-General
දුරකථන தொலைபேசி Telephone 2584984
පැක්ස් தொலைநகல் Fax 2505890
E- mail dir_gen@irrigation.slt.lk, dgiirrig@sltnet.lk

මගේ අංකය எனது இலக்கம் My No Env/526 (Kan ii)Moragolla

මගේ අංකය ஒப்பது இலக்கம் Your No.

දිනය திகதி Date 2009.10.09

GENERAL MANAGER'S OFFICE
14.10.09

පාරිසරික අධ්‍යයන අංශය

CENTRAL ENGINEERING CONSULTANCY BUREAU
14 OCT 2009
3021
ADMINISTRATION SECTION

අධ්‍යක්ෂ ජනරාල්
මධ්‍යම පරිසර අධිකාරිය

යෝජිත මොරගොල්ල ජල විදුලි බලාගාරය ඉදිකිරීම

උක්ත කරුණට අදාලව ඉංජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම උපදේශක කාර්යාංශයේ අංක CB/WR/WRM/P-11 හා 2009.03.02 හා 2009.04.07 දිනැති ලිපි සමග ඉදිරිපත් කර ඇති වාර්තා අනුව මගේ සමාංක හා 2009 .08. 10 දිනැති ලිපිය මගින් වාරිමාර්ග දෙපාර්තමේන්තුවේ කොන්දේසි සහිත එකඟතාවය ලබා දෙන ලදී.

මාගේ උක්ත ලිපියේ සඳහන් කොන්දේසි ලිහිල් කරන ලෙසට ලංකා විදුලි බල මණ්ඩලයේ සාමාන්‍යාධිකාරී විසින් අංක PM/MOGL/FS හා 2009. 10. 01 දිනැති ලිපියෙන් කරුණු ඉදිරිපත් කර ඇත. එම කරුණු සැලකිල්ලට ගැනීමෙන් අනතුරුව මෙම ව්‍යාපෘතිය සෘජුවම රාජ්‍ය ආයතනයක් වන ලංකා විදුලි බල මණ්ඩලය විසින් ඉදිකර ක්‍රියාත්මක කරන්නක් බැවින් උක්ත එකඟතා ලිපියේ අංක 2 හා 3 කොන්දේසි ඉවත්කොට පහත සඳහන් පරිදි සංශෝධනය කරන අතර, මගේ සමාංක හා 2009. 08. 10 දිනැති උක්ත එකඟතා ලිපිය මෙයින් අවලංගු කරන බව ද කාරුණිකව දන්වමි.

මහවැලි ගඟේ ඉදිකිරීමට යෝජිත මොරගොල්ල ජලාශයට ඉහලින් මහවැලි ගඟට සම්බන්ධ වන උලපනේ ඔය හරහා ඉදි කර ඇති උලපනේ අමුණෙන් ජලය ලබා ගන්නා ගම්පොල රජ ඇල ව්‍යාපාරය පිහිටා ඇත. එසේම යෝජිත ජලාශයට පහලින් දුන්හිඳ අමුණ මගින් ගම්පොල රජ ඇල ව්‍යාපාරයේ පහල කොටසට ජලය ලබා ගැනීම සිදු කරනු ලබන අතර, මෙම ඉදිකිරීම නිසා එම පහල අමුණට බලපෑමක් ඇති වේ.

මෙම ඉදිකිරීම සඳහා ලංකා විදුලි බල මණ්ඩලය වෙත මධ්‍යම පරිසර අධිකාරිය විසින් අනුමැතිය ලබාදීමට අදහස් කරන්නේනම් පහත සඳහන් කොන්දේසි වලට යටත්ව අනුමැතිය ලබාදීම පිළිබඳව වාරිමාර්ග දෙපාර්තමේන්තුවේ විරුද්ධත්වයක් නොමැති බව කාරුණිකව දන්වමි.

01) මේ සඳහා පූර්ණ පාරිසරික බලපෑම් ඇගයීමක් සිදු කල යුතුය.

02) යෝජිත ජලාශය නිසා ගම්පොල රජ ඇල ව්‍යාපාරයේ වගා ප්‍රදේශයට කිසිදු හානියක් සිදු නොවිය යුතුය. ජලාශයේ අධි ගංවතුර මට්ටම (HFL) උලපනේ අමුණට හා එමගින් ජලය ලබාගන්නා ගම්පොල රජඇල ව්‍යාපාරයට පහල මට්ටමකින් පිහිටන සේ සැලසුම් කිරීම කල යුතුය.

wt

03) යෝජිත ජලාශයට පහලින් පිහිටි දුන්හිඳ අමුණ මගින් ලබා ගන්නා ජල ප්‍රමාණය කිසිදු ලෙසකින් වෙනස් නොවිය යුතු අතර, දැනට එමගින් ලබා ගන්නා ජල ප්‍රමාණය එලෙසම ලබා ගැනීමට හැකිවන පරිදි හා අවම වශයෙන් ජලය කියුසෙක් 10.00 ප්‍රමාණයක් ලබාදීමට හැකිවන පරිදි සැලසුම් සකස් කල යුතුය. ඒ සඳහා වාරිමාර්ග දෙපාර්තමේන්තුව සමග අවබෝධතා ගිවිසුමක් අත්සන් කල යුතුය. ව්‍යපෘතිය ක්‍රියාත්මක කරන ආයතනය වශයෙන් ලංකා විදුලි බල මණ්ඩලය සමග මෙම අවබෝධතා ගිවිසුම අත්සන් කල යුතු අතර. යම් හෙයකින් ලංකා විදුලි බල මණ්ඩලය අනුප්‍රාප්තිකයෙකුට පැවරීමක් සිදුවුවහොත් යෝජිත මෙම විදුලිබල ව්‍යාපෘතිය සහ ජලාශයෙහි අයිතිය වාරිමාර්ග දෙපාර්තමේන්තුවට භාරදීමට ලංකා විදුලිබල මණ්ඩලය බැඳී සිටිය යුතුය.

04) වියලි කාලයන්හිදී ජල හිඟයක් ඇති වුවහොත් ජලය ලබා දීමේ ප්‍රමුඛතාවය දුන්හිඳ අමුණ යටතේ වගා කරන ගොවි ජනතාවට ලබා දිය යුතුය.

05) උක්ත අංක 03 යටතේ සඳහන් වාරිමාර්ග අවශ්‍යතාවයට අමතරව පාරිසරික අවශ්‍යතාව සඳහා වන ජල ප්‍රමාණය යෝජිත ජලාශයෙන් පහලට ලබා දිය යුතුය.

ඉංජි. එච්.පී.එස්. සෝමසිරි
වාරිමාර්ග අධ්‍යක්ෂ ජනරාල්

පිටපත් :
2) සාමාන්‍යාධිකාරි, ලංකා විදුලි බල මණ්ඩලය
1) සාමාන්‍යාධිකාරි, ඉංජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම උපදේශක කාර්යාංශය
2) කලාප වාරිමාර්ග අධ්‍යක්ෂ (මහනුවර)

WI

මගේ අංකය:-කේ/ටීඩී/11/ජ.වී.ව්‍යාපෘති
දිසාවන කාර්යාලය,
මහනුවර.
2009.09.22

පි.එස්.එන්.සිරිවර්ත මිය
නියෝජ්‍ය සාමාන්‍යාධිකාරී
ජල සම්පත් කළමණාකරණ
415, බෞද්ධාලෝක මාවත,
කොළඹ 07.

යෝජිත මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය

උත්ත කරුණ සම්බන්ධයෙන් මට පිටපතක් සහිතව අඩවි වන නිළධාරි/කාවලපිටිය අමතන ලද ඔබේ අංක.සිබී/ඩබ්ආර්/ඩබ්.ආර්.එම්/පි-11 හා 2009.07.02 දිනැති ලිපිය හා බැඳේ.

02. එම කාර්යයන් සිදු කිරීමට අදාළව අප දෙපාර්තමේන්තුවේ පාලනය යටතේ පවතින වනවගා වනාන්තර සම්බන්ධ නොවන බව අඩවි වන නිළධාරි/කාවලපිටිය විසින් මාවෙත දන්වා ඇති අතර එබැවින් ඔබ ව්‍යාපෘතිය සඳහා අපගේ කිසිදු විශේෂතාවයක් නොමැති බව කාරුණිකව දන්වා සිටිමි.

එස්.එම්.එස්.එල්.වික්‍රමසිංහ
දිසාවන නිළධාරි
මහනුවර.
එස්. එම්. එස්. ලක්ෂ්මි වික්‍රමසිංහ
දිසා වන නිළධාරි
මහනුවර.

භූ විද්‍යා සමීක්ෂණ හා පතල් කාර්යාංශය
புவிச்சரிதவியல் அளவை, சுரங்கங்கள் பணியகம்
GEOLOGICAL SURVEY & MINES BUREAU

4, සේනානායක ගොඩනැගිල්ල, ගාල්ල පාර, දෙහිවල, ශ්‍රී ලංකා.
4, சேனநாயக்க கட்டடம் காலி வீதி தெஹிவளை இலங்கை.
4, SENANAYAKE BUILDING, GALLE ROAD, DEHIWALA, (COLOMBO) SRI LANKA.

11/08/2009

14/08/09

Mrs. P.S.F. Siriwardana
Deputy General Manager
Water Resource Management
Central Engineering Consultancy Bureau
415, Baudhdhaloka Mawatha,
Colombo 07.

205

Environmental Impact Assessment (EIA) for the proposed Moragolla Hydropower Project

This is with reference to your letter dated 29th June 2009 on the above matter.

We regret to inform you that we are unable to comment on Moragolla Hydropower Project without a field inspection and other related information such as Geological Map and Cross Sections of the particular site.

However, it is apparent that the proposed quarry has been operated to supply rock material to construct the Kothmale Dam. If quarrying activities at the same site is commenced it would adversely affect to the surrounding area because soil creeping and earth subsidences have been reported since the impounding of the Kothmale reservoir. Therefore, it is suggested to locate a suitable other quarry site to obtain rock material for Moragolla Hydropower Project.

S.M.A.T.B. Mudunkotuwa
Deputy Director / Geology
for Director

දුරකථන / தொலைபேசி / Telephone : සභාපති / தலைவர் / Chairman : 2739310
අධ්‍යක්ෂ / பணிப்பாளர் / Director : 2725745
සාමාන්‍යාධිකාරී / பொது முகாமையாளர் / General Manager : 2724127
ජෙනරල් / பொது / General : 2725751 2739307 2725745 2739308 2721920
ෆැක්ස් අංකය / தொலைநகல் இல. / Fax No. : 94-011-2735752

ප්‍රාදේශීය මහ ලේකම් කාර්යාලය
ගඟ ඉහල කෝරලේ
DIVISIONAL SECRETARIAT
GANGA IHALA KORALE
කුරුඳුවත්ත කඩවීදිය குருந்துவத்த வீதி Kurunduwattha Bazaar

ප්‍රාදේශීය ලේකම් பிரதேச செயலகம் Divisinol Secretary	0812351032	කාර්යාලය அர்யாலயம் Office	0812352604	ෆැක්ස් பெக்ஸ் Fax	081235264
අපේ අංකය My No	ගඉකො/ප්‍රාලේ/2/1/1 2009/1	ඔබේ අංකය Your No		දිනය Date	2009.08.07

14/08/09

නියෝජ්‍ය සාමාන්‍යාධිකාරි.
ජල සම්පත් කළමණාකරණ ඉංජිනේරු කාර්යයන්
ත්‍රිපිබද මධ්‍යම උපදේශණ කාර්යාංශය,
41 - බෞද්ධාලෝක මාවත,
කොළඹ 07.

CENTRAL ENGINEERING 2303 14/08/09

මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය.

උක්ත හිසින් යුතු අප විසින් එවන ලද ගඉකො/ප්‍රාලේ/2/1/1/2009/1 හා 2009/06/25 දිනැති ලිපිය හා බැඳේ.

ඒ අනුව දුරකතනයෙන් කථා කරගත් පරිදි උලපනේ ප්‍රදේශයේ ක්‍රියාත්මක සංවර්ධන ව්‍යාපෘතින්හි විස්තරාත්මක තොරතුරු මේ සමඟ එවන බව කාරුණිකව දන්වමි.

ප්‍රාදේශීය ලේකම්,
ගඟ ඉහල කෝරලේ.

නිශ්ශංක ප්‍රේමලාල්
සහකාර අධ්‍යක්ෂ (ග්‍රාම සම්පාදන)
ගඟ ඉහල කෝරලේ
ප්‍රාදේශීය ලේකම් වෙළුවට
කුරුඳුවත්ත කඩවීදිය.

Water Resources Unit
Received on 14/8/09
Letter Number 271

රජ ඇල සංවර්ධනය

- උලපනේ ඔය හරහා ජලය රජ ඇලට ලබා ගනී
- උලපනේ සිට මාළිගාපුරණ,ගම්පොලවෙල,ජයමාලපුර දක්වා ජලය ගෙන යයි
- ජල පෝෂිත ප්‍රමාණය අක්කර 405 කි
- මෙම ඇල මාර්ගය මහා චාරිමාර්ගය සතු වේ
- මෙහි සම්පූර්ණ දිග සැතපුම් 08 කි
- රජ ඇලට අයත් ගම්පොලවෙල ඇළෙහි කොටසක් නාය යෑමට ලක්වූ අතර එය තාවකාලිකව අලුත් වැඩියා කර ඇත
- වසර පුරා ජලය රඳා පවතින මෙම ඇල වේල්ලෙහි රොන් මඩ ඉවත් කර ප්‍රතිසංස්කරණය කළ යුතුවේ
- මෙම ව්‍යාපෘතිය පිළිබඳ තොරතුරු 071-4425803 අංකයෙන් ලබා ගත හැක

මහවිලවත්ත ඉඩම් හා නිවාස ව්‍යාපෘතිය

- එක් පුද්ගලයකුට පර්චස් 15 බැගින් බෙදා දුන් අතර එහි නිවාස 100 ක් ඉදිකර ඇත
- වර්ග අඩි 500 කින් සමන්විත ඉදිරිපස පිළ සහ කාමර 02 ක මුලුතැන්ගෙය සහ වැසිකිළියකින් මෙම නිවස සමන්විත වේ
- නිවාස 100 ට අමතරව ප්‍රජා ශාලාවක්,සංස්කෘතික ගොඩනැගිල්ලක්,ක්‍රීඩා පිටියක් හා මාර්ග පහසුකම් සලසා දී ඇත
- මේ සඳහා වැය වී ඇති දළ ඇස්තමේන්තුව

අනු අංකය	ව්‍යාපෘතිය	ඇස්තමේන්තු මුදල
01	නිවාස ඉදිකිරීම	20000000
02	මාර්ග ඉදිකිරීම	15000000
03	ප්‍රජාශාලාව ඉදිකිරීම	1500000
04	සංස්කෘතික ගොවනැගිල්ල ඉදිකිරීම	3000000
05	ක්‍රීඩා පිටිය ඉදිකිරීම	600000
	මුළු වියදම	40100000

ඇත්ගාල නව නගර සංවර්ධනය

- නාගරික සංවර්ධන අධිකාරිය මගින් ක්‍රියාත්මක කරයි
- ඇස්තමේන්තු මුදල රු 16400000/
- 2008 වර්ෂයේදී මෙම ව්‍යාපෘතිය ආරම්භ කරන ලදී
- ඇත්ගාල නැගෙනහිර වසම තුල ඉදිකිරීම් ආරම්භ කර ඇති අතර මෙය කාමර 22 කින් සමන්විතය
- දැනට ගග ඉහළ කෝරළේ ප්‍රාදේශීය සභා අරමුදල් මගින් ක්‍රියාත්මක වේ

උලපනේ කර්මාන්ත පුරය

- කර්මාන්ත අමාත්‍යාංශය මගින් ඉදිකිරීම් කරයි
- 2006 වර්ෂයේදී මෙම ව්‍යාපෘතිය ආරම්භ කරන ලදි
- දැනට කර්මාණ්ත 11 ක වැඩ ආරම්භ කර ඇත
- සපත්තු, ගිනිපෙට්ටි, නූවිලස් මොපින්, බැග්, මිටිස්කුඩු, වැල්ඩින් වැඩ, ජුස් නිෂ්පාදනය, බැග් නිෂ්පාදනය ඉන් කිපයකි
- සේවකයින් 1000 ක් පමණ දැනට සේවය කරයි
- මෙම කර්මාන්ත පුරයෙහි රු 10000000/ වියදමෙන් මාර්ග ඉදිකිරීම් ආරම්භ කර ඇත

- රු 8000000 ක වියදමෙන් ජල ටැංකි 02 ක ඉදිකිරීම් ආරම්භ කර ඇත
- මෙම ව්‍යාපෘතිය පිළිබඳ තොරතුරු 011-2436123/4 අංකයෙන් ලබා ගත හැක

මහනුවර දකුණ ජල සම්පාදනය

- මෙම ව්‍යාපෘතියෙහි ඉදිකිරීම් ජල සම්පාදන මණ්ඩලය මගින් සිදු කරයි
- 2006 වර්ෂයේදී මෙම ව්‍යාපෘතිය ආරම්භ කරන ලදි
- රුපියල් මිලියන 9636 ක් මේ සඳහා වැය වේ
- වල්ලහගොඩ, ගම්පොලවෙල, විගුලවත්ත මාර්ග තුල ජල නල එලීම අවසන් කර ඇත
- මෙම ව්‍යාපෘතිය පිළිබඳ තොරතුරු 081-2385825 /26 අංකයෙන් ලබා ගත හැක

මාර්ග සංවර්ධන අධිකාරිය
வீதி அபிவிருத்தி அதிகாரசபை
Road Development Authority

"සෙත්සිරිපාය" බත්තරමුල්ල
"செத்சிரிபாய" பத்தரமுல்ல
"Sethsiripaya", Battaramulla,
Sri Lanka.

මගේ අංකය
எனது இல.
My No. RDA/ES/H/CP

ඔබේ අංකය
உமது இல.
Your No. .....

දිනය
திகதி
Date .....03.08.2009.....

CENTRAL ENGINEERING CONSULTANCY BUREAU
2385
19 AUG 2009
ADMINISTRATION SECTION

Deputy General Manager
Water Resource Management
CECB

19/08/09

2/6

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

This refers to your letter No. CB/WR/WRM/P – 11 dated 14th July 2009 regarding the above.

As far as the road geometry is considered the following comments are listed below:

01. Horizontal Alignment

The horizontal curves provided appears with very small curve length and with very small curve radius.

02. Vertical Alignment

The vertical curve length are not with minimum vertical curve length.
The vertical curve to be improved.

03. The typical cross section adopted to be shown.

04. The cross-drainage designs to be developed.

05 Any retaining wall requirements to be included

06. A pavement design according to the soil investigation to be prepared.

In addition to the above detailed design related to improvements please communicate with Director/Planning, RDA for the proposed project.

Director / Highway Designs
Road Development Authority

Director/Highway Designs
Road Development Authority

Water Resources Unit
Received on 19/8/09
Letter Number 281

cc: AGM(AD) - f.i. pl.
D/P - f.i. pl.

ප්‍රාදේශීය මහලේකම් කාර්යාලය
උඩපළාත - ගම්පොල.
பிராதேசீய செயலகம்
உடபலாத்த - கம்பளை.
DIVISIONAL SECRETARIAT
UDAPALATHA - GAMPOLA.

මගේ අංකය / எமது இலக்கம் / My No. } ප්‍රා.ලේ/දෙ/1/5/11/2
ඔබේ අංකය / உமது இல / Your No. } සිපි/ඛයඅා/ඛෙ. අා.ජල./ජි-11
දිනය / திகதி / Date } 2009.07.27

234

නියෝජ්‍ය සාමාන්‍යාධිකාරි
ජලසම්පත් කළමණාකරන ඉංජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම
උපදේශක කාර්යාංශය

මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය

උක්ත කරුණට අදාළව ඔබේ සමාංක හා 209.6.24 දිනැති ලිපි හා බැඳේ.

මෙම ව්‍යාපෘතිය ක්‍රියාත්මකවන බල ප්‍රදේශයේ ඉදිරියේදී ක්‍රියාත්මක වන සංවර්ධන ව්‍යාපෘති නොමැති අතර එහෙත් මෙම ව්‍යාපෘති ප්‍රදේශය අවට පහත සඳහන් සංවර්ධන ව්‍යාපෘතීන් ක්‍රියාත්මක වන බව දන්වමි.

1. පිලවල - කඵගල්හින්න මාවතුර පිලවල පාර
2. මාවතුර- මාවතුර නව ජනපද පාර
3. වැලිගහ- සුසාන භූමිය හරහා කනපති වත්ත පාර
4. කැකුළන්ද- ගලත පාසැල අසලින් නයාපාන වත්ත දක්වා පාර
5. මාවතුර- මිහිදු මාවතේ ඉතිරි කොටස සංවර්ධනය කිරීම
6. මාවතුර- මාවතුර වෙලේවත්තගල්මුල අසල වතුර ටැංකිය සෑදීම

බී.එම්.නිමල් බාලසූරිය.
ප්‍රාදේශීය ලේකම් උඩපලාත
බී. එම්. නිමල් බාලසූරිය
ප්‍රාදේශීය ලේකම්
ප්‍රාදේශීය මහලේකම් කාර්යාලය
උඩපලාත - ගම්පොල.

පාලේ
සහකාර කුණ්ඩුකම් : 081-2352585 ගණකාධිකාරි : 081-2351352 ෆැක්ස් : 081-2352236
ලේකම් : 081-2352236 කාර්යාලය : 081-2352236 ඊ මේල් : divsecudpl@sltnet.lk

ශ්‍රී ලංකා මහවැලි අධිකාරිය
இலங்கை மகாவலி அதிகாரசபை
Mahaweli Authority of Sri Lanka
500. ටී. බී. ජයා මාවත, කොළඹ 10.
500, டி.பீ. ஜயா மாவத்தை, கொழும்பு 10.
500, T. B. Jayah Mawatha, Colombo 10.

Water Resources Unit

ED/TS/MH/MORA/14
18 June 2009

Received on 02/07/09
Letter Number 231

(181)

Deputy General Manager (Water Resources Management),
Central Engineering Consultancy Bureau,
No. 415, Bauddhaloka Mawatha,
Colombo 07

CENTRAL ENGINEERING CONSULTANCY BUREAU
02 JUL 2009
SECTION

Dear Sir,

PROPOSED MORAGOLLA HYDROPOWER PROJECT
ENVIRONMENTAL IMPACT ASSESSMENT (EIA)

This refers to your letter No. CB/WR/WRM/P-11, dated 7 April 2009 addressed to us, seeking our observations, recommendation and conclusion with regard to the Development of above Hydropower project.

At a meeting held at the MASL Conference room on 8th February 2006, a consensus was reached among the participants to accept the CEB's proposal to carryout Feasibility study for the Moragolla Project. Also, we informed them that MASL's involvements are essential during the planning stage of the project, since, this project site is on the Mahaweli river course.

Therefore, MASL was appointed as the Project Approving Agency for the Environmental approval of the project and accordingly, TOR for the EIA process was issued.

In that TOR, it has indicated every aspect to be considered for this assessment, including impacts on irrigation and flood protection work, impacts on existing Polgolla and Kothmale Water Management area, method of diversion the existing water during construction stage and proposals for Emergency Action Plan along with arrangements for early warning systems & details required to ensure the dam safety aspects.

අධ්‍යක්ෂ ජනරාල්
பொது இயக்குதர்
Director Office
2687238

පොදු කාර්යාලය
பொது அலுவலகட்
General Office

දුරකථනය தொலைபேசி Telephone 2687491-5
කේබල් கேபல் Cable MAHAGANGA
ෆැක්ස් பெக்ஸ் Fax 2687240

Therefore, we feel that already issued TOR contains required details to incorporate for the above study.

Yours faithfully,

Eng. Dharmasiri De Alwis,
Director General,
Mahaweli Authority of Sri Lanka

CC: 1. Deputy General Manager (Energy Purchases)
Transmission Division
Ceylon Electricity Board
6th Floor, 50, Sir Chittampalam A. Gardiner Mawatha
Colombo 02

2. Director (Env. & Nat. Res.)/MASL

} For information

ENGINEERING CONSU... Arm (WRP) 725 29 JUL 2009 SECTION

(75)

මගේ අංකය
எனது இல.
My No ගිඉකෝ/ප්‍රාලේ

මගේ අංකය
உமது இல.
Your No 2/1/1/2009/1

ලේඛන අංකය
தொலைபேசி இல
Telephone No 081-2352604

ප්‍රාදේශීය මහ ලේකම් කාර්යාලය, ගඟ ඉහළ කෝරළේ.

කාර්යාලය
அலுவலகம்
Office 081-2352604

பிரதேச செயலகம், கங்க இஹல கோரளே

ෆැක්ස්
பக்ஸ்
Fax 081-2352604

DIVISIONAL SECRETARIAT GANGA IHALA KORALE.

කුරුඳුවත්ත,
කඩවීදිය.

குருந்துவத்த
வீதி.

KURUNDUWATTA
BAZAAR.

දිනය
திகதி
Date 2009/06/25

නියෝජ්‍ය සමාන්‍යාධිකාරි
ජල සම්පත් කළමණාකරණ
ඉංජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම උපදේශන කාර්යාංශය
41 බෞද්ධාලෝක මාවත
කොළඹ 07

මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය

උක්ත වැඩසටහන හා සම්බන්ධ ඔබගේ අංක සීඩී/ඩබ්.ආර්/ඩබ්.ආර්.එම්/පී-11හා 2009-06-24 දිනැති ලිපිය හා සම්බන්ධවයි.

එමගින් දන්වා ඇති පරිදි උලපනේ ප්‍රදේශයේ ක්‍රියාත්මක වන සංවර්ධන ව්‍යාපෘති පහත සඳහන් කුර එවන ඔව කාරුනිකව දන්වමි.

01 ඇත්ගාල නව නගර සංවර්ධනය
02 උලපනේ කර්මාන්තපුරය හා ආශ්‍රිත නගරය සංවර්ධන ව්‍යාපෘතිය
03 මහනුවර දකුණ ජල සම්පාද ව්‍යාපෘතිය
04 රජ ඇල සංවර්ධන ව්‍යාපෘතිය
05 උලපනේ මහවිලචත්ත ඉඩම් බෙදාදි නිවාස ඉදිකිරීම් ව්‍යාපෘතිය

ප්‍රාදේශීය ලේකම්
ගඟ ඉහල කෝරළේ

එම්. ඩී. රංජනී ජයකොඩි
ප්‍රාදේශීය ලේකම්
ගඟ ඉහල කෝරළේ
කුරුඳුවත්ත කඩවීදිය

Water Resources Unit
Received on 29/6/09
Letter Number 224

29/06/09

ප්‍රාදේශීය මහලේකම් කාර්යාලය
උඩපලාත - ගම්පොල.
பிராதேசீய செயலகம்
உடபலாத்த - கம்பளை.
DIVISIONAL SECRETARIAT
UDAPALATHA - GAMPOLA.

මගේ අංකය / எமது இலக்கம் / My No. } ප්‍රාදේ /උප/1/5/11/27

ඔබේ අංකය / உமது இல / Your No. }

දිනය / திகதி / Date } 2009.06 19

160

CENTRAL ENGINEERING CONSULTANCY BUREAU
Agm (WR)
670
22 JUN 2009
ADMINISTRATION SECTION

නියෝජ්‍ය සාමාන්‍යාධිකාරී
ජලසම්පත් කළමණාකරන ඉජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම
උපදේශක කාර්යාංශය.

මොරගොල්ල යෝජිත ජල ව්‍යාපෘතිය

උක්ත කරුණ සම්බන්ධයෙන් 2009.02.20 හා 2009.05.13 දිනැති ලිපි හා බැඳේ.

ඒ අනුව මොරගොල්ල යෝජිත ජල විදුලිබල ව්‍යාපෘතියට අදාල සංවර්ධන කටයුතු තුලින් සිදුවන සමාජීය ආර්ථික පාරිසරික බලපෑම් පිළිබඳ සලකා බලා පහත සඳහන් යෝජනා ඉදිරිපත් කරමි.

01.ජලාශයට අයත්වන ඉඩම් ජනපද හා සින්නක්කර ඉඩම් බැවින් එම ඉඩම් හිමියන්ට විකල්ප ඉඩම් ලබාදීම සුදුසුය.

02. යෝජිත විකල්ප මාර්ගය වැලිඟඟ ජනපදය හරහා දළබැවුම් ප්‍රදේශයක ඉදිවන බැවින් එම ඉඩම්වල පදිංචිකරුවන් සඳහා ද විකල්ප ඉඩම් ලබාදීම සුදුසුවන අතර මාර්ග රක්ෂිතයේ පදිංචිකරුවන්ද හඳුනාගෙන සහන සැලසිය යුතුව ඇත.

03. විකල්ප මාර්ගය ඉදිකිරීමේදී පාරිසරික හානිය අවම වන පරිදි එනම් නාය යෑමේ තත්වයන් ඇති නොවන පරිදි ඉදිකිරීම් යෝගය වේ.

04. යෝජිත ජලාශයේ බැම්ම විදුලි බලාගාරය අතර ගගට එකතුවන සක්‍රිය හා වැසි කාලවල පමණක් සක්‍රිය වන කුඩා ජලපහරවල් 06 ක් පමණ ඇති බැවින් ඒවායින් එකතුවන ජලයෙන් අදාල ගංගා කොටස පෝෂණය වීමට ප්‍රමාණවත් වුවද ගංගාවේ පැවැත්මට ප්‍රමාණවත් ජල ප්‍රමානයක් මුදා හැරීම යෝග්‍ය වේ.

MS PSF 22/06/09
F.2 R.N.C pl

Water Resources Unit
Received on 22/6/09
Letter Number 215

ඩී.එම්.නිමල් බාලසූරිය
ප්‍රාදේශීය ලේකම් උඩපලාත

2009.6.22

ප්‍රාදේශීය ලේකම් : 081-2352585 ගණකාධිකාරී : 081-2351352 ෆැක්ස් : 081-2352236
සහකාර ප්‍රාදේශීය ලේකම් : 081-2352236 කාර්යාලය : 081-2352236 ඊ මේල් : divsäecudpl@sltnet.lk

නාගරික සංවර්ධන හා පූජා භූමි සංවර්ධන අමාත්‍යාංශය
நகர அபிவிருத்தி மற்றும் புனிதப் பகுதி அபிவிருத்தி அமைச்சு
MINISTRY OF URBAN DEVELOPMENT &
SACRED AREA DEVELOPMENT

நாகரிக சංවර්ධන අධිකාරිය
நகர அபிவிருத்தி அதிகாரசபை
Urban Development Authority

දුරකථන / தொலைபேசி / Telephone: 2875916 2875917 2875918 2873652 2875919 2875920 2873644 2875333 2873647 2873649 2873651

ෆැක්ස් / தொலை நகல் / Fax: 2873637

6 හා 7 වැනි මහල, සෙත්සිරිපාය, බත්තරමුල්ල
6, 7 ஆம் மாடிகள், "செத்சிரிபாய", பத்தரமுல்லை.
6 & 7 Floors, Sethsiripaya, Battaramulla.

වෙබ් අඩවිය / இணையத்தளம் / Web Site: www.uda.lk

Urban Development Authority,
Central Provincial Office,
No. 18, Keppetipola Mawatha,
Kandy.

11th June, 2009

My No: 17/CP/N/UDA/1
Your No: CB/WR/WRM/P-11

Mrs. P.S.F. Siriwardena,
Dy. General Manager,
Water Resource Management
C.E.C.B.,
415, Bauddhaloka Mawatha,
Colombo 07.

ENVIRONMENTAL IMPACT ASSESSMENT (EIA) FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

This has reference to your letter dated 28th May, 2009 requesting a brief of the existing and planned projectsin the above mentioned project area.

This is to inform you that the proposed project site does not fall within the area declared under the Urban Development Authority Law. However, you are required to obtain details of any proposed projects from Ganga Ihala Korale Pradeshiya Sabha and other relevant Government Agencies.

The U.D.A. has taken the location of the hydro power plant for future planning purposes.

J. B. Hettiarachchie

(Mrs.) Janakie B Hettiarachchie
Dy. Director General (Pl)- Zone II
URBAN DEVELOPMENT AUTHORITY

CJR/n.

15/06/09

ප්‍රාදේශීය මහ ලේකම් කාර්යාලය
ගඟ ඉහල කෝරළේ
DIVISIONAL SECRETARIAT
GANGA IHALA KORALE
කුරුඳුවත්ත කඩවීදිය Kurunduwattha Bazaar

ප්‍රාදේශීය ලේකම් 081235103 2
Divisinol Secretary
කාර්යාලය 0812352604
Office
ෆැක්ස් 0812352604
Fax

මගේ අංකය ගඟඉකෝ/ප්‍රාලේ/2/1/2009/1
My No
ඔබේ අංකය
Your No
දිනය 2008/03/20
Date

5508

නියෝජ්‍ය සාමාන්‍යාධිකාරි (ජල සම්පත් කළමණාකරණ),
ඉංජිනේරුමය කාර්යයන් පිළිබඳ මධ්‍යම උපදේශක කාර්යාංශය,
415,
බෞද්ධාලෝක මාවත,
කොළඹ 07.

මොරගොල්ල යෝජිත ජල විදුලිබල ව්‍යාපෘතිය

උක්ත ව්‍යාපෘතියට අදාළව ඔබේ අංක CB/WR/WRM/P11 දරණ 2009.02.20. දිනැති ලිපිය හා බැඳේ.

ඒ අනුව ඔබ විසින් ලබා දී ඇති මොරගොල්ල යෝජිත ජල විදුලිබල ව්‍යාපෘතියේ සැලසුමට අනුව නිරීක්ෂණ කිරීමේ දී ඉදි කිරීමට සැලසුම් කර ඇති උමං මාර්ගය උලපනේ කර්මාන්ත පුරය හැමිය තුළ ඉදි කිරීමට යෝජිත බැවින් මේ වන විට සියලුම ගොඩනැගිලි ඉදි කිරීම් අවසන් කර කර්මාන්ත ආරම්භ කර ඇති නිසා යෝජිත උමං මාර්ගය ඉදි කිරීමේ ගැටලු පවතී.

ඒ අනුව මෙම ව්‍යාපෘතියේ ඉදිරි කටයුතු කිරීමට කර්මාන්ත හිමියන් දක්වන විරෝධතාවය පිළිබඳ සාකච්ඡා කර සුදුසු ක්‍රියාමාර්ගක් ගැනීම වඩා යෝග්‍ය බව කාරුණිකව දන්වම්.

ප්‍රාදේශීය ලේක.මි
ගඟ ඉහල කොරළේ..

එම්. ඩී. රංජනී ජයකොඩි
ප්‍රාදේශීය ලේකම්
ගඟ ඉහල කෝරළේ
කුරුඳුවත්ත කඩවීදිය

Water Resources Unit
Received on 24/3/09
Letter Number 101

(237)

BOI
SRI LANKA

BOARD OF INVESTMENT OF SRI LANKA

P. O. Box 1768, World Trade Centre- West Tower, Echelon Square, Colombo 1, Sri Lanka.

Date : 29.09.2009

Our Ref: LE 1479

Your Ref:

06/10/09

Mrs P S F Siriwardana
Deputy General Manager (Water Resources Manager)
Central Engineering Consultancy Bureau
415 Bauddhaloka Mawatha.
Colombo 7

Dear Madam

ENVIRONMENT IMPACT ASSESMENT (EIA) FOR THE PROPOSED MOROGOLLA HYDRO POWER PROJECT

This has reference to your letter dated 09.07.2009.

The Board of Investment of Sri Lanka has granted an approval for M/S Farms Pride (Pvt) Ltd to establish a Boiler Processing Plant at Davidson Estate Athgala, Gampola, after obtaining approval from Committee for determining the sitting of High and Medium polluting industries out side the EPZ and industrial estates at Central Environment Authority (CEA) on 23.02.2001

The initial water requirement was 450,000l/day and now approximately 600,000l /day waste water is said to be discharged into Mahaweli River after treatment to comply with standard industrial wastewater discharged into inland surface waters.

Farms Pride P Ltd had requested an approval for their first expansion on 04.06.2009, however our records reveal that the above approval has been withdrawn on 08.04.2009

Please contact M/S Farms Pride P ltd for getting information about their future expansion as requested information is currently not available with us.

(Mrs.) M A S Perera

Director Environment Management
Board of Investment of Sri Lanka

C:\Documents and Settings\chinthakaf.BOI\My Documents\LETTERS\CECB Farms Pride.doc

Tel: 2385972-6, 2346131-3, 2434403-5, 2435027, 2447531
Telex: 21332 ECONCOM-CE, Cable: ECONCOM. COLOMBO
Fax: 94-11-2329795

කර්මාන්ත සංවර්ධන අමාත්‍යාංශය
கைத்தொழில் அபிவிருத்தி அமைச்சு
MINISTRY OF INDUSTRIAL DEVELOPMENT
ප්‍රාදේශීය කර්මාන්ත සේවා මධ්‍යස්ථානය - මධ්‍යම පළාත
பிரதேச கைத்தொழில் சேவை நிலையம் - மத்திய மாகாணம்
REGIONAL INDUSTRY SERVICE CENTRE - CENTRAL PROVINCE

692/1. පේරාදෙණිය පාර, මහනුවර.
692/1, பேராதெனிய றோட், கண்டி.
692/1, Peradeniya Rd, Kandy.

රිමේල් / ஈ.மேல் / E-mail: redkandy@slt.lk

දුරකථනය / தொலைபேசிகள் / Tel No. 081-2386180

(17)

මගේ අංකය / எமது இல. / My No.

ඔබේ අංකය / உமது இல. / Your No 109/12/01/71

දිනය / திகதி / Date

2009 ජූනි මස 25 වන දින.

10/07/09

ජී.එස්.පී.සිරිවර්ධන මිය,
නියෝජ්‍ය සාමාන්‍යාධිකාරී,
ජල සම්පත් කළමනාකරණ අංශය,
ඉංජිනේරු කාර්යයන් පිළිබඳ මධ්‍ය.කාර්යාංශය,
කොළඹ.

යෝජිත මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය.

ඔබගේ අංක CB/WR/WRM/C-11 හා 2009.06.26 දිනැති ලිපිය හා බැඳේ.

යෝජිත මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතියේ පාරිසරික අධ්‍යයනය සඳහා උලපනේ කර්මාන්තපුරය සම්බන්ධයෙන් මෙම විසින් ඉල්ලා ඇති තොරතුරු වලට අනුව දැනට අප කාර්යාලය සතු පහත යඳහන් තොරතුරු පමණක් ලබාදීමට හැකි බව දන්වමි.

01. දැනට අනුමත කර්මාන්ත වලට අමතරව ඉදිරියේදී පිහිටුවීමට අපේක්ෂිත කර්මාන්ත

- සී/ස ඩයිවා ප්ලාස්ටික් ලිමිටඩ් – පොලිතීන් හා පොලිතීන් බෑග්
- ප්‍රේමටෙක් සමාගම – ලී පිත්තාරු රාමු
- ජයලංකා පර්නිචස් – එම්.ඩී.එෆ්. හා දැව හා වානේ ගෘහ භාණ්ඩ
- තරිඳු ෂ්‍රෝඩක්ටස් – පලතුරු බිම

02. අපද්‍රව්‍ය ජලය මුදාහැරීමක් සිදුනොකරන අතර, ඝණ අපද්‍රව්‍ය හා අනිකුත් අපද්‍රව්‍ය කර්මාන්තශාලා භූමිය තුලට රැස්කර ගගඉහළ ප්‍රාදේශීය සභාව මාර්ගයෙන් ඉවත් කිරීම

03. කර්මාන්තපුරයෙහි එක් රැස්වන වැසි ජලය පමණක් කාණු මාර්ග මස්සේ මහවැලි ගඟට එකතු වේ. ජලය අපවිත්‍ර කර්මාන්ත දැනට නොමැති අතර, ඉදිරියේදී එවැනි කර්මාන්ත ආරම්භ කිරීමක් සිදුනොවේ.

04. උලපනේ කර්මාන්තපුරය සම්බන්ධයෙන් පාරිසරික අධ්‍යයන (I.E.E) වාර්තාවක් දැනටමත් සකස් කරමින් සිටින අතර, ශ්‍රී ලංකා මහවැලි අධිකාරියේ නියමයකට අනුව කර්මාන්තශාලා වලින් ඉවත්වන ජලය ගංඉවුරේ සිට මීටර් 60 ක් දුරට මුදා හැරීමට මහවැලි අධිකාරිය අවසර දී ඇත.

එච්.ඩබ්.එම්.පුෂ්පලතා මැණිකේ
ප්‍රාදේශීය අධ්‍යක්ෂ -ම.ප.

Farm's Pride (Pvt.) Ltd.
272, Jayamalapura, Gampola. Sri Lanka.
Tel : +94 (0) 81 2350111
Fax : +94 (0) 81 2350001
email : info@crysbro.net
web : www.crysbro.com

15th June 2009

Mrs.P.S.F.Siriwardene
Deputy General Manager
(Water Resource Management)
Central Engineering Consultancy Bureau
No-415, Baudhaloka Mawatha
Colombo-07

Dear Madam,

Re: Environmental Impact Assessment (EIA) for the proposed Moragolla Hydro power Project

With reference to your letter dated 3rd June 2009, regarding the above subject, we herewith furnish our water requirement for your kind consideration.

We require 400,000 litres of water per day at present and we may need for expanded production in the future will be max 1,000,000 litres/day. The water need for production facility is discharged to the river after treatment as per C.E.A specification.

Please find herewith enclosed map where our Industry located.

Thanking You

Yours Faithfully

FARMS PRIDE (PVT) LTD

M.Imtiaz
Chairman

APPENDIX B

අධ්‍යක්ෂ ජනරාල්
Director-General
දුරකථන අංක
Telephone Nos 011-2695255
ෆැක්ස
Fax 011-2696250
E-mail : arch@slam.ins.lanka.net
Web Site : www.archaeology.gov.lk
පිළිතුරු ලිපිනය
Telegrams පුරාවිද්‍ය
Purave.

ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජය
தொல்லியல் திணைக்களம்
DEPARTMENT OF ARCHAEOLOGY
இலங்கை ஜனநாயக சோசலிசக் குடியரசு
Government of the Democratic Socialist Republic of Sri Lanka

මගේ අංකය
My No. PA/EXP/1/10
ATA/CP/2010
ඔබේ අංකය
Your No
ලිපිනය
Sir Marcus Fernando Mawatha,
Colombo 7.

දිනය
Date 2010.07.14

P. G. R.
20 JUL
5556

ආර්. ජේ. ගුණවර්ධන මහතා
අතිරේඛ කොමසාරිස් (පරීක්ෂණ)
පරීක්ෂණ හා ජනක සැලසුම් අංශය.
මහාවැලි ජල විදුලි ව්‍යාපෘතිය.
3 වන මහල, සැ.තැ. 540.
ලංකා විදුලිබල මණ්ඩලය.
කොළඹ 02.

මහාවැලි ජල විදුලි බලාගාර ව්‍යාපෘතිය
පුරාවිද්‍යා බලපෑම් ඇගැයීම් සමීක්ෂණය

ඉහත දැනුම් කරුණ සම්බන්ධව ඔබ විසින් මා වෙත යොමු කරන ලද 2010-03-31 දිනැති අයදුම්පත හා සම්බන්ධ.

ඉහත ව්‍යාපෘතියෙහි පුරාවිද්‍යා බලපෑම් ඇගැයීම් සමීක්ෂණය මගේ නිලධාරීන් විසින් ළඟදී කොට විමර්ශනය. මා වෙත ඉදිරිපත් කොට තිබේ. එම වාර්තාව ඔබ වෙත මේ සමඟ යොමු කරමි.

පාළිත නිමල් පෙරේරා
මියෝජ්‍ය අධ්‍යක්ෂ ජනරාල්
පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල් වෙනුවට

අධ්‍යක්ෂ ජනරාල්
பணிப்பாளர் நாயகம்
Director-General

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විදුලි පණිවුඩ
தக்தி
Telegrams
පුරාවිද්.
புராவித்.
Puravid.



පුරාවිද්‍යා දෙපාර්තමේන්තුව
தொல்லியல் திணைக்களம்
DEPARTMENT OF ARCHAEOLOGY

ශ්‍රී ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජය
இலங்கை சனநாயக சோசலிசக் குடியரசு
Government of the Democratic Socialist Republic of Sri Lanka

මගේ අංකය
எனது இல.
My No. DA/EXP/1/1 A1A/2010

ඔබේ අංකය
உமது இல.
Your No.

ශ්‍රීමත් මාකස් ප්‍රනාන්දු මාවත.කොළඹ 7.
சேர் மாக்கஸ் பர்நான்து மாவத்தை.
கொழும்பு 7.
Sir Marcus Fernando Mawatha,
Colombo 7.

දිනය
திகதி
Date 2010-07-13

ආර්. ජේ. ගුනවර්ධන මහතා
අතිරේක සාමාන්‍යාධිකාරී (සම්ප්‍රේෂණ)
සම්ප්‍රේෂණ හා ජනක සැලසුම් අංශය,
මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය,
5 වන මහල, තැ.පෙ. 540,
ලංකා විදුලිබල මණ්ඩලය,
කොළඹ 02.

Received. 14/07/10 1540 hrs.

<u>මොරගොල්ල ජල විදුලි බලාගාර ව්‍යාපෘතිය</u>
<u>පුරාවිද්‍යා බලපෑම් ඇගැයීම් සමීක්ෂණ</u>

ඉහත සඳහන් කරුණ සම්බන්ධව ඔබ විසින් මා වෙත යොමු කරන ලද 2010-03-31 දිනැති අයදුම්පත හා සබැඳේ.

02. මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය ක්‍රියාත්මක කිරීමට යෝජිත මහනුවර, ගඟ ඉහළ කෝරළ් සහ උඩපළාත ප්‍රාදේශිය ලේකම් කොට්ඨාසයන්හි වැලි ගඟ, උලපනේ, උඩගම, සිංහපුර, ගම්පොළවෙල, ගලාත, නවදෙවිට ග්‍රාම නිලධාරි වසම්වලට අයත් භූමි වාර්තාව මා වෙත ඉදිරිපත් කොට තිබේ.

03. එම වාර්තාවට අනුව යෝජිත භූමියෙහි මතුපිට පුරාවිද්‍යාත්මක සාධක කිසිවක් දක්නට නොලැබෙන බැවින් පහත සඳහන් කොන්දේසිවලට යටත්ව ඉහත ව්‍යාපෘතිය ක්‍රියාත්මක කිරීම සඳහා අවසර ලබා දෙමි.

කොන්දේසි :

I. ව්‍යාපෘතිය ක්‍රියාත්මක කිරීමේ දී මෙම දෙපාර්තමේන්තුවේ නිලධාරියෙකුගේ අධීක්ෂණය ලබාගත යුතුය.

II. ව්‍යාපෘතිය ක්‍රියාත්මක කර පවත්වාගෙන යාමේ දී පුරාවිද්‍යාත්මක වශයෙන් වටිනා යම් කිසිවක් හමුවුවහොත් වහාම පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල් වෙත දන්වා සිටිය යුතුය.

III. ඕනෑම අවස්ථාවක මෙම දෙපාර්තමේන්තුවේ නිලධාරියෙකුට ස්ථානය පරීක්ෂා කිරීමේ අයිතිය තිබිය යුතුය.

ආචාර්ය නිමල් පෙරේරා
නියෝජ්‍ය අධ්‍යක්ෂ ජනරාල්
පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල් වෙනුවට

පිටපත : සහකාර අධ්‍යක්ෂ (මධ්‍යම)

පුරාවිද්‍යා හානි ඇගයීම් සමීක්ෂණය

මොරගොල්ල ජලවිදුලි බලාගාර ව්‍යාපෘතිය

2010

ගවේෂණ හා ලේඛනගත කිරීම් අංශය

පුරාවිද්‍යා දෙපාර්තමේන්තුව

ශ්‍රීමත් මාකස් ප්‍රනාන්දු මාවත

කොළඹ 07

උපදේශකත්වය	-	ආචාර්ය සෙනරත් දිසානායක	
		පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල්	
අධීක්ෂණය	-	ආචාර්ය නිමල් පෙරේරා	
		නියෝජ්‍ය අධ්‍යක්ෂ ජනරාල්	
සම්බන්ධීකරණය	-	වන්දන අබේරත්න මයා	
සහභාගිත්වය	-	ප්‍රියන්ත කප්පාගොඩ මයා	
		ගවේෂණ නිලධාරී	ප්‍රධාන කාර්යාලය-කොළඹ
		ශ්‍රී.අනුර ශාන්ත මයා	
		ගවේෂණ නිලධාරී	ප්‍රාදේශියපුරාවිද්‍යා කාර්යාලය(මධ්‍යම)
සිතියම් සැකසීම		නුවන් අබේවර්ධන මයා	
		පුරාවිද්‍යා පර්යේෂණ සහකාර	ප්‍රධාන කාර්යාලය-කොළඹ
ක්ෂේත්‍ර සහය		වන්දන අබේරත්න මයා	
ඡායාරූප		ශ්‍රී.අනුර ශාන්ත මයා	ප්‍රාදේශිය පුරාවිද්‍යා කාර්යාලය(මධ්‍යම)
වාර්තාව සැකසීම	-	ප්‍රියන්ත කප්පාගොඩ මයා	
		ගවේෂණ නිලධාරී	ප්‍රධාන කාර්යාලය-කොළඹ

ස්තුතිය

මෙම ක්ෂේත්‍ර අධ්‍යයනයේදී මූලික අනුමැතිය හා උපදේශකත්වය ලබාදුන් පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල් ආචාර්ය සෙනරත් දිසානායක මැතිඳුන්ට

අධීක්ෂණ කටයුතු කරමින් මේ සඳහා දායකත්වය සැපයූ නියෝජ්‍ය අධ්‍යක්ෂ ජනරාල් ආචාර්ය නිමල් පෙරේරා මැතිඳුන්ට

ක්ෂේත්‍ර කටයුතු සඳහා නිලධාරියකු ලබාදෙමින් මධ්‍යම පළාත වෙනුවෙන් අධීක්ෂණ කටයුතු කළ මධ්‍යම පළාත් පුරාවිද්‍යා සහකාර අධ්‍යක්ෂතුමන්ට

සම්බන්ධීකරණ කටයුතු සිදුකළ ව්‍යාපෘති කළමණාකාරිණී මාධවික කුඩලිගම මහත්මියට ක්ෂේත්‍ර කටයුතු වලදී සහභාගී වී සහය දක්වා ක්ෂේත්‍ර පහසුකම් සලසාදුන් වන්දන අබේරත්න මහතාට හා නේවාසික ස්ථානයේ සියළු දෙනාට

පුරාවිද්‍යා ස්ථාන/පුරාවිද්‍යා ස්මාරක ප්‍රමුඛතා නිර්ණය කිරීම

ප්‍රමුඛතා පිළිවෙළින් ස්මාරක වර්ග කෙරෙහිමගින් අදහස් කරනුයේ ව්‍යාපෘතිය මගින් යෝජිත භූමියේ පුරාස්මාරක සඳහා වන හානිය වළක්වා ගැනීමයිට මෙම තක්සේරු කිරීමේදී ප්‍රධාන වශයෙන් සැලකිල්ලට ගෙන ඇති කරුණු නම් එම ස්මාරකයන්හි ඇති පුරාවිද්‍යාත්මක වටිනාකම සහ ස්මාරකය ආශ්‍රිත පරිසරය සමඟ වෙන් කළ හැකිවීමේ හෝ නොහැකිවීමේ හැකියාවයිවිමේ කරුණු අනුව පුරාස්මාරක ඒ බී සී වශයෙන් කොටස් තුනකට වර්ග කෙරේ.

ඒ ශ්‍රේණිය - විනාශ කිරීමට ඉඩ දිය නොහැකි දැන් තිබෙන ස්ථානයේම තිබෙන්නට ඉඩ හැරිය යුතු පුරා ස්ථාන හා ස්මාරකයිවිනමුත් මේ වර්ගයට අයත් ඇතැම් පැරණි ස්මාරක අත්‍යාවශ්‍ය නම් සහ අවශ්‍ය තාක්ෂණය යොදා ගත හැකි නම් දැන් පවතින ස්ථානයෙන් ඉවත් කොට ඊට ආසන්නම ස්ථානයක නැවත සවි කිරීම පිළිබඳව සලකා බැලිය හැකි එවා වේවිවිහෙත් මෙම ක්‍රියාවලිය වියදම් අධික හා ශ්‍රී ලංකාව තුළ ක්‍රියාත්මක කළ නොහැකි තත්වයක පවතී.

බී ශ්‍රේණිය - වර්තමානයේ පිහිටි ස්ථානයෙන් ඉවත් කර ආසන්නම වෙනත් ස්ථානයක සථාපිත කළ යුතු පැරණි ස්මාරකයක්. නමුත් වර්තමානයේ පිහිටි ස්ථානය මැනවින් වාර්තා කළ යුතුවේ.

සී ශ්‍රේණිය - මැනවින් වාර්තා කොට ඇතැම් විට කැණීම් කර විනාශ වීමට ඉඩ හැරිය හැකි ස්ථාන.

උපදෙස් හා කොන්දේසි

- මෙම වාර්තාව අදාල වනුයේ සංවර්ධන යෝජක විසින් පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල්වරයා වෙත සපයා ඇති සැලැස්මේ සඳහන් බිම් ප්‍රදේශයට පමණකිරඉන් බැහැරව පිහිටි භූමියක් යම් හෙයකින් ඇදා ගනු ලබන්නේ නම් ඒ සඳහා වෙනම පුරාවිද්‍යා බලපෑම් ඇගයීම් සමීක්ෂණයක් සඳහා අයැදුම් කළ යුතුය.
- ජලාශ හා ජල ස්ථම්භ ඉදිකිරීම ජලනළ එළීම පමණක් නොව අදාළ බිම් ප්‍රදේශය තුළ සිදුවන්නා වූ සියළුම සංවර්ධන ක්‍රියාකාරකම් වලට මෙම බලපෑම් ඇගයීම් යටතේ ගන්නා ලද තීරණ සහ උපදෙස් අදාළ විය යුතුය.
- අදාළ භූමිය තුළ ඇති මෙහි උපලේඛනයෙහි සඳහන් පුරාවිද්‍යා ස්ථානවලට පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල් විසින් යෝජනා කරනු ලබන වැඩ පිළිවෙලට පරිබාහිර වන්නා වූ කිසිදු ආකාරයක මැදිහත් වීමක් සිදුනොවිය යුතුය.
- අදාළ සංවර්ධන ව්‍යාපෘතිය ක්‍රියාත්මක වන අතරවාරයේ හෝ ඉන්පසු ඕනෑම අවස්ථාවක පරීක්ෂා කිරීමට පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල්වරයාට හෝ ඔහුගේ බලයලත් නිලධාරියෙකුට බාධාවක් නොවිය යුතුය.
- මේ සමග ඇති ලේඛනයේ සඳහන් නොවුවද යම්කිසි ස්ථානයක මතුපිට හෝ භූමිය අභ්‍යන්තරයෙහි යම්කිසි පුරාවස්තුවක් අනාවරණය වුවහොත් පුරාවස්තුවල ආරක්ෂාවට කඩිනම් පියවර ගෙන වහාම පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල්වරයා වෙත දැනුම්දිය යුතුය.
- සංවර්ධන යෝජනා ක්‍රමය හේතුවෙන් යම්කිසි පුරාවස්තුවකට සෘජු වශයෙන් හානිකර බලපෑමක් නොවන්නේ වුවද වක්‍රව යම්කිසි හානියක් සිදුවන්නේ නම් හෝ එසේ වීමට පැහැදිලි අවකාශ ඇත්නම් හෝ ඒ කෙරෙහි සංවර්ධන යෝජකයාගේ විශේෂ අවධානය යොමුවිය යුතු අතර ,ඒ සම්බන්ධයෙන් නොපමාව පුරාවිද්‍යා අධ්‍යක්ෂ ජනරාල්වරයා දැනුවත් කළ යුතු වේ.
- මෙම උපදෙස් හා කොන්දේසි කඩකරන්නේ නම් පුරාවස්තු ආඥාපනතේ 43(ආ) වගන්තිය යටතේ මෙම ව්‍යාපෘතිය නීති විරෝධී ව්‍යාපෘතියක් සේ සළකා රිට විරුද්ධව නීතිමය කටයුතු සිදුකරනු ඇත.

ස්ථානීය පිහිටීම.

පළාත	-	මධ්‍යම පළාත
දිස්ත්‍රික්කය	-	මහනුවර
ප්‍රාදේශීය ලේකම් කොට්ඨාසය	-	උඩ පලාත හා ගඟඉහළ කෝරළේ
ග්‍රාමනිලධාරී වසම්	-	වැලිගඟ,උලපනේ,උඩගම,සිංහපුර,ගම්පොළවෙල,ගලාත, නවදෙවිට
ව්‍යාපෘතියේ නම	-	ජලවිදුලි ව්‍යාපෘතිය,මොරගොල්ල

අරමුණ හා හැඳින්වීම

විදුලිබල මණ්ඩලයේ අතිරේක සාමාන්‍යාධිකාරී (සම්ප්‍රේෂණ)ආර්.පේ.ගුණවර්ධන මයාගේ අත්සනින් යුතුව 2010.03.31 තමින් පුරාවිද්‍යා හානි ඇගයුමක් සඳහා අයදුම්පතක් ඉදිරිපත් කරන ලදී.ඒ අනුව ප්‍රධාන කාර්යාලය හා ප්‍රාදේශිය පුරාවිද්‍යා කාර්යාලය(මධ්‍යම)එකාබද්ධව යෝජිත පුරාවිද්‍යා හානි ඇගයීම් සමීක්ෂණයට අදාළ සැලසුම් හා භූමියේ විස්තරද ලබාගත් පසු 2010.06.09 හා 2010.06.12 දින දක්වා සිදු කරන ලදී.මෙම ව්‍යාපෘතිය රටේ සංවර්ධන යෝජනා ක්‍රමයට සෘජුවම් යකත්වය සපයන හෙයින් එය කඩිනමින් සිදුකිරීමට කටයුතු කරන ලදී.

සංවර්ධන ව්‍යාපෘතියේ විස්තර හා භූගෝතික පිහිටීම

මධ්‍යම පළාතේ මහනුවර දිස්ත්‍රික්කයේ ගඟඉහළ කෝරළේ සහ උඩපළාත ප්‍රාදේශිය ලේකම් කොට්ඨාස වලට අයත් වැලිගඟ,උලපනේ,උඩගම,සිංහපුර,ගම්පොළවෙල,ගලාත හා නවදෙවිට යන ග්‍රාම නිලධාරී වසම් වලට අයත් ප්‍රදේශ ආවරණය වන සේ මොරගොල්ල ජලාශය ඉදිකිරීමට යෝජිතය.

ශ්‍රී ලංකා මහවැලි අධිකාරිය විසින් වේල්ල ඉදිකරනු ලබන අතර මාර්ග සංවර්ධන අධිකාරිය ශ්‍රී ලංකා මහවැලි අධිකාරිය හා පෞද්ගලික ඉඩම් වල ජලාශය ඉදිවේ.භූගත උමං මාර්ගය මීටර් 4.5 ක විෂ්කම්භයකින් යුතුය.පොළොව මතුපිට සිට මීටර් 80-100 ට වැඩි ගැඹුරෙන් පිහිටා ඇත.උමං මාර්ගයේ දිග මීටර් 2980 කි.

මේ හේතුවෙන් මතුපිට භූමියට ඇතිවන බලපෑම අඩුවේ.වේල්ල ඉදිකිරීම සඳහා පිපිරවීම් සහ ගැඹුරු හැරීම් සිදුකෙරේ.බලාගාර ගොඩනැගිල්ල වරහ මීටර් 522 ක භූමි ප්‍රමාණයක ද ස්විචාම්පන්න අංගනය වරහ මීටර් 300 ක භූමි ප්‍රමාණයකද ඉදිවන අතර විෂ්කම්භය මීටර් 23.5 වන සර්ජන ටැංකියේ පහළ කොටස භූගත වන අතර මීටර් 10 ක පමණ උසක් පමණක් පොළව මතුපිටින් පෙනෙන අතර කොටු දොරද පොළොව මතුපිටින් පිහිටයි.

මෙහි සිදුකෙරෙන ඉදිකිරීම් සඳහා අවශ්‍ය ප්‍රදේශයේ ගස් කපා එළිපෙහෙළි කෙරෙන අතර භූමිය කැණීම් කෙරෙනුයේ අත්තිවාරම සඳහා පමණකි.ජලාශය ඉදිකිරීම හේතුවෙන් මාවතුර අටබාගේ මාර්ගයේ මීටර් 400 ක පමණ පහත් බිම් ප්‍රමාණයක් යටවේ.

උලපනේ මාවතුර මාර්ගයේ මහවැලි ගඟට ඉහළින් දැනට ඉදිවෙමින් පවතින ආරුක්කු පාලමෙහි යාබැම් සහ ආරුක්කු යෝජිත ජලාශය නිසා අර්ධ වශයෙන් යටවේ.ජල මට්ටම පාලමෙහි මතුපිට මට්ටමට වඩා පහතින් පවතිනු ඇත.

එමෙන්ම උලපනේ කර්මාන්ත පුරය පරිශ්‍රයේ පිහිටි ඉඩම් කීපයකට වඩාත් සමීප වුවත් ඊට වඩා පහත් මට්ටමක පවතී.

මද කඳු සහිත බිම්,කඳුකර බිම්,පතන්,මුඩුබිම්,ගෙවතු,වැවිලි,ලඳුකැලෑ හා ජනාවාස යන භූමි ස්වභාවයන් යෝජිත ජලාශ භූමියට අයත් වේ.

ඉදිකිරීම් කටයුතු වලදී තාවකාලික පාංශු බාදනයක් සිදුවිය හැකි බවටද අවශ්‍ය බලධාරීන් පවසා සිටිය අතර ජලාශයට යටවන මාර්ගයට සාපේක්ෂව විකල්ප මාර්ගයක් ද ඉදිකෙරේ.

නේවාසික කඳවුරු කාර්යාල සහ පහසුකම් ආදිය ද අවශ්‍ය ප්‍රදේශවල ඉදිකෙරේ.

විදුලි බලාගාරය ඉදිවන ස්ථානය

ගිනිගත්ගේන සිට නාවලපිටියට පැමිණ එහි සිට ගම්පොළ පාරේ ඇත්ගාල හන්දියෙන් දකුණට හැරී පුංකි දුන්හිඳ පාරේ කිලෝ මීටර් 1 1/2 ක් පමණ ගිය විට ඇත්ගාල නම් ගමේ විදුලි බල ස්ථානය ඉදිකිරීමට යෝජිතය.

විදුලි බලාගාරය ස්ථාපිත කිරීමට යෝජිත ස්ථානයේ භූගෝලීය දත්ත පිහිටීම

(උතුරු දෙසින්) 07° 13′ 151 N 080° 57′ 626 E 490 Ft

(දකුණු දෙසින්) 07° 13′ 140 N 080° 57′ 640 E 500 Ft

මෙම ඉඩම පෞද්ගලික ඉඩමක් වන අතර ඒ සඳහා වන්දි ගෙවා ඉඩම ලබා ගැනීමට යෝජිතය.ලඳු කැලෑවක් ද එළිමහන් භූමියකින් ද යුතු මෙහි කොස් ,දෙල් ආදී ස්ථිර හොඟ ද දක්නට ඇත.බෑවුම් සහිත භූමියක් වන අතර එයට ඉහළින් දුන්හිඳ ඇල නමින් හඳුන්වන ඇල මාර්ගයකි.එය රජ ඇල නමින් හැඳින්වෙන ඇල මාර්ගයට එක්වී ගම්පොළවෙල දක්වා ජලය ගෙන යයි. ජනප්‍රවාද ගත තොරතුරු වලට අනුව ඇත්ගාල නමින් හැඳින්වෙන මෙම භූමියට එම නම ලැබී ඇත්තේ රජුගේ හස්තීන් බැඳ තිබූ ස්ථානය නිසා බවයි.

නැගෙනහිර අන්තයෙන් මහවැලි ගඟද බටහිර දෙසින් ඉහළට ඇත්තේ මෙහිම ඉහළ කඳුවැටියයි.මෙම ස්ථානයේ භූගෝලීය දත්ත පිහිටීම 07° 13′ 141 N 080° 57′ 628 E යන රේඛා විච්ඡේදනය වන ආසන්නයේ ඉඩම විසිරී ඇත.විදුලි බලාගාරය ඉඩමට මීටර් 50 ක් පමණ ඉහළින් ඇති දැනට භාවිතා වන මාර්ගයට සමාන්තරව මීටර්---- ක් පමණ ඉහළට ගොඩනැගිල්ල නිර්මාණය වේ.

බලාගාරයට ඉහළින් යන මාර්ගයේ මීටර් 300 ක් පමණ නල මාර්ගයෙන් ජලය ගෙන එන අතර එම ස්ථානයෙන් ඉහළ ඇති වේල්ල ඉදිවන ස්ථානයේ සිට මෙකී නල මාර්ගය තෙක් ජලය ගෙන එනුයේ භූගත උමං මාර්ගයකිනි.එම උමං මාර්ගය අවසන් වන ස්ථානයේ භූගෝලීය දත්ත පිහිටීම 07° 12′ 858 N 080කි 57′ 597 E 527 ft වේ.

දුන්හිඳ පාර යනුවෙන් හඳුන්වන ඉහතකී මාර්ගයේ සිට පහළ ගඟ දක්වා දළ බෑවුමකි.ගඟෙන් එහා කොටස අටබාගේ ගුඩහමුදා කඳවුර හා කළුගල් කැඩීමේ ව්‍යාපෘතියක් ද දක්නට ඇත.

බලාගාරය අයත් වන්නේ ඇත්ගාල ග්‍රාම නිලධාරී වසමට වන අතර ගඟඉහළ ප්‍රාදේශිය ලේකම් කොට්ඨාසයට සම්බන්ධය.

මෙකී ස්ථානයේ සිට ආපසු ඇත්ගාල හන්දිය දෙසට කිලෝ මීටර් 3 ක් පමණ විත් වම්පසට මීටර් 50 ක් පමණ ගිය විට ිමරජය එබන (කැළඹුම් ලිඳ) පිහිටුවන ස්ථානය

07කි 12′ 853 N 080° 57′ 462 E 610ft

යන භූගෝලීය දත්ත පිහිටි ස්ථානයේ සිට නැගෙනහිරට එන්නට මීටර් 30 ක් පමණ දුරින් මෙම ටැංකිය ඉදිකෙරේ.ඇත්ගාල සිංහපුර වසමට අයත් මෙම ස්ථානයේ ද භූගත උමං මාර්ගයෙන් ජලය ගෙනයනු ලබයි.මෙම ප්‍රදේශය ආශ්‍රිතව ද ජනප්‍රවාද පවතී.කෝට්ටේ විසූ ජයමහ ලෑන ගම්පොළ රාජධානිය පිහිටුවාගෙන සිටි ප්‍රදේශය මෙය බවත් ජයමාලපුර නමින් ඇත්තේ එම ප්‍රදේශය බවත් ජනප්‍රවාදගතය.

වේල්ල ඉදිවන ස්ථානය

ඉහත කී භූගත උමං මාර්ගය අවසන් වන බලාගාරය ඉදිවන ස්ථානය වෙත ජලය ගෙන යන භූගත උමං මාර්ගය ආරම්භ වනුයේ වේල්ල ඉදිවන ස්ථානයේ වයඹ දෙසින් ඇති කඳුවැටිය මැදින් ය.මෙහි ඉදිවන වේල්ල උසින් මීටර් 30 ක් පමණ වන අතර ගඟඉහළ කෝරළේ හා උඩ පළාත කෝරළය මෙමගින් යාකෙරේ.

වේල්ල ඉදිවූ පසු එයට සමගාමීව ගඟ ඉහළට ජලය පිරී යයි.පතන් සහ ඉළුක්ද තේ වගාවන්ගෙන් ද යුතු ඉඩම් පෞද්ගලික වන අතර අනෙක් පසින් රජයේ ඉඩම් ද වේ.උමං මාර්ගය ආරම්භ වන ස්ථානය හා අවසන් වන ස්ථානය අතර දුර කිලෝ මීටර් 3.1 පමණ වේ.

වේල්ල ඉදිවන ස්ථානයට ආසන්න භූමිය යටවන බිම් ප්‍රදේශයේ ඉහළ කඳුවැටිය මධ්‍යයේ ද (යෝජිත මාර්ගය)ගන්නා ලද භූගෝලීය දත්ත පිහිටීම 07° 12′ 781 N 080° 57′ 953 E 624ft ලෙස දැක්විය හැකිය.

මීටර් 80- 100 ත් අතර පොළව යටින් උමඟ දිවෙන අතර බොහෝ ස්ථාන වල දක්නට ඇත්තේ තේ වගාවන් මෙන්ම තෘණ වර්ග බහුලව ඇති ප්‍රදේශයි.ඒ අතර නිවාස පිහිටි ඉඩම් ද උමං මාර්ගය මත දක්නට ඇත.

උලපනේ සිට කොත්මලේ බලාගාරයට යන මාර්ගයේ වේල්ල බැඳෙන ස්ථානයට ඉහළින් දැනට භාවිතවන මාර්ගය වෙනුවට නව මාර්ගයක් ඉදිකෙරේ.එම ප්‍රදේශය ආරක්ෂිත කලාපයක් ලෙස නම් කෙරෙන අතර දැනට භාවිතා වන මාර්ගයේ මීටර් 15 ක් පමණ උසට ජලයෙන් යටවන හෙයින් ඒ අසල ඇති නිවාස 4 ක් පමණ ද මෙම තත්වයට මුහුණ දෙනු ඇත. ඒවාද අනෙක් නිවාස ද මේ හේතුවෙන් ඉවත් කෙරෙන අතර මාර්ගය මීටර් 400 ක් පමණ ජලාශය හේතුවෙන් යටවේ.

දැනට භාවිතා වන මාර්ගයේ වේල්ල ඉදිවන ස්ථානයට ආසන්නව භූගෝලීය දත්ත පිහිටීම 07° 10′ 577 N 080° 57′ 143 E 542ft වේ.

මෙහි සිට මීටර් 10 ක් පමණ ගිය විට ගඟ හරස් කර වේල්ල ඉදිවන අතර ඒ මතින් ද එහා ඉවුරට යාමට මාර්ගයක් ඉදිකෙරේ.

ශ්‍රී ගංගාරාම විහාරය - වැලිගඟ,මාවතුර

මැත කාලයේ දී ඉදිකරන ලද මෙම විහාරය කුඩා කඳු වැටියක් මත පිහිටා ඇත.උලපනේ දෙසට දිවෙන මාර්ගයේ එදෙසට යන්නකුගේ වම් පසින් කිලෝ මීටර් 1 ක් පමණ දුරින් පිහිටි මෙහි කුඩා විහාර ගෙයක් ,බෝධියක් ,ආවාස ගෙයක් හා කුඩා ශාලාවක් ද ඉදිකර ඇත.ජලාශය හේතුවෙන් හානියක් සිදුවන්නේ නැත.

මෙය නව විහාර කර්මාන්තයක් වන අතර මේ හැර වෙනත් කිසිදු පුරා සාධකයක් හෝ පුරා ස්ථානයක් දක්නට නොමැත.මෙම ස්ථානයේ සිට කිලෝ මීටර් 4 ක් පමණ ඉහළට ගමන් කළ විට පුරාණ ගල් විහාරය නමින් හැඳින්වෙන විහාරය හමුවේ.

පුරාණ ගල් විහාරය

යෝපිත පලාශයේ සිට කිලෝ මීටර 4 ක පමණ දුරකින් මාවතුර ගමේ කදු ගැටයක් මත කළුගල් කුට්ටි වලින් නිර්මාන පිළිම ගෙයකි.චතුරස්‍රාකාර ආකෘතියක් මත නැගෙනහිරට මුහුණලා ඉදිකර ඇති මෙම පිළිම ගෙයි ඉදිරිපසින්ම ඇත්තේ ප්‍රදක්ෂිණා පථයයි. එය වේදිකාව ලෙසද හැඳින්.එහි උස සෙන්ටි මීටර 100 ක් වන අතර සිව්කොනේ දිග පළල මීටර 11.37 ක් හා මීටර 8.30 ක් පමණ වේ.

ඉදිරිපස උළුවස්සේ උස සෙන්ටි මීටර 290 ක් ද පළල සෙන්ටි මීටර 180 ක් ද වන අතර එම උඩලිපතේ දිග සෙන්ටි මීටර 117 ක් ද පළල සෙන්ටි මීටර 60 ක් ද ඝණකම සෙන්ටි මීටර 26 ක් ද වේ.යටලිපතේ උස ෙන්ටි මීටර 30 කි.පළල සෙන්ටි මීටර 45 කි.සම්ප්‍රථ ගොඩනැගිල්ලේම පාදමේ සිට සෙන්ටි මීටර 110 ක් උසින් ඉහතකී උඩුපියුම් බොරදම සහත පීඨයක් දෙපසින්ම ගමන් කර ඇත.මැද ගොඩනැගිල්ල පිහිටුවා ඇත්තේ ද යටිපියුම්බොරදමක් මතය.ගභප් ගෘහය කොටස ගල් වේදිකාවටම සම්බන්ධව ඇත.මණ්ඩපයේ දිග සෙන්ටි මීටර 295 ක් ද පළල සෙන්ටි මීටර 265 ක් ද වන අතර එතුළට පිවිසීම සඳහා ද්වීත්ව දොරටුවක් තිබී ඇත.වන්ද්‍රවංක ක්‍රමයට ඇති මෙහි උස සෙන්ටි මීටර 235 ක් ද පළල සෙන්ටි මීටර 214 ක්ද වන අතර ඝණකම සෙන්ටි මීටර 21 ක්ද වේ.යටලිපතේ පළල සෙන්ටි මීටර40 ක් ද වන අතර ඇතුලත බිතු කුළුණු 8 ක් පමණ දෙපසින් දක්නා ලැබේ.

ගර්භ ගෘහය දිග සෙන්ටි මීටර 525 ක් ද පළල සෙන්ටි මීටර 678 ක්ද වන අතර සෙන්ටි මීටර 280 ක් පමණ ගිය විට උසින් හා පළලින් සෙන්ටි මීටර 92 : 67 ක්පමණ වන වා කවුළුවකි.එම බිත්තියේ පීඨිකාව සමග පළල සෙන්ටි මීටර 74 කි.ඉදිරිපස පළල සෙන්ටි මීටර 380 ක් වන අතර පීඨයත් සමග පළල සෙන්ටි මීටර 410 කි.ගර්භ ගෘහය වටා ඇති වේදිකාවේ පළල සෙන්ටි මීටර 67 ක් වේ.ගොඩනැගිල්ල වටාම වේදිකාවෙන් ඉහළට ගිය කණු 34 ක් පෙන්වා ඇත.ඉදිරිපස දොරටුව ඉදිරියෙන් පෘඨිකාව සෙන්ටි මීටර 15 ක් දිගින් හා සෙන්ටි මීටර 183 ක් පළලින් හා සෙන්ටි මීටර 26 ක් ඝණකමින් ඉදිරියට පන්නා ඇත.

එයට පහළින් ද්විතීය සංදර්ශයට අයත් පීඨයත් අර්ධ වෘත්තාකාරව දක්නට ඇත.එහි දිග සෙන්ටි මීටර 151 ක් ද ඝණකම සෙන්ටි මීටර 52 ක් ද වේ.හුදෙකලා වූ මෙම ගොඩනැගිල්ල වල් බිහිවී ඇති අතර ඉදිරිපස උළුවස්සට සමගාමීව ගොඩනැගිල්ලේ අනෙකුත් අවශේෂ දක්නට නොමැත.මෙහි වහළය කුමන හැඩයකින් යුතු වූයේද යන්න අපැහැදිලි වුවත් ගොඩනැගිල්ලේ පිහිටීම අනුව වහළය උඩරටටම ආවේණික වූ

බෝධිය ආසන්නයේ එසේ හමුවන ගල් කුට්ටි අතර බොරදමින් යුතු ගල් කුට්ටිද වේ.ගොඩනැගිල්ල පිහිටි මළුවේ නැගෙනහිර අන්තයේ නාගස් අසලද එවැනිම ගල් කුට්ටි කීපයක් බැම්මක් ලෙස තබා ඇත.

ගොඩනැගිල්ලට නැගීමට උතුරු හා දකුණු දෙපසින්ම ඉහත කී ගල් කුට්ටි යෙදූ පියගැට දෙකක් තාවකාලිකව තනා ඇති අතර දකුණු පසින් නව විහාර මන්දිරයක් ඉදිකර ඇත.මළුවේ භූගෝලීය දත්ත පිහිටීම

07^{0} 09′ 121 N 080^{0} 57′ 334 E වේ.

නිගමනය හා යෝජනා

මෙම ක්ෂේත්‍ර අධ්‍යයනය සිදු කළේ පොළව මතුපිටින් පමණි.එහිදී දෘෂ්‍යමානතාවය මත සිදුකළ මෙම අධ්‍යයනය තුළින් අප බලාපොරොත්තු වූයේ යෝජිත ජලාශයට යටවන භූමිය නිරීක්ෂණය කිරීමටය.

යෝජිත මොරගොල්ල ජලාශයට යටවන භූමියේ යම් පුරාවිද්‍යා ස්ථානයක් හෝ ස්මාරකයක් වෙත්නම් ඒ සඳහා ගතයුතු ක්‍රියා මාර්ගයන්ද විමසිය යුතුව තිබිණ.

එහෙත් මෙම භූමියෙහි හෝ ඒ ආසන්නයේ හෝ පුරාවිද්‍යා සාධක හමු නොවුණි.එබැවින් පොළොව අභ්‍යන්තරයේ යම් පුරාවිද්‍යා සාධකයක් හමුවුවහොත් එහිදී ගත යුතු ක්‍රියාමාර්ගයන්ද සහිතව උපදෙස් හා කොන්දේසි වලට යටත්ව අදාළ ඉදිකිරීම් කටයුතු සඳහා අනුමැතිය ලබාදීම සුදුසු යැයි යෝජනා කරමු.

සමාලෝචනය

මෙම පුරාවිද්‍යා බලපෑම් ඇගයීම් සම්ක්ෂණය ඉතා කඩිනමින් සිදුකරන ලද්දකි.

ඒ අනුව මෙම ජලාශයට යටවන භූමිය තුළ බලපෑමක් සිදුවන ලෙස කුමන ආකාරයක හෝ පුරාසාධකයක් හෝ පුරාස්ථානයක් දක්නට නොමැත.

ලංකා විදුලිබල මණ්ඩලයෙන් අපවෙත සපයා තිබූ නොරතුරු හා සැලසුම් පිටපත් ද උපයෝගී කර ගනිමින් සම්ක්ෂණයට අදාළ නොරතුරු සකස් කළ අතර යෝජිත ජලාශය ඉදිකිරීම රටේ සංවර්ධන ක්‍රියාදාමයේ අත්‍යාවශ්‍ය කරුණක් වන හෙයින් මෙම ව්‍යපෘතිය සඳහා අප දෙපාර්තමේන්තුවේ අනුමැතිය ලබාදීම කාලෝචිත ක්‍රියාවක් බවද දන්වා සිටිමු.

APPENDIX C

ජාතික ජල සම්පාදන හා ජලාපවහන මණ්ඩලය
தேசிய நீர் வழங்கல் வடிகாலமைப்புச் சபை
National Water Supply & Drainage Board

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Galle Road
Ratmalana, Sri Lanka.

My No.

Your No.

Date 22/05/2009

12/06/09

Central Laboratory
Telawala Road, Ratmalana

.	SUBJECT	: **WATER QUALITY TESTING**
.	DATE OF SAMPLING	: 23/02/2009
.	LAB REGISTRATION NO	: **2009/WW/P/08 – 2009/WW/P15**
.	SAMPLE COLLECTED BY	: D N P Welikala (Chemist)
.	REPORT REQUIRED BY	: Mrs. P S F Siriwardena Deputy General Manager (Water Resource Management) Central Engineering Consultancy Bureau

Results:

Sample No	Sample Location	Time (Hrs)	pH	Temperature (C^0)	Conductivity µs/cm	Turbidity NTU	Dissolved Oxygen mg/dm^{-3}	Total Coliform Count /100 ml	Algae count /ml	Total Phosphates as(PO_4) mg/dm^{-3}	Total Nitrogen as (N) mg/dm^{-3}	GPS Reading X	GPS Reading Y
2009/WW/P/08	Close to dam	10.30	7.0	26.7	74	9.1	7.8	TNC	N.D.	0.013	0.19	177601	211698
2009/WW/P/09	Between dam and power house	11.45	7.4	26.5	72	2.9	7.8	96	2×10^3	0.013	0.16	178034	213360
2009/WW/P/10	At Pilliwela village	13.20	7.6	26.6	73	12	6.6	TNC	N.D	0.026	0.18	175778	209114
2009/WW/P/11	Near the bridge	14.05	7.6	27.3	76	17.8	7.4	TNC	4×10^3	0.013	0.29	176465	210549
2009/WW/P/12	Ulapana anicut	15.10	7.2	26.5	55	6.1	7.8	TNC	N.D.	0.013	0.18	175992	211108
2009/WW/P/13	Ulapana irrigation channel	15.30	7.3	25.4	47	1.1	7.8	TNC	N.D.	0.026	0.18	176939	212450
2009/WW/P/14	Close to power house	16.10	7.5	27.1	71	2.7	8.6	TNC	1×10^3	0.013	0.16	178268	214436
2009/WW/P/15	Irrigation channel close to power house	16.35	7.6	27.4	73	5.6	7.8	136	1×10^3	0.013	0.19	178129	214461

TNC: Too Numerous to Count > 200

N.D.: Not Detected.

.....
Lab Assistant

.....
Snr. Chemist
L.P.R.J. WIJESINGHE
Senior Chemist
Central Laboratory
National Water Supply & Drainage Board
Telawala Road, Ratmalana.

REPORT ON THE MONITORING OF AMBIENT AIR QUALITY LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJECT

ENVIRONMENTAL DIVISION
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24/03/09

REPORT ON THE MONITORING OF ANBIENT AIR QUALITY LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJEC

DATE OF ISSUE	: 24TH MARCH 2009
REPORT NO	: NBRO/ENV/26201/2009/041-A
JOB NO	: AQP/2009/041-A

Report to:

Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

Issued By:

Environmental Division
National Building Research Organisation
99/1, Jawatta Road
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Sri Lanka

This report contains five pages

ආපදා කළමනාකරණ හා මානව හිමිකම් අමාත්‍යාංශය இடர் முகாமைத்துவ மற்றும் மனித உரிமைகள் அமைச்சு Ministry of Disaster Management and Human Rights

ජාතික ගොඩනැගිලි පර්යේෂණ සංවිධානය
தேசிய கட்டிட ஆராய்ச்சி நிறுவனம்
NATIONAL BUILDING RESEARCH ORGANISATION

ජාවත්ත පාර, කොළඹ 5.
ஜாவத்தை வீதி, கொழும்பு 5.
Jawatta Road, Colombo 5, Sri Lanka.

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– Office – 2588946, 2501834, 2500354 Fax – 2502611
E-mail – Director General dgnbro@slt.lk – Gen. – nbro@sltnet.lk
Website – www.nbro.gov.lk

NBRO/ENV/26201/2009/041-A Your Ref } AQP/2009/041-A Date } 20th March 2009

Client: Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

REPORT ON AMBIENT AIR QUALITY MONITORING FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) OF THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

1. SCOPE

Request was made by the client, Mrs. P.S.F. Siriwardena, Deputy General Manager, (Water Resource Management), Central Engineering Consultancy Bureau, 415, Bauddhaloka Mawatha, Colombo 07, to the Environmental Division of National Building Research Organisation (NBRO) to monitor existing Ambient Air Quality levels with respect to Nitrogen Dioxide (NO_2), Sulphur Dioxide (SO_2), Ozone (O_3), Carbon Monoxide (CO) and Particulate Matter (PM–10 & PM– 2.5) at selected locations within the study area to assess the existing air quality levels for Environmental Impact Assessment (EIA) study of the Proposed Moragolla Hydropower Project.

In this regard, following officers of the Environmental Division of NBRO carried out the air sampling programme on 11th to 12th March 2009.

Staff Involved:

Mr. H.D.S.Premasiri	*- Coordinator*	*- Air Quality Studies*
Mr. A. T .R. Fernando	*- Project Assistant*	*- Air Quality Studies*
Mr. V. D. Daniel	*- Laboratory Assistant*	*- Air Quality Studies*
Mr. W.A.Weerasinghe	*- Field Assistant*	*- Air Quality Studies*
Mr. N.Krishnamoorthy	*- Field Assistant*	*- Water Quality Studies*

Cont.....2

2. DESCRIPTION OF THE STUDY AREA

The study area is project affected area of the proposed Moragolla Hydro Power Project, about 500 m surrounding Powerhouse, Dam, Tunnel opening and Quarry site. The existing land use in the study areas are residential, industrial and forestry within the Ulapone Pradeshiya Sabbha. The existing air quality levels are mainly dominated by pollution sources such as transport and domestic activities and industrial emissions etc. in the area.

3. WEATHER CONDITION

A dry weather condition with fair scatterd wind prevailed during the monitoring period.

4. AMBIENT AIR QUALITY SAMPLING LOCATIONS

Five locations were selected for the collection of air samples within the project study area to represent all activities of the project. Location description is given in Table 1 and attached area map (Annex 1).

4.1 DESCRIPTION OF SAMPLING LOCATIONS

Table 1: Ambient air quality sampling location description

Location	GPS Coordinates	Description
L1	N - 07^0 07.841^0 E - 80^0 34,457^0	At the proposed power house area of the proposed Moragolla Hydro Power project.
L2	N- 07^0 06.465^0 E - 80^0 34.060^0	At the left riverbank of the proposed dam of the Moragolla Hydro Power project.
L3	N - 07^0 06.402^0 E - 80^0 39.998^0	At the premises of Sri Pattini Devalaya, Industrial Zone, Ulapene.
L4	N - 07^0 03.905^0 E - 80^0 35.892^0	At the proposed quarry site, Kadadora , Kotmale and 300 – 400 m away from the Mahaweli Maha Saaya.
L5	N - 07^0 06.221^0 E - 80^0 34.079^0	At the premises of Mr. Y.A. Thilakarathne, No.05, Weliganga, Mawathura, Gampola. (Close residential house to the tunnel opening area)

* Refer annex 1 for more details

Cont.....3

4.2 SAMPLING AND ANALYTICAL CONDITIONS

Air samples were collected from selected locations as per the methods stipulated in National Ambient Air Quality Standards on eight (08) hour basis for the analysis of SO_2, NO_2 & CO. Sampling duration for O_3 analysis was 1 hour and PM 10 & PM 2 analysis were 24 hours. The sampling receiver height was about 3 m from the ground level and the sampling rates were 0.7 l/min for SO_2, NO_2 and 1 l/min for CO & O_3. The sampling rate for PM-10 & PM2.5 were 18 l/min. NO_2, CO and O_3 levels were measured at the site. Samples collected for the analysis of SO_2 were stored in a cooler box and PM10 & PM 2.5 samples were stored in filter cassettes. Then samples were sent to the NBRO laboratory for the analysis.

The laboratory received the samples at 21:00 hrs on 11/03/2009 in satisfactory condition. They were analyzed on the same day for the SO_2. PM 10 & PM 2.5 samples were analyzed on 16.03.2009 after drying to a constant weight in a desiccator.

4.3 SAMPLING AND ANALYTICAL METHODS

Table 2: Description of the analytical methods for each parameter for ambient air quality

Parameter	Testing Method	Minimum Detection Limits of the Method	CEA Recommended method	Instrumentation
SO_2	ASTM D 2914 - 78, 1987 West-Gaek & Pararosaniline Spectrometric method	0.004 mg/m^3 (0.0015 ppm)	Pararosaniline method or equivalent (pulsed fluorescent method)	*Standard Personal Air Samplers * UV-Visible Spectrophotometer
NO_2	ASTM D 1607 - 76, 1987, Griess – Saltzman Reaction Method	0.004 mg/m^3 (0.002 ppm)	Colorimetric using Saltzman method or equivalent (gas phase Chemiluminescence)	*Standard Personal Air Samplers * UV – Visible Spectrophotometer
CO	ASTM D 3162 – 78, 1987 Non - dispersive infrared Spectrometric method,	1.0 mg/m^3 (1 ppm)	Non - dispersive infrared(IR) spectroscopy	*Riken Keiki CO Detector *Model - CO-7
O_3	ASTM D 2912 - 76, 1983 Neutral Buffered Potassium Iodide method (NBKI) UV Spectometric method	0.001 mg/m^3 (0.0005 ppm)	Chemiluminescence method or equivalent (UV Spectrometric method)	* Standard Personal Air Samplers * UV - Visible Spectrophotometer
PM10 & PM 2.5	ASTM D 4096 - 82, 1997 High - Volume Sampling and Gravimetric Analysis	0.002 mg/m^3	Hi - volume sampling, and Gravimetric	* High Volume Sampler with size selective sample inlet *.Sartorius analytical balance

Cont.....4,

4.4 AMBIENT AIR QUALITY MONITORING RESULTS

Table 3: Concentration of each parameter at each sampling location

Parameter	Date of Sampling	Date of Analysis	Time average	Concentration at each Location (mg/ m^3)				
				L1	L2	L3	L4	L5
SO_2	11/03/2009	11/03/2009	8 hrs	0.007	0.013	0.019	0.018	0.012
NO_2	11/03/2009	11/03/2009	8 hrs	0.009	0.011	0.028	0.015	0.010
CO	11/03/2009	11/03/2009	8 hrs	1.5	1.8	3.5	2.8	2.5
O_3	11/03/2009	11/03/2009	1 hrs	0.001	0.001	0.003	0.003	0.002
PM10	11/03/2009	16/03/2009	24 hrs	0.008	0.008	0.013	0.016	0.011
$PM_{2.5}$	11/03/2009	16/03/2009	24 hrs	0.003	0.002	0.005	0.007	0.005

4.5 AMBIENT AIR QUALITY STANDARDS FOR NO_2, SO_2, CO, O_3, SPM & PM10

Table 4: The permissible Ambient Air Quality standards stipulated under the Extraordinary Gazette, No. 1562/22, August 15, 2008, by the Central Environmental Authority of Sri Lanka.

Pollutant	Time Average	Standard Concentration (mg/m^3)
Sulfur Dioxide (SO_2)	8 hrs	0.120
Nitrogen Dioxide (NO_2)	8 hrs	0.150
Carbon Monoxide (CO)	8 hour	10
Ozone (O_3)	1 hr	0.200
Particulate matter (PM10)	24 hrs	0.100
Particulate matter (PM 2.5)	24 hrs	0.050



Cont.....5

5.0 CONCLUSION

Measured existing ambient air quality levels with respect to SO_2, NO_2, CO, O_3 and PM 10 & PM 2.5 were within the Ambient Air Quality Standards stipulated by the Ministry of Environment & Natural Resources of Sri Lanka (Extraordinary Gazette No. 1562/22, August 15, 2008).

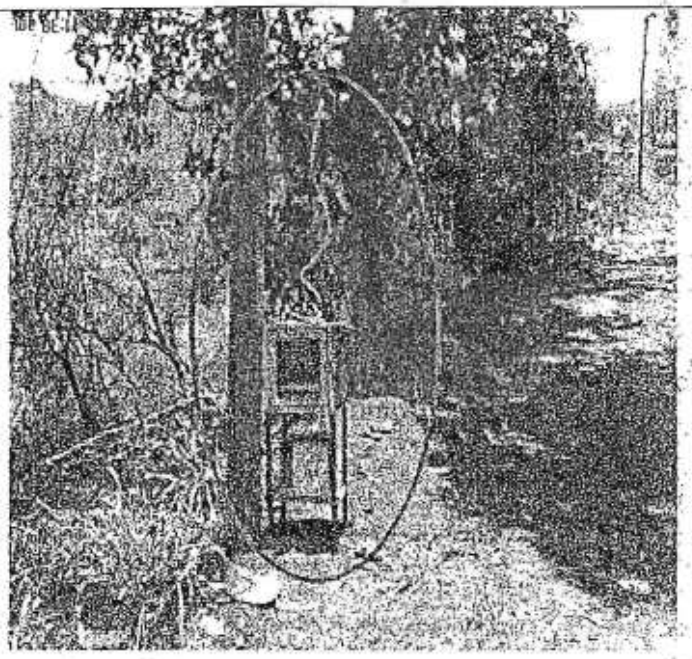
.....
C. J. Annakage
Scientist/Air Quality
Environmental Division

.....
H.D.S.Premasiri
Coordinator/Air Quality
Environmental Division

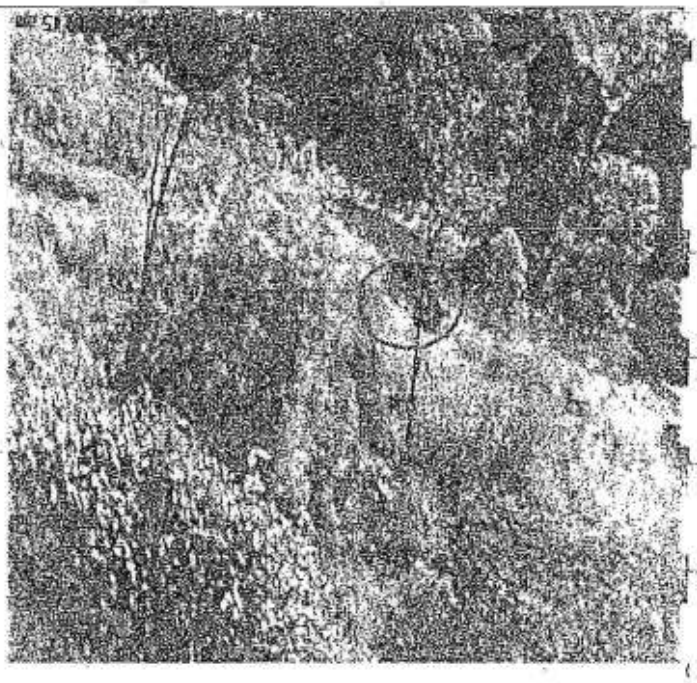
.....
M.D.C. Perera
Head/Environmental Division
National Building Research Organisation

HEAD/ ENVIRONMENTAL DIVISION
National Building Research Organisation
No. 99/1, Jawatta Road
Colombo 05

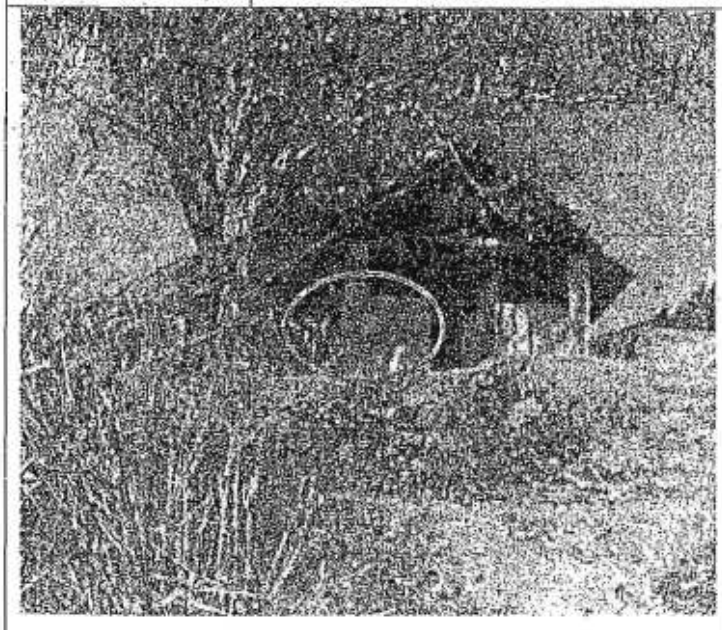
Annex 1.General Overview of Air Quality Monitoring Locations



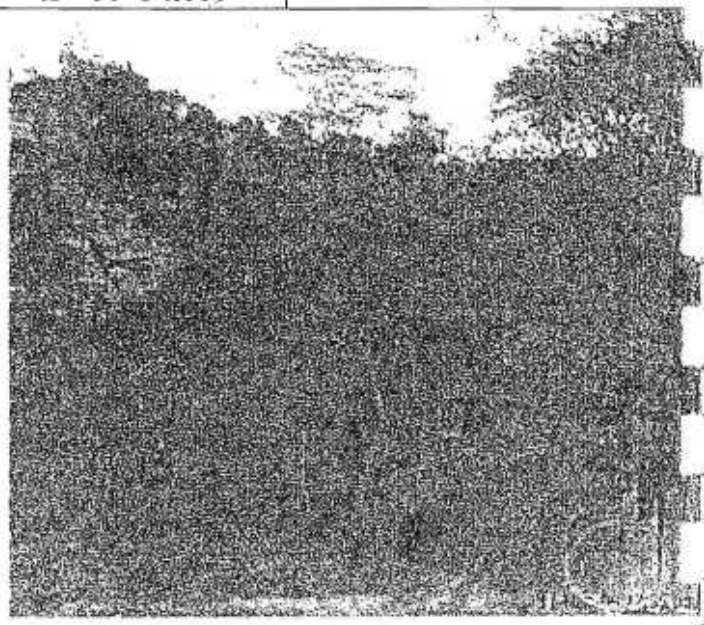
Location:- L1 N - 07° 07.841' E - 80° 34.457'	At the proposed power house area of the proposed Moragolla Hydro Power project.



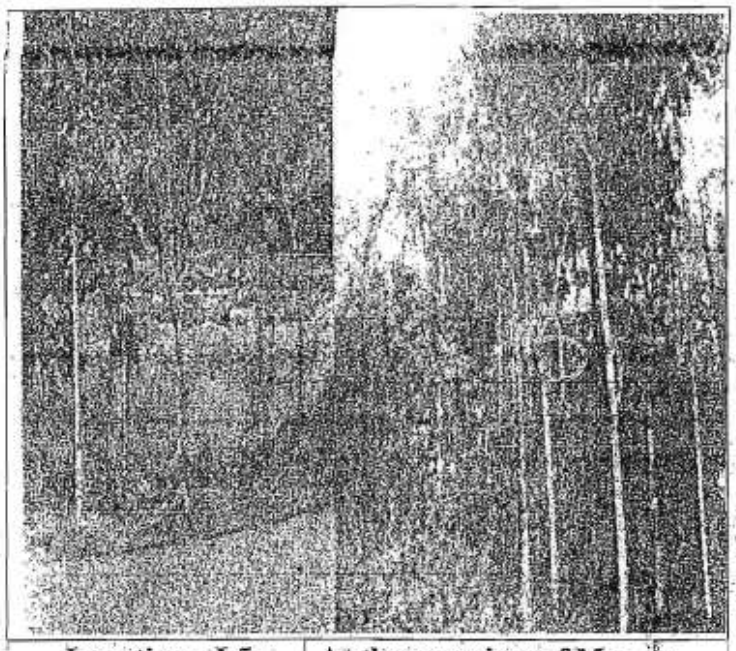
Location:- L2 N - 07° 06.465' E - 80° 34.060'	At the left riverbank of the dam site area.



Location:- L3 N - 07° 06. 402' E - 80° 33.998'	At the premises of Sri ***Pattini Devalaya, Industrial*** Estate, Ulapone.



Location:- L4 N - 07° 03.905' E - 80° 35.892'	At the proposed quarry site ***Kadadora, Kothmale. (it is*** an abundant CECB quarry site)



Location:- L5 **N - 07^0 06.221'** **E - 80^0 34.079'**	**At the premises of Mr. Y.A.Tilakarathna, No.05, Weliganga, Mawathura, Gampola.**

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I වැනි කොටස: (I) වැනි ඡෙදය - සාමාන්‍ය

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	පැය 8	150	0.08	
	පැය 1	250	0.13	
4. සල්ෆර් ඩයොක්සයිඩ් (SO_2)	පැය 24	80	0.03	පරාරෝසනිලින් ක්‍රමය හෝ ඊට සමාන ක්‍රමයක් (පලස්ෆ්ලෝරස ක්‍රමය
	පැය 8	120	0.05	
	පැය 1	200	0.08	
5. ඕසොන් (O_3)	පැය 1	200	0.10	කෙමිලුමිනිසන්ස් ක්‍රමය හෝ ඊට සමාන ක්‍රමයක් (අධෝරක්ත) දීප්තිමාපක ක්‍රමය)
6. කාබන් මොනොක්සයිඩ් (CO)	පැය 8	10000	9.0	විසරණ නොවන අධෝරක්ත වර්ණාවලික්ෂය "
	පැය 1	30000	26.0	
	කවර වුවද වේලාවක්	58000	50.0	

* නියමිත කාලපරිච්ඡේදය තුල සාමාන්‍ය ලබාගැනීම සඳහා අවශ්‍ය අවම නිරීක්ෂණ සංඛ්‍යාව :

පැය 3 ක සාමාන්‍ය - අනුක්‍රමික පැයක් සාසා සාමාන්‍ය 3ක්
පැය 8 ක සාමාන්‍ය - පැයක් පාසා සාමාන්‍ය 8ක්,
පැය 24 ක සාමාන්‍ය - පැයක් පාසා සාමාන්‍ය 18ක්
වාර්ෂික සාමාන්‍ය - එක් කාර්තුවකට අවම වශයෙන් මාස 2ක සාමාන්‍ය බැගින් මාසයක් පාසා සාමාන්‍ය 9ක්

+ රසායන ද්‍රව භාවිතයෙන් හෝ ස්වයංක්‍රීය විශ්ලේෂක මගින්

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ශ්‍රී ලංකා රජයේ මුද්‍රණ දෙපාර්තමේන්තුවේ මුද්‍රණය කරන ලදී.

ලංකා ප්‍රජාතාන්ත්‍රික සමාජවාදී ජනරජයේ ගැසට් පත්‍රය
අති විශෙෂ
e Gazette of the Democratic Socialist Republic of Sri Lanka
EXTRAORDINARY

අංක 1562/22 - 2008 අගෝස්තු 15 වැනි සිකුරාදා - 2008.08.15
No. 1562/22 - FRIDAY, AUGUST 15, 2008

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

L.D.B. 4/81.

THE NATIONAL ENVIRONMENTAL ACT, No. 47 OF 1980

ATIONS made by Minister of Environment and Natural Resources under Section 32 of the National ental Act, No. 47 of 1980.

PATALI CHAMPIKA RANAWAKA,
Minister of Environment and Natural Resources.

ıst, 2008.

Regulations

he National Environmental (Ambient Air Quality) Regulations, 1994, published in *Gazette Extraordinary*, of December, 1994 are hereby amended by the subsitution for the Schedule to that regulation of the following :-

"SCHEDULE

Pollutant	*Averaging Time**	*Maximum Permissible Level*		*+ Method of measurement*
		μgm^{-3}	*ppm*	
'articulate Matter - \erodynamic diameter s less than 10 μm in size (PM_{10})	Annual	50	—	Hi-volume sampling and Gravimtric or Beta Attenuation
	24 hrs.	100	—	
'articulate Matter - \erodynamic diameter is less ıan 2.5 μm in size ($PM_{2.5}$)	Annual	25	—	Hi-volume sampling and Gravimtric or Beta Attenuation
	24 hrs.	50	—	

SCHEDULE *(Contd.,)*

Pollutant	*Averaging Time**	*Maximum Permissible Level*		*+ Method of measurem*
		μgm^{-3}	*ppm*	
3. Nitrogen Dioxide (NO_2)	24 hrs.	100	0.05	Colorimetric using saltzman Method or equivalent Gas phase chemiluminescence
	8 hrs.	150	0.08	
	1 hr.	250	0.13	
4. Sulphur Dixoxide (SO_2)	24 hrs.	80	0.03	Pararosaniliene Method equivalent Pulse Flourescent
	8 hrs.	120	0.05	
	1 hrs.	200	0.08	
5. Ozone (O_3)	1 hr.	200	0.10	Chemiluminescence Method or equivalen Ultraviolet photometr
6. Carbon Monoxide (CO)	8 hrs.	10,000	9.00	Non-Dispersive Infrar Spectroscopy"
	1 hr.	30,000	26.00	
	Any time	58,000	50.00	

* Minimum number of observatons required to determine the average over the specified period —

03 hour average	-	03 consecutive hourly average
08 hour average	-	08 hourly average
24 hour average	-	18 hourly average
Yearly average	-	09 monthly average with at least 02 monthly average each

\+ By using Chemicals or Automatic Analysers.

08-1106

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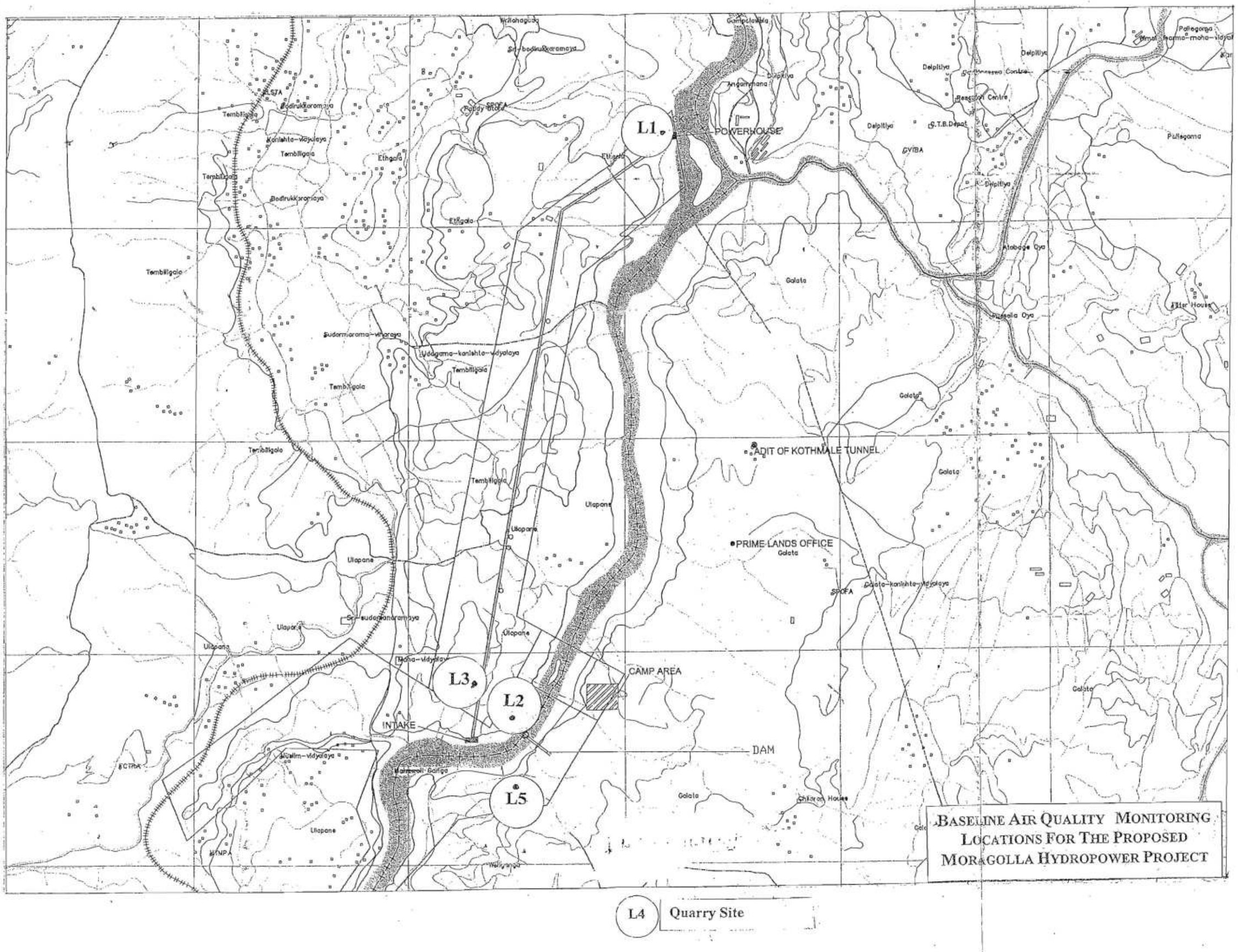

L1
L2
L3
L5
POWERHOUSE
CAMP AREA
INTAKE
DAM
ADIT OF KOTHMALE TUNNEL
PRIME LANDS OFFICE
Galata
Delpitiya
Ulapane
Tembiligala
Ethgala
Pulleyama
Atabage Oya
Pulleyala Oya
Sri-bodirukkaramaya
Kanishta-vidyalaya
Sudarmarama-vidyalaya
Uddagama-kanishta-vidyalaya
Sri-sudarshanaramaya
Maha-vidyalaya
Muslim-vidyalaya
Galata-kanishta-vidyalaya
Filter House
Pollegama
SPOFA
CVTBA
G.T.B.Depot
Angammana
Gamplawila
Kollahagoda
Paddy store
Maliwali Ganga
Walayanga
L4 Quarry Site
BASELINE AIR QUALITY MONITORING LOCATIONS FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

(12)

REPORT ON THE MONITORING OF NOISE LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJECT



24/03/04

ENVIRONMENTAL DIVISION
NATIONAL BUILDING RESEARCH ORGANISATION
99/1, JAWATTA ROAD
COLOMBO - 05
SRI LANKA.

Tel: 0112-588946, 0112-501834, 0112-503826. Fax: 0112-502611, e-mail: nbro@sltnet.lk

REPORT ON THE MONITORING OF NOISE LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJEC

DATE OF ISSUE : 24TH MARCH 2009
REPORT NO : NBRO/ENV/26201/2009/041-B
JOB NO : AQP/2009/041-B

Report to:

Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

Issued By:

Environmental Division
National Building Research Organisation
99/1, Jawatta Road
Colombo - 05
Sri Lanka

This report contains five pages

මනාකරණ හා මානව හිමිකම් අමාත්‍යාංශය இடர் முகாமைத்துவ மற்றும் மனித உரிமைகள் அமைச்சு Ministry of Disaster Management and Human Rights

ජාතික ගොඩනැගිලි පර්යේෂණ සංවිධානය
தேசிய கட்டிட ஆராய்ச்சி நிறுவனம்
NATIONAL BUILDING RESEARCH ORGANISATION

ජාවත්ත පාර, කොළඹ 5.
ஜாவத்தை வீதி, கொழும்பு 5.
Jawatta Road, Colombo 5, Sri Lanka.

Tele – Director General – 2505149
E-mail – Director General dgnbro@slt.lk – Gen. – nbro@sltnet.lk
Website – www.nbro.gov.lk

NBRO/ENV/26201/2009/041-B
AQP/2009/041-B
Your Ref.} Date } 20th March 2009

Client: Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

NOISE LEVELS MONITORING REPORT FOR ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

1. SCOPE

Request was made by the client, Mrs. P.S.F. Siriwardena, Deputy General Manager, (Water Resource Management), Central Engineering Consultancy Bureau, 415, Bauddhaloka Mawatha, Colombo 07, to the Environmental Division of National Building Research Organisation (NBRO) to monitor existing noise levels within the study area for Environmental Impact Assessment (EIA) study of the proposed Moragolla Hydropower Power project.

In this regard, following officers of the Environmental Division of NBRO carried out the Noise levels monitoring programme on 11th March 2009.

Staff Involved:

Mr. H.D.S.Premasiri	*- Coordinator*	*- Air Quality Studies*
Mr. A. T .R. Fernando	*- Project Assistant*	*- Air Quality Studies*
Mr. V. D. Daniel	*- Laboratory Assistant*	*- Air Quality Studies*
Mr. W.A.Weerasinghe	*- Field Assistant*	*- Air Quality Studies*
Mr. N.Krishnamoorthy	*- Field Assistant*	*- Water Quality Studies*

Cont.....2

2. DESCRIPTION OF THE STUDY AREA

The study area is the project affected area of the proposed Moragolla Hydro Power Project, about 500 m surrounding Powerhouse, Dam, Tunnel opening and Quarry site etc. The existing land use in the study areas is residential, industrial and forestry within the Ulapone Pradeshiya Sabbha. Noise monitoring locations were selected to measure the existing noise levels to cover sensitive and affected areas around the proposed project activities.

3. WEATHER CONDITION

Dry weather condition with fair scattered wind prevailed during the monitoring period.

4. NOISE LEVEL MEASUREMENTS

4.1 MEASURING INSTRUMENTS

Sound level meter	: RION NA 28
Calibrator	: RION NC 74 – IEC 60942:2003, class1
Calibration due	: November 2009.

The sound level meter conforms to the requirements of both IEC 61672-12002 class 1 and JIS C 1509-1:2005 class 1

4.2 METHOD OF MEASUREMENTS:

The sound level measurements were carried out in accordance with the methods laid down in International Organisation for Standardisation (ISO) 1996 (part 1,2,3) and BS 4142: 1997. The equivalent continuous A weighted sound pressure level (Leq,T) was measured for a periods of T (15 min) with the integrated time of one (01) second in the FAST selection mode of the meter.

4.3 MEASURING CONDITIONS

A set of about 15 minutes continuous time integrated noise levels were taken during the day time on 11th March 2009 at eight (08) selected locations within the study area of the proposed hydropower project. Monitoring location description is given in Table 1 and attached area map (Annex 1). Another set of 5 minutes continuous time integrated noise levels were taken at same locations during the night time on the same day. The height of the noise level meter receiver was about 2 m from the ground levels for each measurement.

Cont.....3,

4.4 DESCRIPTION OF MONITORING LOCATIONS

Table 1: Noise Monitoring Location Description

Location	GPS Coordinates	Description of Locations
N1	N - 07° 07.871' E - 80° 34.432'	At the proposed power house area
N2	N - 07° 03.905' E - 80° 35.892'	At the proposed quarry site, Kadadora, Kothmale. (it is an abundant CECB quarry site)
N3	N - 07° 04. 184' E - 80° 36.181'	At the premises of Mahaweli Maha Seya, Kothmale.
N4	N - 07° 06.221' E - 80° 34.079'	At the premises of No.17, Weligaga, Mawathura, Gampola.
N5	N - 07° 07.342' E - 80° 34.171'	At road side, close to the right riverbank of dam site area.
N6	N - 07° 06.465' E - 80° 34.060'	At the left riverbank of the dam site area.
N7	N - 07° 06. 402' E - 80° 33.998	At the premises of Sri Pattini Devalaya, Industrial Estate, Ulapone.
N8	N - 07° 07.013' E - 08° 34.024'	At the premises of No.9, SAARC village, Ulapone, Gampola.
N9	N - 07° 07.489' E - 80° 34.144'	At the premises of Mr. M. Kariyawasam, Ethgala, Gamploa.
N10	N - 07° 06.378' E - 80° 33.905'	At the premises of Ms. Pushparani, Madawilawatte, Denmark Division, Gampola.

- **Refer attached layout map for further details**

Cont.....4



4.5 NOISE MONITORING RESULTS

Table 2: Noise Levels at each monitoring location on 11/03/2009

Location	Monitoring Date	Start time (Hours)	Session	Run time (minutes)	Measured Residual Noise Level Leq (dB)	Sources Contributed
N1	11/03/2009	11:55	Day	15	46	Birds and domestic noise
		20:15	Night	05	43	Insects
N2	11/03/2009	12:40	Day	15	40	Birds and Road noise
		18:40	Night	05	45	Insects
N3	11/03/2009	13:15	Day	15	44	Bird and domestic
		18:50	Night	05	41	Insects
N4	11/03/2009	09:40	Day	15	53	Road & River water flow
		19:25	Night	05	49	River water flow
N5	11/03/2009	10:10	Day	15	54	Road &River water flow
		19:10	Night	05	48	River water flow
N6	11/03/2009	15:40	Day	15	52	Road &River water flow
		19:50	Night	05	46	River water flow & Insects
N7	11/03/2009	10:40	Day	15	56	Construction activity of industrial zone
		00:15	Night	05	49	Domestic
N8	11/03/2009	12:20	Day	15	54	Domestic
		00:30	Night	05	48	Domestic & Insects
N9	11/03/2009	14:35	Day	15	54	Domestic
		00:30	Night	05	48	Domestic & Insects
N10	11/03/2009	11:10	Day	15	54	Domestic
		00:30	Night	05	48	Domestic & Insects

Leq: The equivalent noise level generated during the sampling period.

Cont.....5

4.6 MAXIMUM PERMISSIBLE NOISE LEVELS

The proposed project areas are within the Ulapone Pradeshiya sabha area and therefore the area could be considered as low noise areas as per the National Environment (Noise Control) Regulations No. 1, 1996, annex II (Extraordinary Gazette No. 924/12 – Thursday, May 23, 1996). Therefore, the maximum permissible noise levels at the boundary of the land in which any source of noise should not exceed the L_{Aeq},T levels given below.

- 55 dB(A) during the Day time
- 45 dB(A) during Night time

During the project construction period, noise levels shall not exceed the following L_{Aeq},T limits at the boundary of the land which any sources of noise are located, However, such activities shall not be carried out for a period which in the aggregate exceeds three months, without the written consent of the Central Environmental Authority.

- 75 dB(A) during the Day time
- 50 dB(A) during Night time

5. CONCLUSION

Most of project activities of the proposed projects are within rural areas and the measured residual noise levels were mainly dominated by the sources in given in table 2.

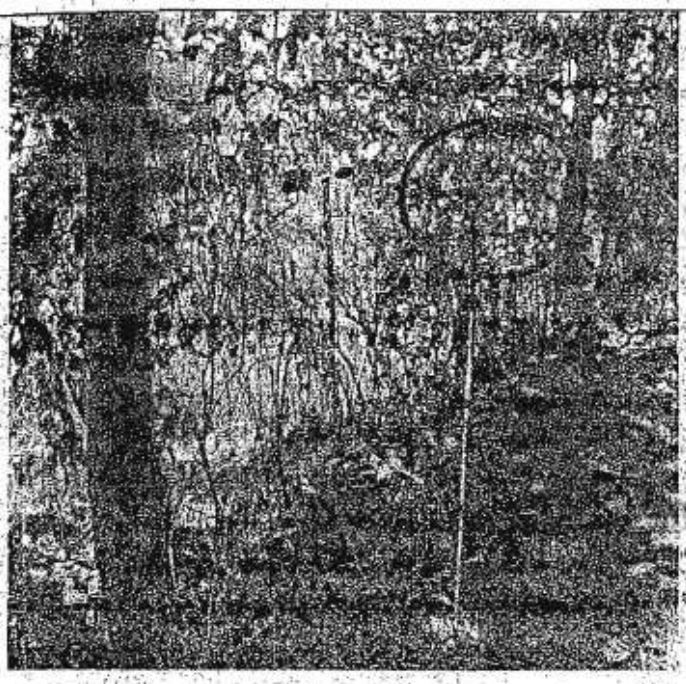
.....
C. J. Annakage
Scientist/Air Quality
Environmental Division

.....
H.D.S.Premasiri
Coordinator/Air Quality
Environmental Division

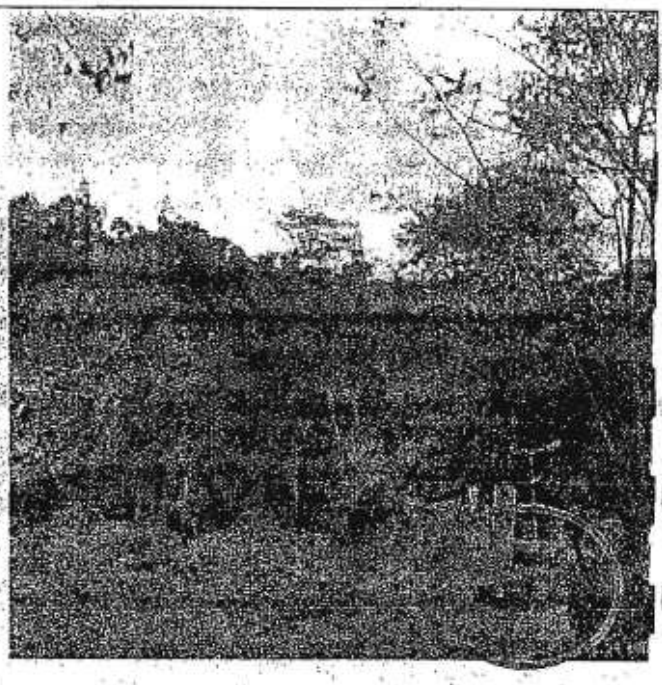
.....
M.D.C.Perera
Head/Environmental Division
National Building Research Organisation

HEAD/ ENVIRONMENTAL DIVISION
National Building Research Organisation
No. 99/1, Jawatta Road
Colombo 05

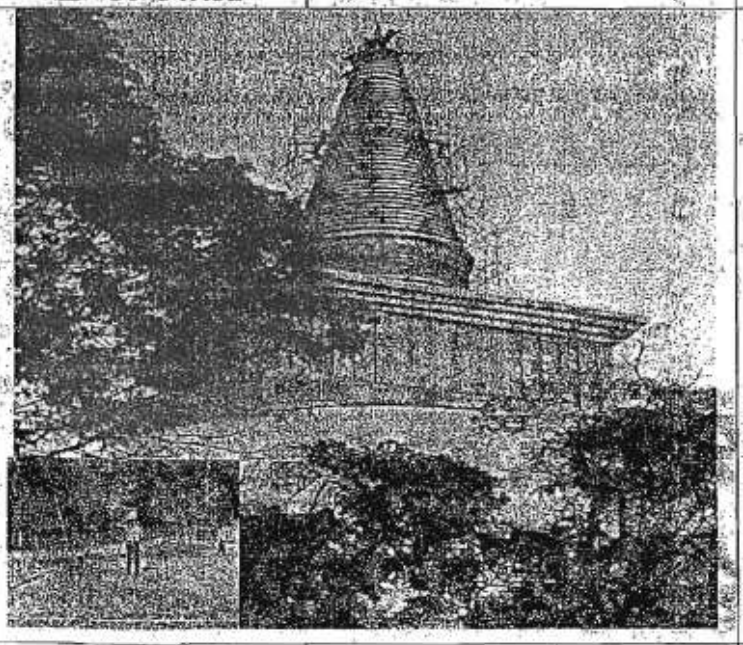
Annex 1.General Overview of Noise Monitoring Locations



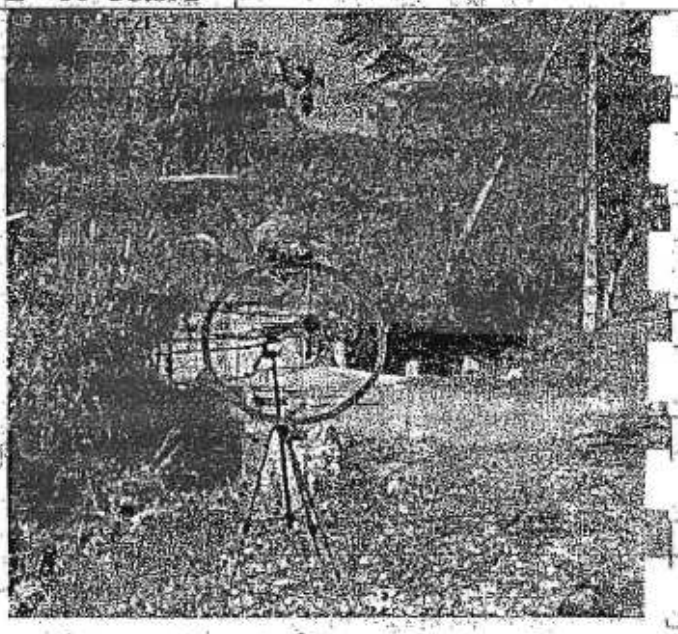
Location:- N1	At the proposed power house area
N - 07° 07.871' E - 80° 34.432	



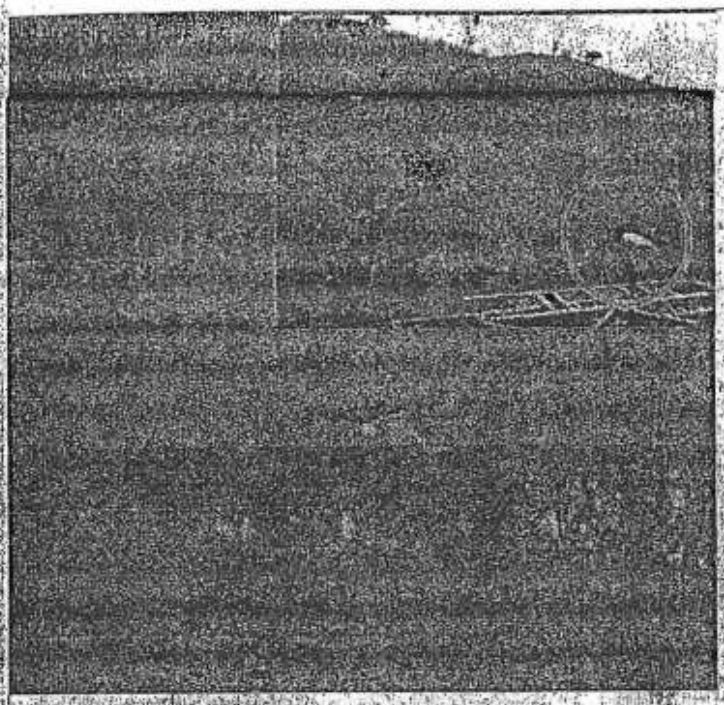
Location:- N2	At the proposed quarry site Kadadora, Kothmale. (it is a abundant CECB quarry site)
N - 07° 03.905' E - 80° 35.892'	



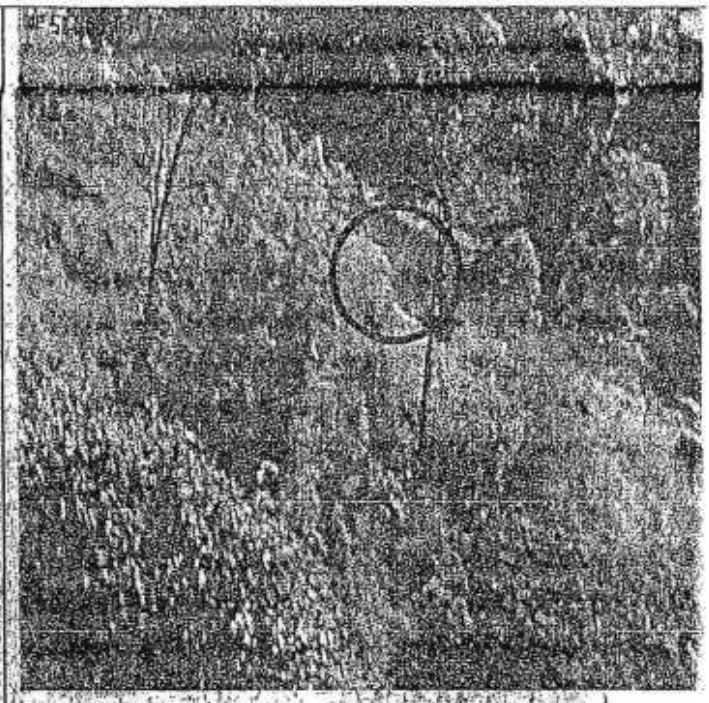
Location:- N3	At the premises of Mahaweli *Maha Seya, Kothmale.*
N - 07° 04. 184' E - 80° 36.181'	



Location:- N4	At the premises of No.17, Weligaga, Mawathura, Gampola.
N - 07° 06.221' E - 80° 34.079'	



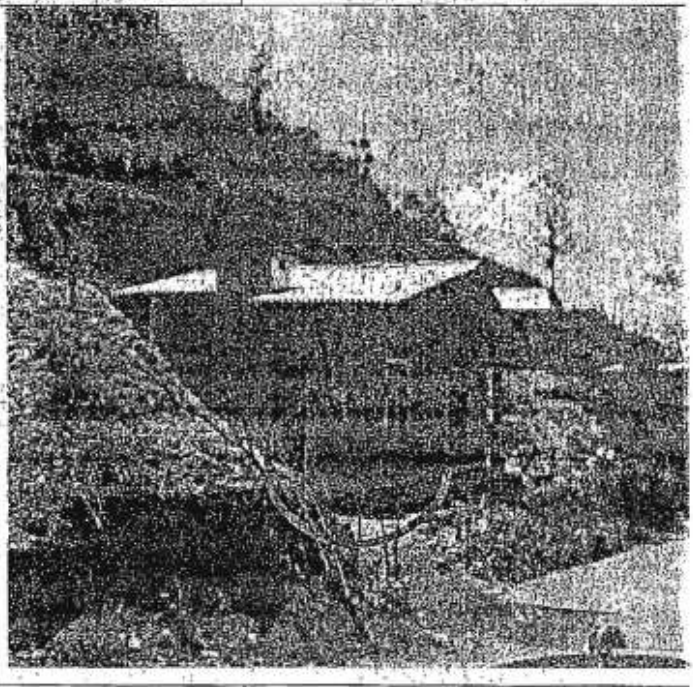
Location:- N5	At road side, close to the right riverbank of dam site area.
N - 07° 07.342' E - 80° 34.171'	



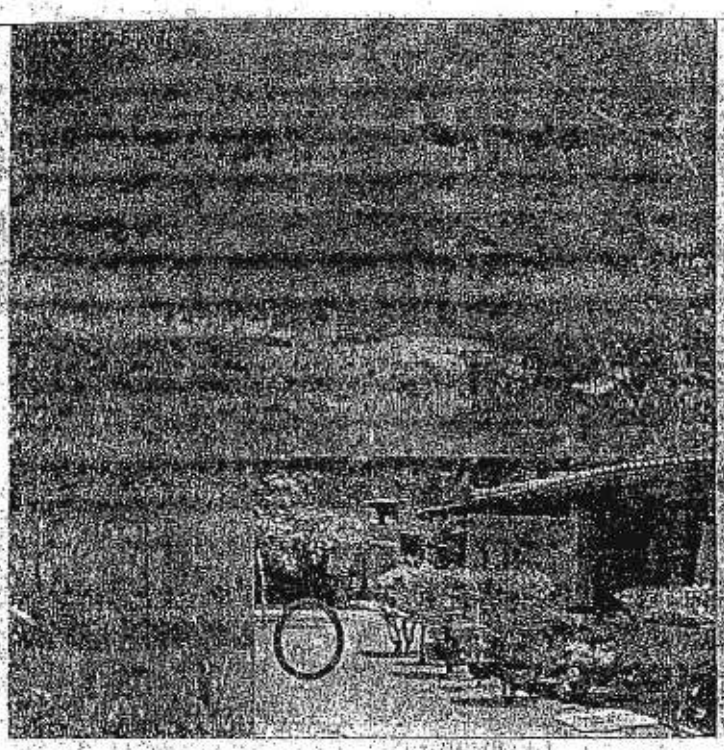
Location:- N6	At the left riverbank of the dam site area.
N - 07° 06.465' E - 80° 34.060'	

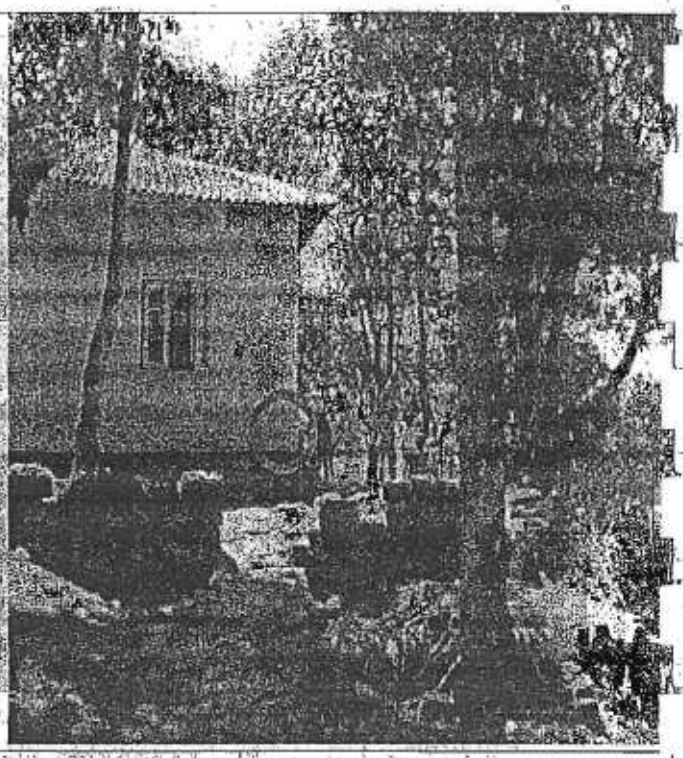


Location:- N7	At the premises of Sri Pattini Devalaya, Industrial Estate, Ulapone.
N - 07° 06. 402' E - 80° 33.998'	



Location:- N8	At the premises of Ms. Pushparani, Mewilawattha, Denmark Division, Gampola.
N - 07° 06.013' E - 80° 34.024'	





Location:- N9 **N - 07° 07.489'** **E - 80° 34.144'**	**At the premises of Mr. M. Kariyawasam, Ethgala, Gamploa.**	**Location:- N10** **N - 07° 06.378'** **E - 80° 33.905'**	**At the premises of Ms. Pushparani, Madawilawatte Denmark Division, Gampola.**

PART I : SECTION (1) GENERAL
Government Notifications

THE NATIONAL ENVIRONMENT ACT, NO. 47 OF 1980

REGULATIONS made by the Minister of Transport, Environment and Women's Affairs under section 23P, 23Q and 23R of the National Environmental Act, No. 47 1980 read with section 32 of that Act.

Srimani Athulathmudali
Minister of Transport, Environment
And Women's Affairs

Colombo
21st May, 1996,

Regulations

1. These Regulations may be cited as the National Environmental (Noise Control) Regulations No.1 1996

2. Except in the instances where the provisions of regulation 7 applies, the maximum permissible noise levels at the boundary of the land in which any source of noise is located, shall not exceed the limits set out in the First Schedule hereto. The provisions of this regulation shall operate only in respect of the areas specified in the said schedule.

3. Except in the instances where the provisions of regulation 7 applies, where the background noise levels in relation to any source of noise exceeds the limits set out in the First Schedule hereto, the limits set out in the Second Schedule hereto shall apply in respect of the areas specified therein.

4. Except in the instances where the provision of regulation 7 applies and notwithstanding anything the contrary in regulations 2 and 3 , the maximum permissible noise levels, at the boundary of any land in which any source of noise is located and emitted consequence of the carrying out of any construction activity on such land, shall not exceed the limits set out in the Third Schedule hereto:

   Provided that the noise levels caused by such activity shall not be carried on for a period which in the aggregate exceeds three months, without the written consent of the Authority given in respect of any such particular activity, or in terms of a licence granted under Section 23A of the Act, for the discharge or emission of waste or the emission of noise.

5. Notwithstanding anything to the contrary in regulations 2,3 and 4 of these regulations any local authority may prepare in consultation with the Authority a

noise zone map covering the area of authority of such local authority. Any noise zone map so prepared shall on completion be approved by the Authority. Any noise zone map so prepared and approved may be amended from to time.

6. Where the Authority approves any noise zone map in terms of regulation 5, it shall, by Notification published in the Gazette inform the public of such approval. With effect from the date of such Notification, regulations 2,3 and 4 of these regulations shall cease to apply within the area of authority of the respective local authority to which such noise zone map applies, and regulation 7 shall thereupon apply to the area covered by such noise zone map.

7. Where a noise zone map has been prepared and approved by the Authority in terms of regulation 6

   a The maximum permissible noise levels at the boundary of the land in which any source of noise is located shall not exceed the limits set out in the Fourth Schedule hereto, within the respective areas specified in the said Schedule, and which are demarcated on a noise zone map published under regulation 6..

   b where the background noise levels in relation to any source of noise exceeds the limits set out at the Fourth Schedule hereto, the limits set out in the Fifth Schedule hereto shall apply within the respective areas specified therein, and which are demarcated on a noise zone map published under regulation 6.

   c notwithstanding anything to the contrary in regulations 7 (a) and (b) maximum noise levels at the boundary of any land in which any source of noise is located and emitted in consequence of any construction activity, shall not exceed the limits set out in the Sixth Schedule hereto within the areas specified therein, and which are demarcated on a noise zone map published under regulation 6.

8. Noise level measurements procedure, shall be in accordance with the criteria set out in the Seventh Schedule hereto.

9. The equipment used for noise level measurement shall be in accordance with the specifications set out in the Eighth Schedule hereto.

10. In these Regulations:-

"A-weighted" means a process of automatic adjustments made to the out put of the Sound sensor in a sound level meter, so that the reading of the meter takes into account the frequency characteristics of the human ear:

"Act" means the National Environmental Act, No 47 of 1980:

"Authority" means the Central Environmental Authority established under the Act:

"background noise level" means the A-weighted sound pressure level of the residual noise in decibels exceeded for 90% of a given time interval:

"commercial area" means any area which consists predominantly of commercial buildings such as shops and offices, depicted in a noise zone map:

"day time" from 06.00 hours to 18.00 hrs, except of the purposes of the Third and the Sixth Schedule hereto, where it means 06.00 hours to 21.00 hours:

"Silent Zone means the area covered by a distance of 100 meters from the boundary of a courthouse, hospital, public library, school, zoo, sacred areas and areas set apart for recreation or environmental purposes.

SCHEDULE I
(Regulation 2)

Maximum Permissible Noise Levels at Boundaries in La_{eq} T

Area	La_{eq} T	
	Day Time	Night Time
Low Noise	**55**	**45**
Medium Noise	**63***	**50**
High Noise	**70**	**60**
Silent Zone	**50**	**45**

*Provided that the noise level should not exceed 60 dB (A) inside existing houses, during day time.

SCHEDULE II

(Regulation 3)

The following noise levels will be allowed where the background noise level exceed or is marginal to the given levels in Schedule I

(a)	For low noise areas in which the background noise level exceed or is marginal to the given level	Measured Background Noise Level +3dB (A)
(b)	For medium noise areas in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3dB (A)
©	For silent zone in which the background noise level exceeds or is marginal to the given level	Measured Background Noise Level +3 dB(A)
(d)	For high noise areas in which the background noise level exceeds or is marginal to the given level.	
	(i)For day time	Measured Background Noise Level +5 dB (A)
	(ii)For night time	Measured Background Noise Level +3 dB (A)

The above maximum noise levels should be maintained inside the boundary of the land, in which the source noise is located.

SCHEDULE III

(Regulation 4)

"IEC" means the International Electro technical Standardization

"Industrial area" means any area which consists predominantly of industries and manufacturing establishments, depicted in a noise zone map

"ISO" means the International Oranization for Standardization.

"LA_{eq} "T"means the equivalent continuous, A-weighted sound pressure determined over a time interval T(in dB)

"local authority" means a Pradeshiya Sabha, Urban Council or Municipal Council and includes any authority created and established by or under any written law to exercise, perform and discharge powers, duties and functions corresponding to or similar to the powers, duties and functions exercised, performed and discharged by any such institution.

"mixed residential area" means an area consisting of residences and commercial establishments, depicted in a noise zone map .

"night time" means from 18.00 to 06.00 hours except for the purposes of the Third Schedule and the Sixth Schedule hereto where it means 21.00 hours to 06.00 hours.

"Noise sensitive area" includes any area in which a courthouse, hospital, public library, school, zoo sacred area and areas set a part for recreation or environmental purposes are depicted in a noise zone map;

"Noise zone map" means a survey map or plan of the whole or any part of the area of authority of any Local Authority demarcating such area into rural residential, urban residential , commercial, industrial and noise sensitive areas and clearly identifying the metes and bounds and prepared to a scale of 1:10.000 in Pradeshiya Sabha areas and to a scale of 1:5000 in Urban or Municipals Council areas or to any other scale as may from time to time be stipulated by the Authority;

"Residual noise" means the ambient noise remaining at a given position in a given situation when the specific noise source is suppressed to such a degree that it does not contribute to the ambient noise;

"Rural residential area" means an area located within any area consisting predominantly of residences, depicted in a noise zone map:

"Urban residential area" means an area located within any build up area consisting predominantly of residences, and which are depicted in a noise zone map.

For the purposes of Schedules I and II : -

"Low noise area" means an area located within any Pradeshiya Sabha area.

"Medium noise area" means an area located within any Municipal Council or Urban Council area:

"High noise area" means any export processing zone established by the Board of ***Investment or industrial estates approved under Part IV C of the National*** Environmental Act:

Maximum permissible Noise Levels at Boundaries of the land in which the source of noise is located in La_{eq}, T, for construction activities.

La_{eq}, T

Day Time	Night Time
75	50

SCHEDULE IV

(Regulation 7 (a

Maximum permissible Noise Levels at Boundaries in L_{Aeq}, T, for industrial activities .

L_{Aeq}, T

Areas	Day Time	Night time
Rural Residential Area	55	45
Urban Residential Area	60	50
Noise Sensitive Area	50	45
Mixed Residential	63	55
Commercial Areas	65	55
Industrial Area	70	60

SCHEDULE V

(Regulation 7 (t

The following noise levels will be allowed in places where the background noise levels exceed or is marginal to the given levels in Schedule I

(a) For rural residential areas in which the background noise level exceeds or is marginal to the given level — Measured Backgro Noise Level +3dB

(b) For noise sensitive areas in which the background noise level exceeds or is marginal to the given level — Measured Backgro Noise Level +3dB

(c) For noise sensitive areas in which the background noise level exceeds or is marginal to the given level — Measured Backgro Noise Level +3 dB(

(d) For mixed residential or commercial areas in which the background noise level exceed or is marginal to the given level

(i) For day time — Measured Backgrc Noise Level +5 dB

(ii) For night time — Measured Background Noise Level +3 dB (A)

(e) For industrial areas in which the background noise level exceeds or is marginal to the given level

(i) For day time — Measured Background Noise Level +5 dB (A)

(ii) For night time — Measured Background Noise Level +3 dB (A)

SCHEDULE VI

(Regulation 7 (c)

Area	L_{Aeq}, T	
	Day Time	**Night Time**
Industrial / commercial	75	60
Urban /Rural/Mixed Residential	65	56

SCHEDULE VII

(Regulation 8)

1. Measurement Procedure:

Environment noise level measurements should be carried out generally in accordance with the methods laid down either in 150 1996 (Parts 1,2,3) and BS 4142:1990. The specific noise level shall be determined by measurement, or by a combination of measurements and calculations as given in B 5 4142:1990.

2. Measurement Time Interval:

a. Each measurement time shall be chosen so that all significant variations of noise emission and transmission are covered.

b. Each measurement time shall not exceed one (1) hour during the day time, and five (5) minutes during night time, for industrial areas.

c. Each measurement time shall not exceed five (5) minutes during the day ti night time for construction activities.

3. Correction to Measured Noise Level:

The following corrections should be made to the measured level according to characteristic features of the noise:-

Characteristic features of the noise	*Correction dB (A)*
Impulsive noise (Bangs, cljcks, clatters, thumps etc)	+5
Total character Whine, hiss, screech, hum etc.	+5

4. The measurement procedure set out above will be superseded by procedure di adopted by the Sri Lanka Standards Institute for such purpose.

SCHEDULE VIII

(Regulation

1. Measuring Equipment

Noise levels shall be measured in terms of L_{Aeq} T by either of the following means

i. Using integrating averaging sound level meter complying with type 2 of BS 66 : 1986 (IEC 804) or complying with standards or by means of a measuri equipment recommended by the Authority.

ii. If noise is steady, by visually averaging an analogue out from a sound lev meter set to frequency weighing "A" and time weighing "S" and complying wi type 2 of BS 5969 1989 :IEC 651)or complying with standards with standards by means of measuring equipment recommended by the Authority.

Note: Use of integrating – averaging and sound level meter complying with type 1 BS 6998 (IEC 804) is preferred.

2. Calibration

Before and after each series of measurements sound level meter should b calibrated using acoustic calibrator or pistonophone complying with class 2 of B 7189 : 1989 (IEC 942), or complying with standards or by means of a Measurir equipment recommended by the Authority.

(ii) For night time — Measured Background Noise Level +3 dB (A)

(c) For industrial areas in which the background noise level exceeds or is marginal to the given level

(i) For day time — Measured Background Noise Level +5 dB (A)

(ii) For night time — Measured Background Noise Level +3 dB (A)

SCHEDULE VI

(Regulation 7 (c)

Area	L_{Aeq},T	
	Day Time	Night Time
Industrial / commercial	75	60
Urban /Rural/Mixed Residential	65	56

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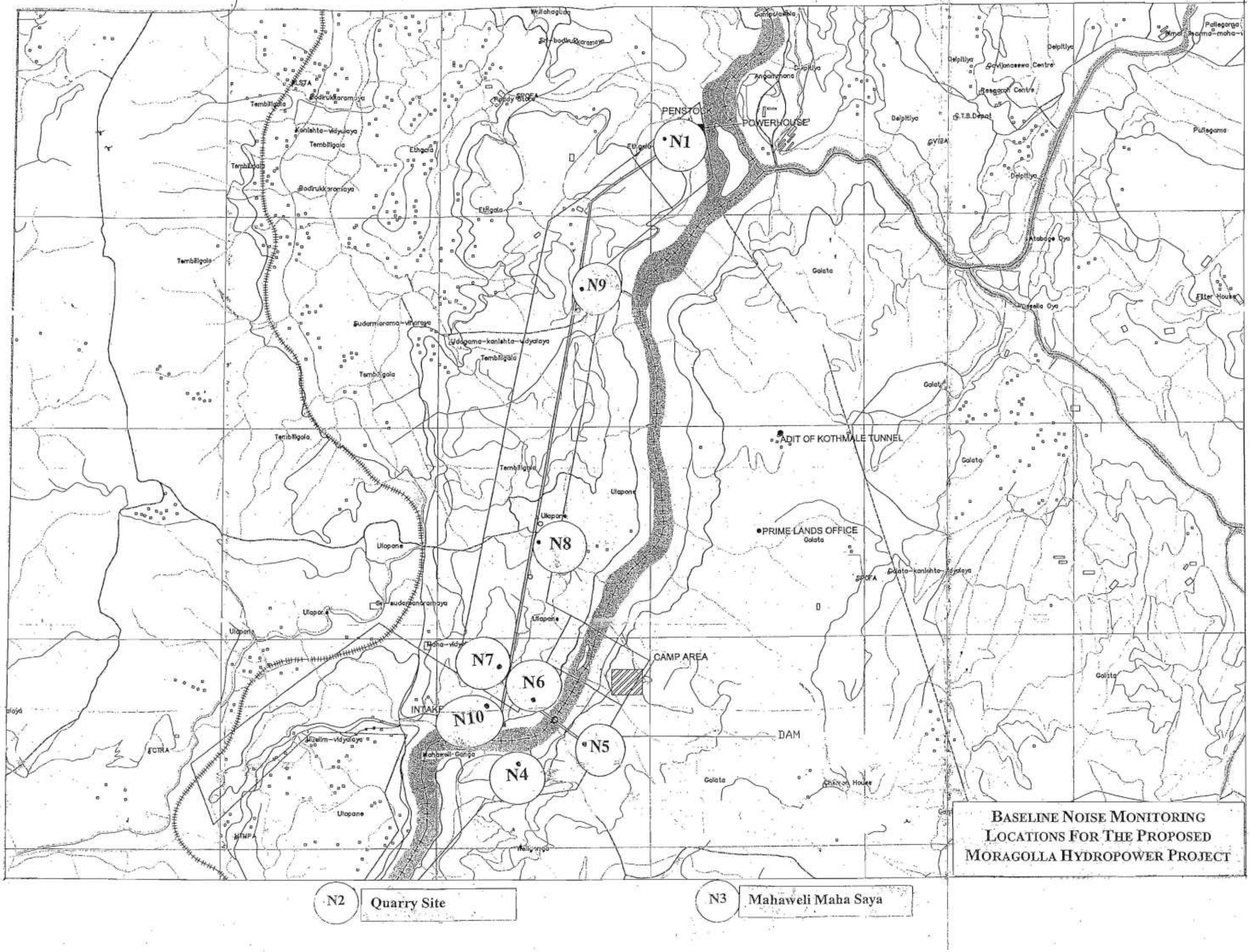
PENSTOCK
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N1
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INTAKE
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ADIT OF KOTHMALE TUNNEL
PRIME LANDS OFFICE
Galata
Delpitiya
Tembiligala
Ulapane
Mahaweli-Ganga
Atabage Oya
Pussella Oya
Filter House
Chairman House
Resaran Centre
S.T.B.Depot
Pallegama
Ethgala
Galata-kanishta-vidyalaya
Tembiligala-kanishta-vidyalaya
Sudarmiarama-viharaya
Udagama-kanishta-vidyalaya
Bodirukkaramaya
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REPORT ON THE MONITORING OF VIBRATION LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJECT

ENVIRONMENTAL DIVISION
NATIONAL BUILDING RESEARCH ORGANISATION
99/1, JAWATTA ROAD
COLOMBO - 05
SRI LANKA.

Tel: 0112-588946, 0112-501834, 0112-503826. Fax: 0112-502611, e-mail: nbro@sltnet.lk

24/03/09.

REPORT ON THE MONITORING OF VIBRATION LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJEC

DATE OF ISSUE	: 24TH MARCH 2009
REPORT NO	: NBRO/ENV/26201/2009/041-C
JOB NO	: AQP/2009/041-C

Report to:

Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

Issued By:

Environmental Division
National Building Research Organisation
99/1, Jawatta Road
Colombo - 05
Sri Lanka

This report contains three pages

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தேசிய கட்டிட ஆராய்ச்சி நிறுவனம்
NATIONAL BUILDING RESEARCH ORGANISATION

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ஜாவத்தை வீதி, கொழும்பு 5.
Jawatta Road, Colombo 5, Sri Lanka.

Tele – Director General – 2505149
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E-mail – Director General dgnbro@slt.lk – Gen. – nbro@sltnet.lk
Website – www.nbro.gov.lk

Ref } NBRO/ENV/26201/2009/041-C Your Ref } AQP/2009/041-C Date } 20th March 2009

Client: Mrs. P.S.F.Siriwardena,
Deputy General Manager – Water Resource Management,
Central Engineering Consultancy Bureau,
415, Bauddhaloka Mawatha,
Colombo 07.

REPORT ON THE MONITORING OF VIBRATION LEVELS FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) STUDY OF PROPOSED MORAGOLLA HYDROPOWER PROJECT

1. SCOPE

Request was made by the client, Mrs. P.S.F. Siriwardena, Deputy General Manager, (Water Resource Management), Central Engineering Consultancy Bureau, 415, Bauddhaloka Mawatha, Colombo 07, to the Environmental Division of National Building Research Organisation (NBRO) to monitor baseline vibration levels at the study area of the Environmental Impact Assessment (EIA) study of proposed Moragolla Hydropower Project at Ulapane, Gampola.

In this regard, following officers of the Environmental Division of NBRO carried out the vibration measuring programme on 12th March 2009.

Staff Involved:

Mr. H.D.S.Premasiri - Coordinator - Air Quality Studies
Mr. A. T .R. Fernando - Project Assistant - Air Quality Studies
Mr. V. D. Daniel - Laboratory Assistant - Air Quality Studies

2. DESCRIPTION OF THE STUDY AREA

The study area is the project affected area of the proposed Moragolla Hydropower Project, about 500 m surrounding Powerhouse, Dam, Tunnelling & Tunnel opening and Quarry site etc. The existing land use in the study areas is residential, industrial and forestry within the Ulapone Pradeshiya Sabbha There are no vibration sensitive locations identified within the study area.

Cont.....2

3. WEATHER CONDITION

Dry weather condition with fair scattered wind was prevailed during the monitoring period.

4. VIBRATION MEASUREMENTS

4.1 MEASURING INSTRUMENTS

Vibration meter : Instantel BlastMate III

4.2 METHOD OF MEASUREMENTS

The continuous vibration levels were recorded at selected locations for the period of 15 min in accordance with the methods laid down in International Organisation for Standardization - ISO - 4966: 1990E, as stipulated in the interim vibration standard stipulated by the Central Environmental Authority of Sri Lanka.

4.3 MEASURING CONDITIONS

A set of about 15-minute continuous vibration levels (both structural and ground) were taken during the day time at eight (08) selected locations within the proposed project area. Location description is given in Table 1 and attached area map (Annex 1).

4.4 DESCRIPTION OF MONITORING LOCATIONS

Table 1: Vibration Monitoring Location Description & Existing Vibration Levels

Location	GPS Coordinates	Description of Locations	Measured Vibration levels in mm/sec
V1	N - 07° 07.841' E - 80° 34.457'	At the proposed power house area, close to the existing channel	<0.5
V2	N - 07° 06.465' E - 08° 34.060'	At the left riverbank, closed to the proposed dam area.	<0.5
V3	N - 07° 06. 402' E - 80° 33.998'	At the premises of Sri Pattini Devalaya, Industrial Estate, Ulapone.	<0.5
V4	N - 07° 07.013' E - 08° 34.024'	At the premises of No.9, SAARC village, Ulapone, Gampola.	<0.5
V5	N - 07° 07.489' E - 80° 34.144'	At the premises of Mr. M. Kariyawasam, Ethgala, Gamploa.	<0.5

Cont.....3

Table 1: Cont...

Location	GPS Coordinates	Description of Locations	Measured Vibration levels in mm/sec
V6	N - 07^0 06.378' E - 80^0 33.905'	At the premises of Ms. Pushparani, Madawilawatte, Denmark Division, Gampola.	<0.5
V7	N - 07^0 06.221' E - 80^0 34.079'	At the premises of Mr. Y.A.Tilakarathna, No.05, Weliganga, Mawathura, Gampola.	<0.5
V8	N - 07^0 06.342' E - 80^0 34.171'	At the roadside of the right riverbank, closed to the proposed dam.	<0.5
V9	N - 07^0 04. 184' E - 80^0 36.181'	At the premises of Mahaweli Maha Seya, Kothmale.	<0.5

- **Refer annex I for further details**

4.5 MAXIMUM PERMISSIBLE VALUES

The proposed project area is within the Pradeshiya sabha area is a rural area. The maximum permissible interim vibration levels stipulated for different building types by the Central Environmental Authority of Sri Lanka are given in the annexe 11.

5. CONCLUSION

Measured vibration levels at all locations were well below the levels stipulated for the type 3 structures in the interim vibration standard stipulated by the Central Environmental Authority of Sri Lanka.

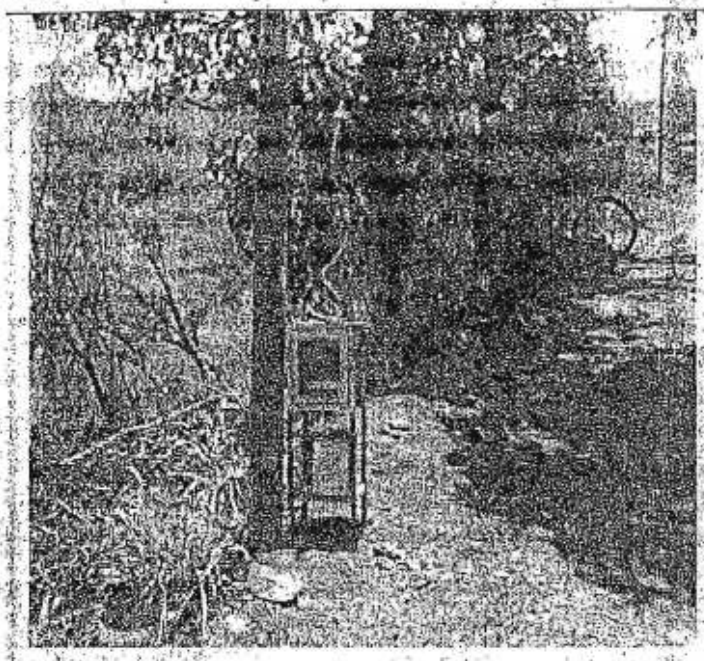
C. J. Annakage
Scientist/Air Quality Studies
Environmental Division

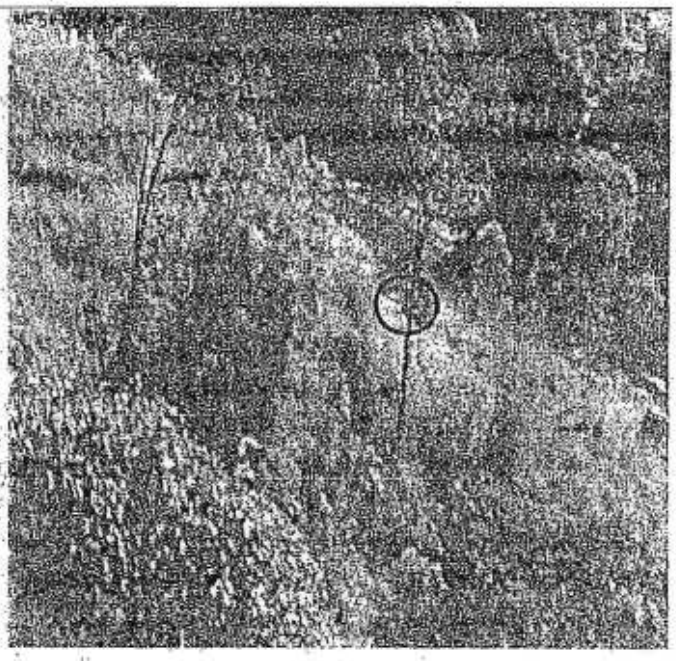
H.D.S.Premasiri
Coordinator/Air Quality Studies
Environmental Division

M.D.C.Perera,
Head/Environmental Division
National Building Research Organisation

HEAD/ ENVIRONMENTAL DIVISION
National Building Research Organisation
No. 99/1, Jawatta Road
Colombo 05

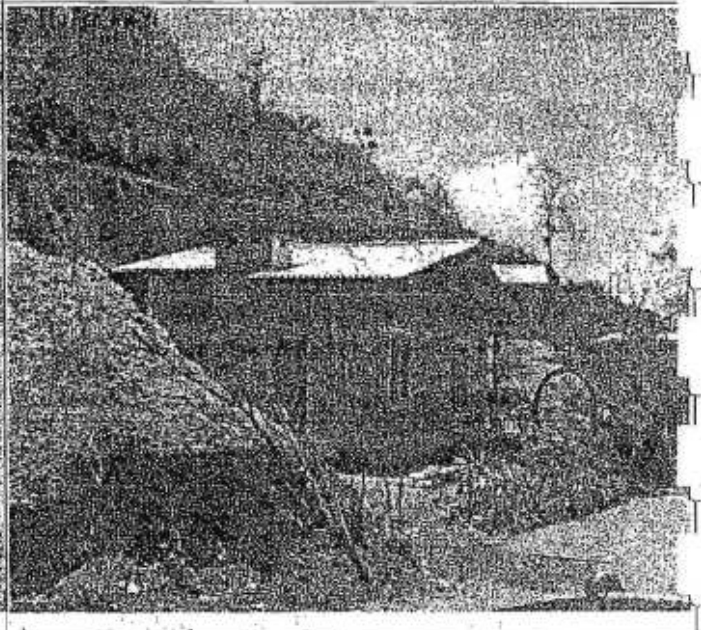
Annex 1.General Overview of Vibration Monitoring Locations



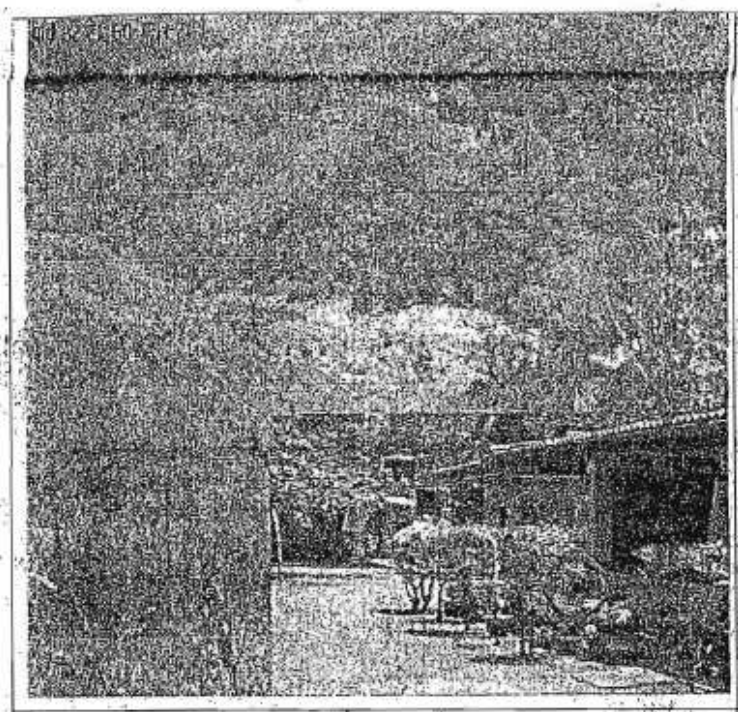


Location:- V1 N - 07° 07.841' E - 80° 34.457'	**At the propose power house area, close to the existing channel**	**Location:- V2** N - 07° 06.465' E - 80° 34.060'	**At the left riverbank of the dam site area.**

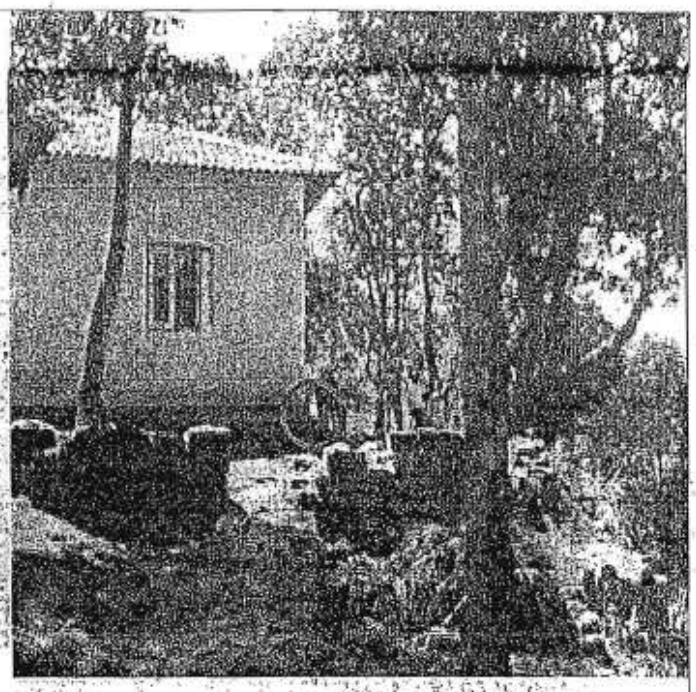




Location:-V3 N - 07°08.402' E - 80° 33.998'	**At the premises of Sri Pattini Devalaya, Industrial Estate, Ulapone.**	**Location V4** N - 07°07.013' E - 08° 34.024'	**At the premises of No.9, SAARC village, Ulapone, Gampola.**



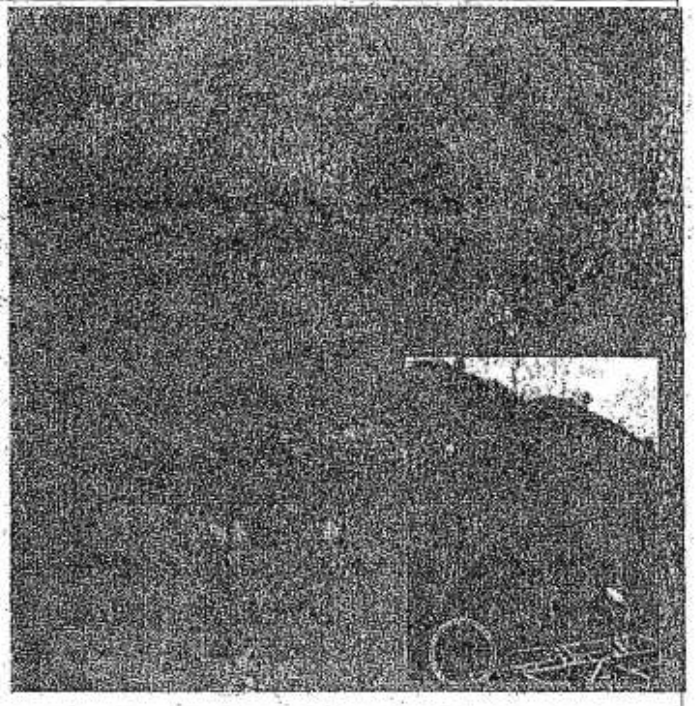
Location:- V5	At the premises of Mr. M. Kariyawasam, Ethgala, Gamploa.
N - 07° 07.489' E - 80° 34.144'	



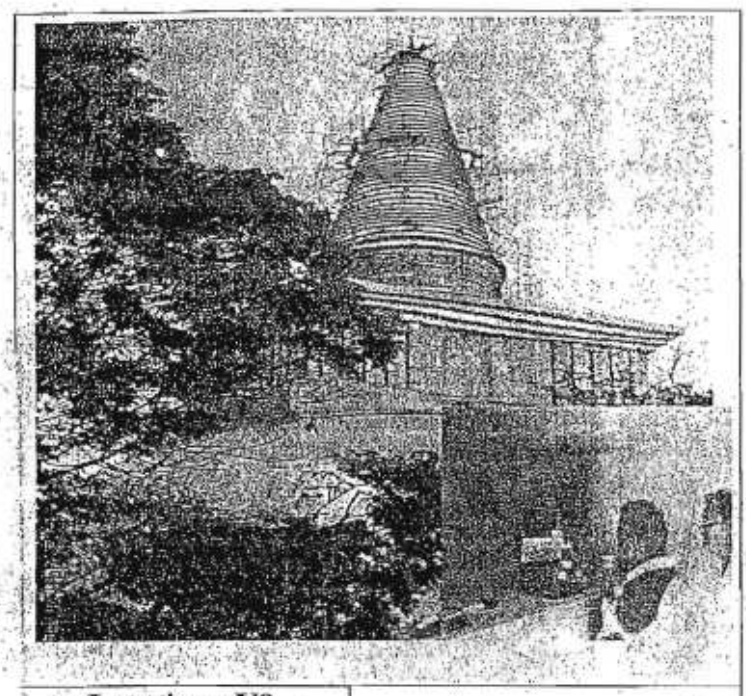
Location:- V6	At the premises of Ms. Pushparani, Mewilawattha, Denmark Division, Gampola.
N - 07° 06.378' E - 80° 33.905'	



Location:- V7	At the premises of Mr. Y.A.Tilakarathna, No.05, Weliganga, Mawathura, Gampola.
N - 07° 06.221' E - 80° 34.079'	



Location:- V8	At road side, close to the right riverbank of dam site area.
N - 07° 06.342' E - 80° 34.171'	



Location:- V9 **N - 07^0 04. 184'** **E - 80^0 36.181'**	**At the premises of Mahaweli Maha Seya, Kothmale.**

7.2 PROPOSED VIBRATION STANDARDS

1. Building Classification

Before introducing the vibration standards for the operation of machinery blasting activities, construction activities & vehicle movements, it is necessary classify the building structure as the vibration affects in accordance with the nature of the nearby structure. Building that have been built-up in Sri Lanka could be categorized into the following categories in accordance with the ISO 4866:1990 (E) standards. Please note that the following categorization of buildings has been adopted in introducing the vibration standards for all cases. However it is noteworthy to mention here that even though the classification of buildings given by the International Standards are almost the same, the same categories have been divided into sub categories to suit the Sri Lankan situation.

Table 1.1: Categorization of structures according to the type of building (from ISO-4966: 1990E)

Category of the structure of the building		Description
Resistance to the vibration decreasing ↓	Type 1	Multi storey buildings of reinforced concrete or structural steel, with in filling panels of block work, brick work or precast units not designed to resist earthquakes
	Type 2	Two-storey domestic houses & buildings constructed of reinforced block work, precast units, and with reinforced floor & roof construction, or wholly of reinforced concepts or similar, not designed to resist earthquakes.

Type 3	Single and two-storey houses & buildings made of lighter construction, using lightweight materials such as bricks, cement blocks etc, not designed to resist earthquakes
Type 4	Structures that, because of their sensitivity to vibration, do not correspond to those listed above 1,2 & 3, & declared as archeologically preserved structures by the Department of Archaeology

2. Interim Standards for Vibration Control

Table 2.1: Interim Standards for vibration of the Operation of Machinery, Construction Activities and Vehicle Movements Traffic

Category of the structure as given in Table 1.1	Type of Vibration	Frequency of Vibration (Hz)	Vibration in PPV (mm/Sec.)
Type 1	Continuous	0 –10	5.0
		10-50	7.5
		Over 50	15.0
	Intermittent	0 –10	10.0
		10 –50	15.0
		Over 50	30.0
Type 2	Continuous	0 -10	2.0
		10-50	4.0
		Over 50	8.0
	Intermittent	0 –10	4.0
		10 –50	8.0
		Over 50	16.0
Type 3	Continuous	0 -10	1.0
		10 - 50	2.0
		Over 50	4.0
	Intermittent	0 - 10	2.0
		10 – 50	4.0
		Over 50	8.0
Type 4	Continuous	0 - 10	0.25
		10 – 50	0.5
		Over 50	1.0
	Intermittent	0 – 10	0.5
		10 - 50	1.0
		Over 50	2.0

Notes

1. Please see separate measurement methods
2. The values given above are in such a way that minor damage is unlikely as the nearby house/building

Table 2.2: Interim Standards on Vibration for Blasting Activities

Category of the structure as given in Table 1.1	Type of Vibration	Type of Blasting	Ground Vibration in PPV (mm/sec.)	Air blast over Pressure (dB (L)
Type 1	Impulsive	Single bore hole	8.0	105
		Multi bore hole with delay detonators	10.0	115
Type 2	Impulsive	Single bore hole	6.0	105
		Multi bore hole with delay detonators	7.0	11.5
Type 3	Impulsive	Single bore hole	4.0	105
		Multi bore hole with delay detonators	5.0	115
Type 4	Impulsive	Single bore hole	0.5	95
		Multi bore hole with delay detonators	0.75	100

Note

1 Please see separate measuring methods
2 The values given above in such a way that minor damage to unlikely to occur at the nearby house/building

3. Standards for the inconvenience of the occupants in buildings

The frequency response of vibration of the human body is complex as explained in chapter 6. However, approximate response curves (basic curve) for Z axis are given in BS 6472: 1992. These are given in terms of base curves, which may be close to the threshold of perception for majority of people.

Table3.1: Base curve in relation to preparing of interim vibration for the in convenience of the occupants in building taken from BS 6472: 1992

Frequency Hz	PPV (mm/sec)
1	2.25
1.25	1.61
1.6	1.11
2.0	0.296
2.5	0.569
3.15	0.402
4.00	0.281
5.00	0.225
6.30	0.179
8.00	
10.00	
12.50	
16.00	
20.00	
25.00	
31.00	
40.00	
50.00	
63.00	

Table 3.2 Multiplying factors use to specify magnitudes of building vibration with respect to human resource using the base curve in Table 3.1

Place	Time	Multiplying factors		
		Continuous vibration (day time and night time)*	Impulsive vibration (max. of three occurrence per day	Intermittent vibration
Critical working areas (e.g. hospital operating theatres, precision laboratories	Day	1	1	1
	Night	1	1	1
Residential	Day	6	40	20
	Night	2	10	5
Office	Day	6	80	30
	Night	6	80	30
Workshop	Day	8	100	50
	Night	8	100	50

Note: * "day time" from 0600h to 1800h

"night time" from 1800h to 0600h

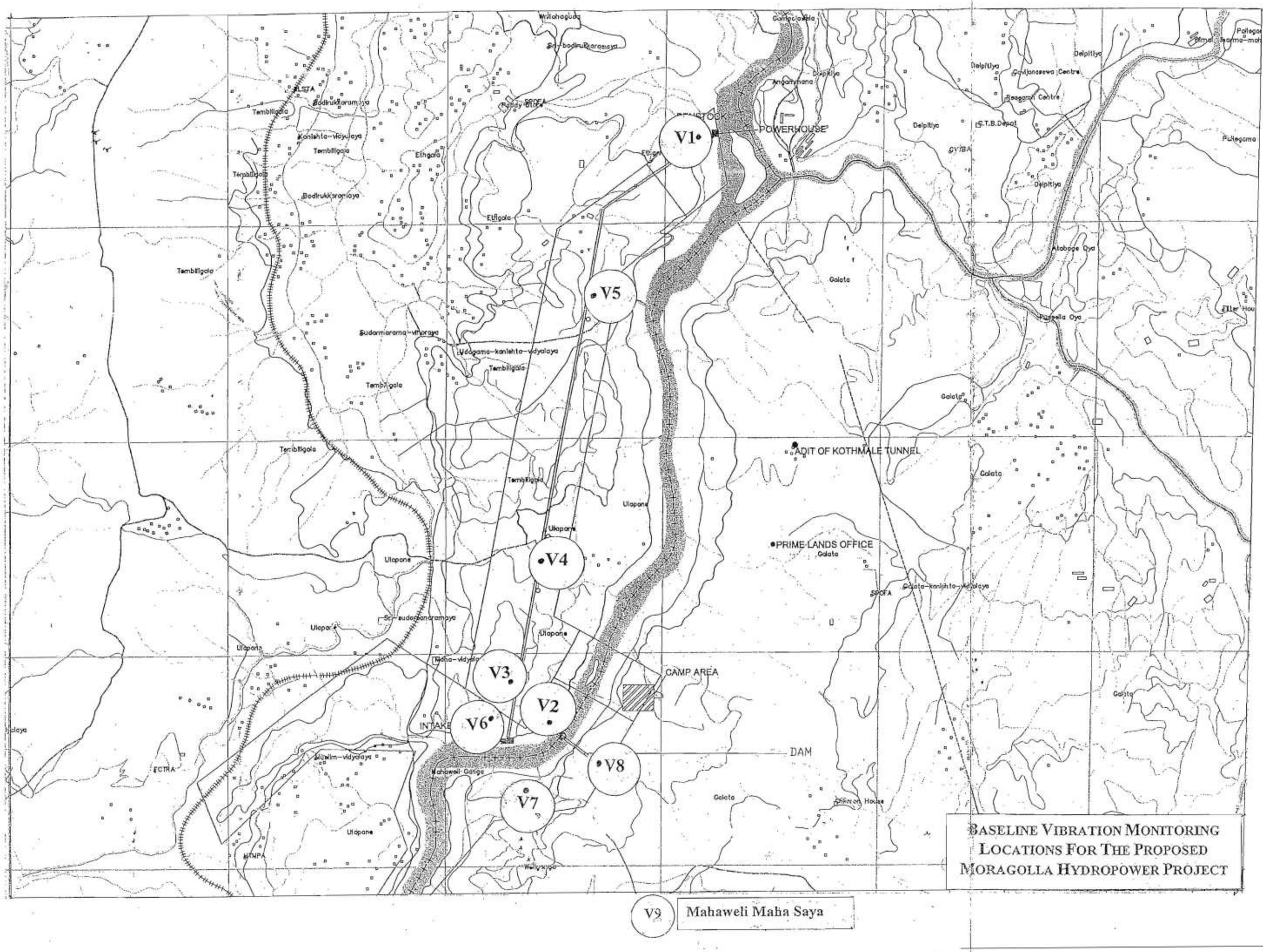
Table 3.3: Interim standards on vibration for the inconvenience of the occupants in buildings

Place	Time	Multiplying factors		
		Continuous vibration (day time and night time)*	Impulsive vibration (max. of three occurrences per day	Intermitted vibration
Critical working areas	Day & Night	0.141	0.141	0.141
Residential	Day Night	0.705 0.282	5.640 1.410	2.820 0.705
Office	Day & Night	0.846	11.280	4.230
Workshop	Day & Night	1.41	1.41	7.05

Note * " day time" from 0600 to 1800h

" night time" from 1800h to 0600h

All values are frequency weighted to vertical axis



BASELINE VIBRATION MONITORING LOCATIONS FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT

V9 Mahaweli Maha Saya

Report on analysis of a wastewater sample carried out for Water Resources Unit, Central Engineering Consultancy Bureau, 415, Baudhdhaloka Mawatha, Colombo.

Report No: EN/09/WQ/44

June , 2009

Department of Civil Engineering
University of Moratuwa
Moratuwa, Sri Lanka

Background

The University of Moratuwa undertook the testing of a wastewater sample for Ms Primali Siriwardena, Water Resources Unit, Central Engineering Consultancy Bureau, 415, Baudhdhaloka Mawatha, Colombo. Sample was collected by the laboratory personnel of the Environmental Engineering Laboratory, Department of Civil Engineering, University of Moratuwa on 29.05.09. Number of samples and number of parameters to be tested were selected by the client.

Objective

The main objective of the study was to perform analysis of water quality parameters of the given sample to evaluate the existing treatment process.

Location

Sample was collected from poultry farm at Farms Pride Pvt. Ltd., Bangalawatta Road, Athugala.

Type of sample

Treated effluent water from wastewater treatment plant.

Methodology

Standard Methods for Examination of Water and Wastewater (1995) were followed in the analysis.

Results :

pH		6.64
Biochemical Oxygen Demand (BOD_5) mg/l		35.0
Chemical Oxygen Demand (COD) mg/l		80.0
Suspended Solids mg/l		39.8
Colour		
Yellow range 436 nm^{-1}		1.2
Red range 525 nm^{-1}		0.8
Blue range 620 nm^{-1}		2.0
Microbiological Examinations	(i) total coliforms/ 100 ml	$9x10^5$
	(ii) faecal coliforms/ 100 ml	$2.2x10^5$

(Mrs) N.S.Gunathilake
Technical Officer

Dr. J.Manathunga
Head/ Division of Environmental Engineering

Head
Environmental Engineering
Department of Civil Engineering
University of Moratuwa.

INDUSTRIAL TECHNOLOGY INSTITUTE (ITI)

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Telephone: 2674461(5 Lines) Fax : 2683127

TEST REPORT

Report No. SS 0907506

Report to:

Central Engineering Consultancy Bureau
415, Bauddhaloka Mawatha,
Colombo 07.

Issued by:

Chemical and Microbiological Laboratory
Industrial Technology Institute

PBTS/28/07/09

2009/07/28

28/7

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... Continuation Sheet

TEST REPORT
Report No. SS 0907506

Customer: Central Engineering *Consultancy Bureau* 415, Bauddhaloka Mawatha, Colombo 07.	**Test Item:** WATER **Service Requested:** Customer's requests on 09th July, 14th July and 16th July 2009

Place of Sampling:	Farm's Pride Processing Plant, Bangalawatta Road, Atigala, Gampola
Collection Point	: 1. Chlorination Tank Outlet 2. River water (up stream) pump outlet.
Source	: Raw water → influent pit → screen filter through → Diffusion Air flowration unit → Contact tank → Aeration Tank → Retention Tank → Pressure Sand Filter → Chlorination → Chlorination Tank End
Quantity of sample collected	: Approximately 200 mL each
Date & Time of Sampling	: 17th July, 2009
Temperature of sample at reception	: 12°C
Test Dates: 17th July 2009 to 21st July 2009	

TEST RESULTS

Tests/ unit	Method	Result	
		1	2
Total Coliform count per 100 mL (confirmed MPN)	APHA -2005	1.6×10^{6}	1.3×10^{4}
Faecal Colform per 100 mL (confirmed MPN)		1.6×10^{6}	1.3×10^{4}

APHA – Standard Methods for the examination of water and waste water APHA, AWWA, WEF, 2005, 21st edition

Mr. W. A. A. Peris
Technical Assistant

Authorized Signatory

Mrs. Sajeevika Perera
Senior Research Officer
Chemical & Microbiological Laboratory

2009/07/28
/msd

APPENDIX D

REPORT ON HYDROLOGICAL STUDIES

LANDSLIDE INVESTIGATION REPORT – by NBRO

SOIL CONSERVATION PLAN – by DEPT. OF AGRICULTURE

Hydrological Studies

1.0 Introduction

Hydrological studies carried out on MAHW263 hydropower project during the Master-Plan Study for the Electricity Supply for Sri Lanka were based on a monthly time step. The report does not describe in detail the methodology adopted except the mention of a methodology referred to as the Fluvial model.

During the present study, hydrology of the project will be analysed afresh. Since the proposed reservoir is of small capacity, stream flow series on a daily time step will be prepared.

In addition to the stream flow series at different points of interest in the project area, flood hydrographs at these points will also be estimated.

2.0 Previous Studies

Previous studies on upper Mahaweli Ganga basin such as the studies on Kothmale and upper Kothmale projects have derived flows at specific dam sites. The most recent study on the hydrology of Mahaweli Ganga basin has been carried out during the Master-Plan Study for the Electricity Supply of Sri Lanka (MPES). During the MPES study, rainfall and runoff data bases have been established for the Mahaweli Ganga basin and the records of river gauging stations have been reviewed.

During the same study, a separate report has been prepared for MAHW263 project including an estimate of hydrology of the project. The data bases on Mahaweli Ganga as well as that of MAHW263 project have been prepared on a monthly time step. The data covered 36 year period from 1949 to1985. Nearly 20 years have passed since the conclusion of the MPES study and therefore there is a need to evaluate the current hydrological regime of the river basin.

The study by MPES on MAHW263 project gave the following parameters for the hydrology of the project.

Mean Annual Rainfall	4200 mm
Mean Monthly Stream flow	26.10m^3/s
Diversion flood (20 Yr)	2700m^3/s
Design flood (10,000 Yr)	6200m^3/s

2.1 Upper Mahaweli Ganga Basin

Mahaweli Ganga is the largest river basin in the island both in terms of surface area (10327 km^2) and the annual runoff volume (5570MCM) generated. It is also the longest river and on its travel to the sea it flows through different climatic zones. Water resource of the river basin has been extensively developed for hydropower and irrigation.

Mahaweli Ganga originates around Hatton and flows past Ginigathena and Nawalapitiya in its travel to the project area. It flows in a northwardly direction through the project area. About 3.5 km upstream of the proposed Moragolla dam site, Mahaweli Ganga is joined by one of the largest tributaries of upper Mahaweli basin named Kothmale Oya. About 6.5 km downstream of confluence of Kothmale Oya with Mahaweli Ganga, a moderate sized right bank tributary named Atabage Oya joins Mahaweli Ganga.

Water resource of Kothmale Oya has been developed for hydropower through Kothmale and Upper Kothmale hydropower projects. Kothmale reservoir which has a capacity of 172.5 MCM completely regulates the flows of Kothmale Oya except for the large flood flows. Flow of Kothmale Oya intercepted by the Kothmale reservoir is channelled through the Kothmale underground powerhouse and released back to Mahaweli Ganga close to its confluence with Atabage Oya. ***Figure 2.7*** in the EIA report shows the general area.

Normal river flows of Kothmale Oya will not be available to the proposed Moragolla reservoir. Only the flood flows released through the spillway of Kothmale reservoir will pass downstream towards Moragolla reservoir.

Due to this reason flows of total catchment of Mahaweli Ganga at Moragolla (809km^2) will not be available to the project. Flows of only the balance catchment of about 247km^2 in extent will pass through the project area. Henceforth this part of the catchment will be referred to as unregulated part of Mahaweli Ganga catchment to distinguish it from the total Mahaweli catchment at Moragolla. ***Figure 3.1(b)*** in the EIA rport shows this catchment.

2.2 Topography and Land Use

Mahaweli Ganga originates at an attitude of 1300 m around Hatton and flows past Ginigathena and Nawalapitiya in its travel to the project area. Mahaweli Ganga flows in a northwardly direction through the project area.

In the initial reach river runs nearly in the SE-NW direction before turning to flow in SW-NE direction past Ginigathena. Mountain ridges of the upper Mahaweli basin follow the same directions. The westernmost ridge starts at around 1300m asl and drops to about 600 m asl in the project area. Trafalgar (1238m) and Unulugala (1342m) and Kabaragala (1506m) are the prominent peaks in this ridge. The ridge along the eastern boundary of the river valley which separates the Mahaweli Ganga and Kothmale Oya basins is relatively at a high altitude ranging from 1500m asl to 1300m asl .

Unregulated part of Mahaweli Ganga catchment is mainly formed by Mahaweli Ganga, Garak Oya (Karawak Oya), and Inguru Oya. River valleys of these tributaries are narrow and elongated.

Mahaweli Ganga flows in a narrow river valley between the confluences of the two tributaries Kothmale Oya and Atabage Oya in the project area. Minor streams on the right bank within this reach are relatively of short length. The drainage pattern in the left bank is similar except for the minor tributary named Ulapane Oya which joins Mahaweli Ganga on its left bank close to Ulapane town.

The river length between the confluences of Kothmale Oya and Atabage Oya is about 6.5 km. River bed level drops by about 79 m over this reach in several cascades. In between these cascades there are short reaches of river which have relatively mild slopes. Downstream of the confluence of Atabage Oya with Mahaweli Ganga, river bed slopes become mild and lower parts of the river valley widens up towards Gampola area. Upstream of the confluence of with Kothmale Oya too, the river bed slopes of Mahaweli Ganga are less steep although not as mild as the reach downstream of confluence with Atabage Oya.

Ulapane Oya is a left bank tributary which directly discharges into proposed Moragolla reservoir. The confluence of Ulapane Oya with Mahaweli Ganga has a unique feature of near 13m drop in river bed immediately upstream at its confluence with Mahaweli Ganga. This feature was well utilized in planning the Moragolla reservoir and it prevents submergence of useful areas of Ulapane Oya while allowing the construction of a fairly deep reservoir just at its confluence.

Figure 1H shows the river bed profile of the unregulated part of the catchment starting from the proposed tailrace location. Downstream of this area river bed slopes are mild.

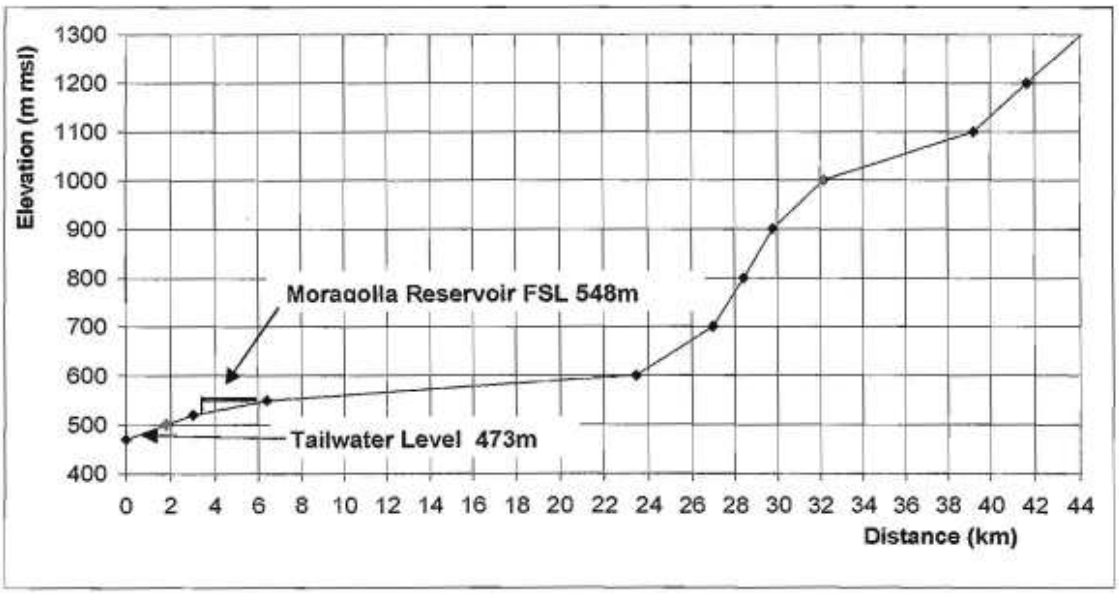

Figure 1H River Bed Profile of Upper Mahaweli Ganga Basin

Land use of the catchment is dominated by tea plantations. Rest of the areas are covered with some planted Pine forests and home gardens.

2.3 Rainfall

2.3.1 Availability of Data

Long records of rainfall are available for the upper catchment of Mahaweli Ganga due to presence of tea estates. Records of some stations date back to the 19th century. Compared to upper parts and the surrounding areas, there is low coverage of rain gauges in the middle and lower parts of the river basin especially in the area of Inguru Oya sub basin.

It was noted that steep gradients of rainfall exist between the western end of the catchment and the eastern part where the project is located. The variation in annual rainfall is as much as 2000mm over a distance of 14km. Describing exact distribution of annual rainfall between these ends need reasonable number of stations. However as can be seen in the foregoing discussion, there is only one reasonably reliable station in the intervening area.

It was also noted that some of the stations which were in operation in these areas have now ceased to function. For example important long-term stations such as Oonoogaloya, Blackwater etc. have now ceased to function.

Information on rainfall of the catchment is very important as the upper part of unregulated catchment is believed to receive high volumes of rainfall. Such high rainfalls are due to the orographic effects as well as due to the exposure of the south western monsoon winds.

Identification of the levels of rainfall received by different parts of the catchment is important as the only river gauging station functioning in the basin at Nawalapitiya is a recent one and has only a short record. Use of rainfall data to verify the stream flow observations is necessary as past experience shows dependence on observed stream flow records of a single gauging station is not prudent as there could be various forms of errors associated with stream flow gauging stations. This is especially important since gauge calibration information and history are not normally available to the public.

Interpreting the runoff response of the upper catchment using the runoff observed at the stream flow gauging station needs understanding the distribution of rainfall within sub catchments that form the catchment at the gauging station and each sub catchment's contribution to the gauged river flows.

Several rain gauges located in and around the project catchment were selected for the study of rainfall. Most of these gauges have long records and they are reporting the records to the Department of Meteorology. In addition, there are records of rainfall collected from some tea states in the basin and surrounding areas by the Consultant for various studies. Gauge histories of these stations are not known and past records are not available, nevertheless these observations will be useful in assessing the levels of rainfalls and the patterns of monthly distribution of the rainfall received by the respective areas. These records were used to supplement the information established with the rest of the stations. Short records of four such stations Kolapathana, Kataboola, Mossaville and Nagastenne were used in the study.

Total number of stations identified is 28 which include stations within the Kothmale Oya and Kelani Ganga basins as well. Rainfall data of adjacent Kothmale Oya basin is used to study the rainfall-runoff regime of the basin for comparison. Other stations outside the basin were used to supplement the rainfall data. Locations of the rain gauges in the surroundings of Moragolla catchment are shown in Dwg MG/FS/H/02. As such 05 stations in the upper part of Kothmale Oya catchment are not shown in this drawing.

Figure 2H shows the lengths of records of the stations except the 04 stations that are not reporting to the Department of Meteorology.

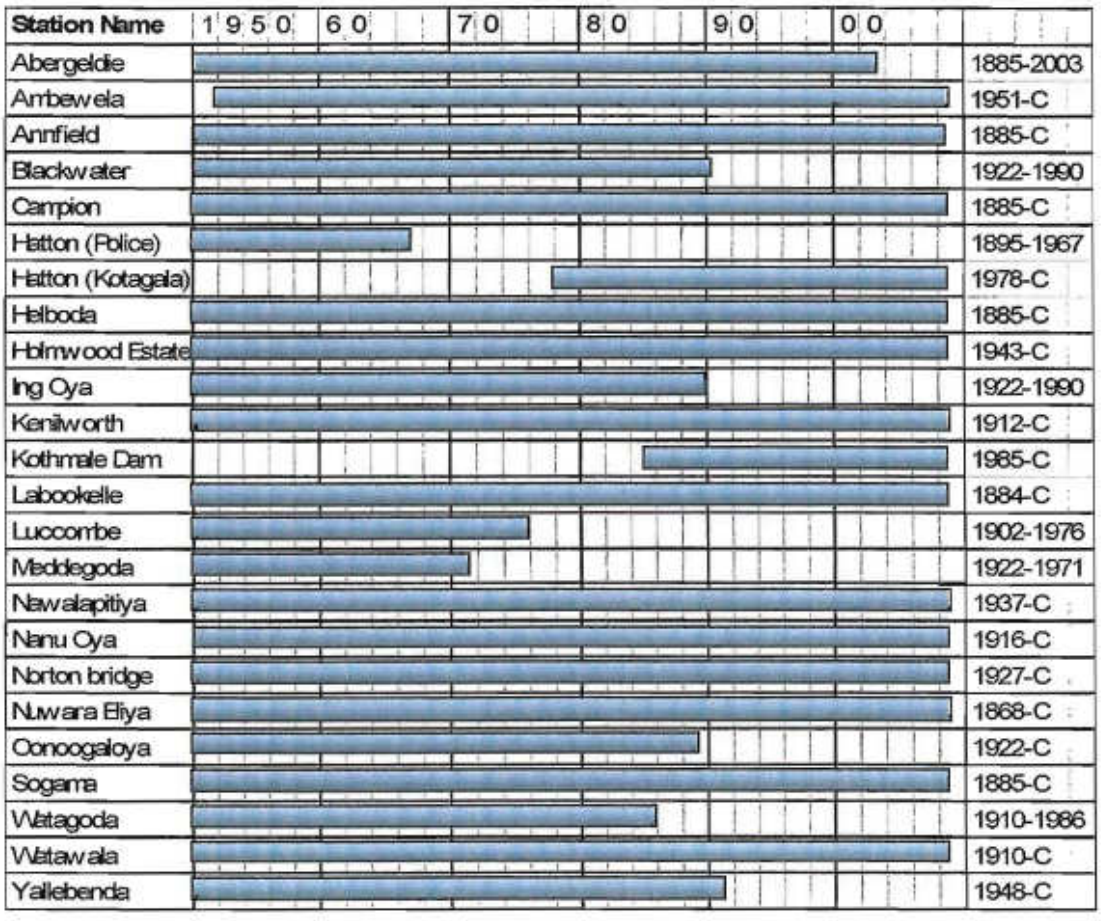

Figure 2H Rainfall Data Chronograms

Figure 2H shows that although many rain gauges had been in operation during the period 1950-1990, some are not functional at present. Therefore, it is difficult to draw information on the current rainfall regime of the entire catchment in a satisfactory manner at present. However, previous records of rainfall of the areas not monitored at present can be used to study the distribution of rainfall in those areas. The relationships of the concurrent records of the stations functional at present and the stations which have ceased to function were used to draw inferences of the distribution of rainfall within the catchment.

2.3.2 *Analysis of Rainfall Data*

Since catchment is fairly large there is an appreciable variation in annual rainfall received in different parts of the catchment. The analysis was therefore concentrated in studying the monthly rainfall patterns of available stations and their long-term behaviour to identify

the most suitable method to represent the catchment rainfall both in terms of geographical location and timeliness of data. In these studies, the long-term behaviour of the rainfall in and around the catchment was also investigated.

Missing records of the stations were filled-in. Missing records in the key stations up to 1985 have been filled during the study for Master plan for Electricity Supply of Sri Lanka. An important station was Hatton which had ceased to function around 1967. Alternative station Kotagala is functional since 1978 and combined record of the two stations with the missing years filled in during Master plan study is treated as a single record representing Hatton throughout this study.

2.3.3 *Distribution of Monthly Rainfall*

Figure 3.3 shows the distribution of mean monthly rainfall of stations used in the present study. Data indicates that all stations show a similar distribution of rainfall through the year. As indicated by the two distinct peaks, the catchment area receives rain during southwest monsoon and inter-monsoon from September to November.

Monthly rainfall distribution patters of each station was analyzed and compared with rest of the stations. As a result 05 groups of rainfall stations were identified from the database of 23 stations located within and in the vicinity of Moragolla catchment based on the magnitude and the monthly distribution pattern of rainfall. These groupings are;

Group 1 : Abergeldie, Blackwater, Ing Oya, Kenilworth, Kataboola, Kolapathana, Nagastenne, Nortonbridge, Watawala, Luccombe
Group 2 : Kothmale dam, Mossaville, Meddegoda, Sogama
Group 3 : Watagoda, Annfield
Group 4 : Hatton, Nawalapitiya, Oonoogaloya, Yallebenda, Kotagala
Group 5 : Helboda, Labookelle

Figure 3H shows monthly rainfall distribution of a representative station from each group to show the different types of distribution distinct to each group.

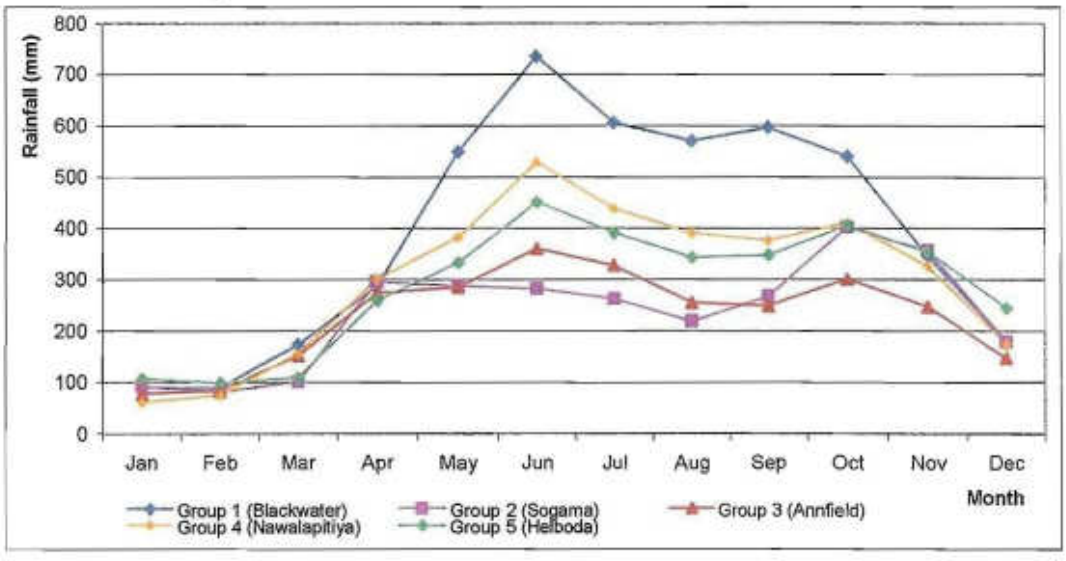

Figure 3H Distribution of Monthly Rainfall

It was noted that each group is roughly located within a certain mean annual rainfall isohyet interval. It was also noted that mean annual rainfall reduced from west towards east. Mean annual rainfall isohyets of the project catchment are shown in ***Drawing A*** attached.

The distributions also revealed that difference in annual rainfall received by each area is determined by the level of rainfall received during the southwest monsoon season by each area. It also showed that catchment generally receives rainfall beyond mid July where the normal season of southwest monsoon wanes in most of the parts of the island and extends up to August. Project catchment also receives rainfall during the inter monsoon period which lasts from September to November.

Comparison of total rainfall received during the two periods from April to August and September to November at each station shows that total rainfall depths received during southwest monsoon period is nearly double that received during inter monsoon period.

The western most water divide of upper Mahaweli Ganga catchment runs in SE-NW direction and therefore sits across the direction of the monsoon winds. The areas closer to the divide receives higher level of rainfall (e.g. Blackwater, Watawala) compared to the areas located further from it (e.g. Sogama, Kothmale dam).

During the usually low rainfall months of July and August at the end of the southwest monsoon season, upper Mahaweli Ganga basin receives fairly high rainfalls. This is due to the influence of its geographic location with slopes of the catchment exposed to easterly convectional air currents originating from sea about 70 km to the west.

2.3.4 Areal Rainfall

Aerial rainfall of the catchment can be computed using the stations described in sec 2.3.1. Only few stations with sufficiently long records are available for applying Theissen average method for computing areal rainfall. Theissen averaged rainfall was computed using the available stations Hatton (including Kotagala), Watawala, Kenilworth, Nawalapitiya, Sogama and Oonoogaloya. Areal rainfall by Theissen average method is 3451mm.

Mean annual rainfall isohyets were plotted using the long-term mean annual rainfall of the stations and areal rainfall was computed based on isohyetal method. Mean annual basin rainfall for the period 1968-2007 using isohyetal method is 4000mm.

The difference in values by two methods is attributed to the shortage of stations for applying Theissen method as well as the reduction of annual rainfall over the last two decades of the stations used. For example mean annual rainfall by Theissen average method for the period 1968 to 1985 is 3900mm which is comparable to result by isohyetal method. But data of latter period which had several low rainfall years has reduced the long-term mean values. Inability of Theissen averaged method to represent rainfall in areas where steep gradients are present is also another reason.

Mean annual basin rainfall is taken as 4000mm. ***Figure 4H*** shows the distribution of mean monthly basin rainfall.

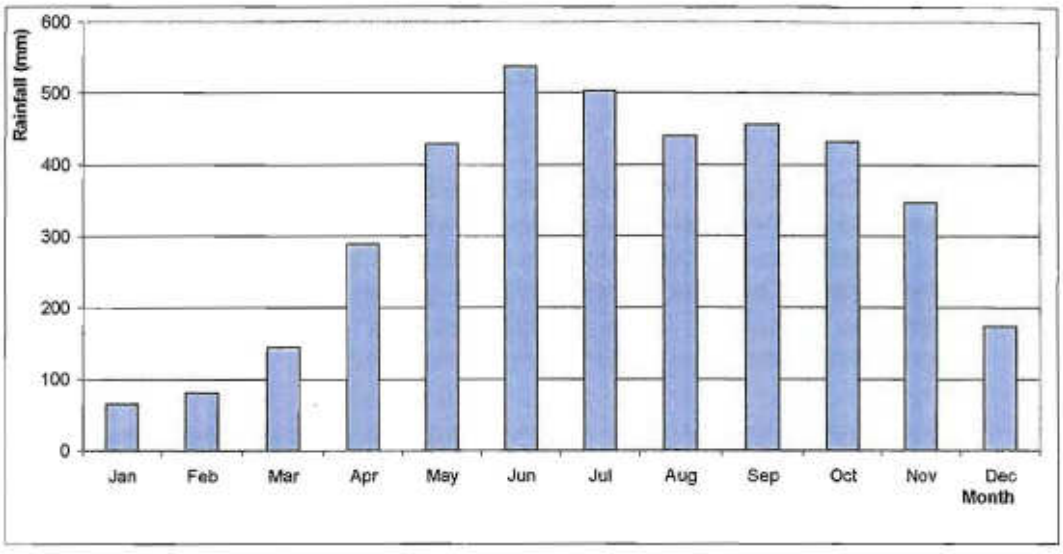

Figure 4H Distribution of Mean Monthly Basin Rainfall

2.3.5 *Long-term Mean Annual Rainfall of Upper Mahaweli Ganga Basin*

Data of stations described in previous sections can be used to evaluate long-term rainfall behaviour of the upper Mahaweli Ganga basin and the surrounding areas. Of the available stations, Watawala, Sogama, Annfield, Nawalapitiya and Labookelle were selected to represent the five groups of rainfall stations discussed in sec 2.3.3.

Figure 5H shows three-year moving averages of annual rainfall of the stations selected.

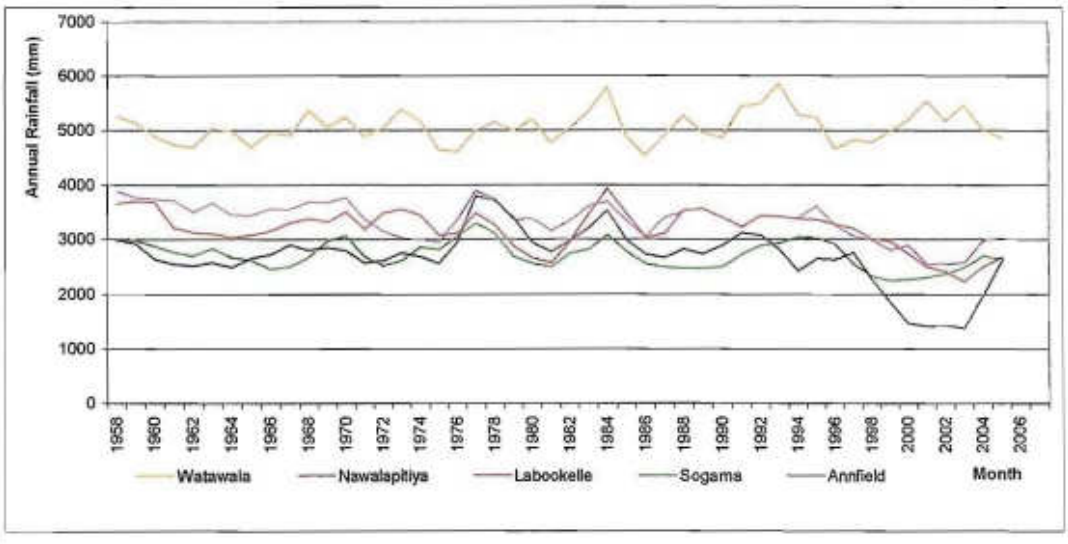

Figure 5H Moving Averages of Annual Rainfall

The records indicate the long-term annual rainfall in the catchment has been stable and annual rainfall has varied within a narrow band. The annual variations had been mainly due to the variations in rainfalls received during the inter-monsoon months of October to November.

2.3.6 *Daily Rainfall Base for the Preparation of Daily Stream Flow Series*

Two daily rainfall databases were prepared for the estimation of daily river flow database for the project. First database was for daily rainfall of the catchment of gauging station at Nawalapitiya. This will be used with observed daily flow database to calibrate the rainfall-runoff model. This was done by dividing the catchment into different zones and assigning an index rainfall station to represent each zone. The length of database covered 1989 to 2007, the period for which observed river flows are available at station Nawalapitiya. Index stations used in this database were, Hatton, Blackwater, Watawala, and Nawalapitiya.

The second database is for the daily rainfall of project catchment to be used to predict the daily river flows using daily rainfall using the model already calibrated. Same methodology as adopted for Nawalapitiya catchment was used. Some additional index stations were added to represent the incremental catchment between Nawalapitiya and Moragolla. Index stations used in the second database were Hatton, Blackwater, Watawala, Nawalapitiya, Oonoogaloya and Sogama. Period of second data base covered 1968 to 2007.

Monthly rainfalls of these stations are given in Annex A of Section B of Volume 6 of the feasibiliy study report.

2.3.7 *Point Rainfall and Number of Rainy Days*

Information on point rainfall and number of rainy days in the project area are required for planning the construction work at work sites. Generally the project area receives less rainfall compared to the catchment. Station Sogama was selected as the representative station based on mean annual rainfall isohyets. Monthly rainfall of the station and all statistical parameters related to the station are given in Annex A of Section B of Volume 6 of the feasibiliy study report.

Number of rainy days was analyzed according to the depth of rainfall received. Average number of rainy days in the project area is 182. ***Table 1H*** gives the distribution of daily rainfall depths.

Table 1H Distribution of Daily Rainfall in Project Area

Daily Rainfall Depth (mm)	Percentage Occurrence	Average Number of Days
0	50%	182
0-10	27%	99
10-20	10%	37
20-30	05%	18
30-40	03%	11
40-50	02%	07
>50	03%	11

2.4 Stream Flows

2.4.1 Availability of Data

Stream flow observations have been made at several locations in and around the catchment of Mahaweli Ganga at Moragolla.

Stream flow gauges set up at Talawakele (316km^2), Morape (555km^2), Watawala (65km^2), Bawagama (169km^2), Mallanda (188km^2) and Nawalapitiya (176km^2) by the Department of Irrigation are located within the project catchment.

In addition gauges have been set up at Gampola (951km^2) and Peradeniya (1167km^2) outside the project catchment but within a reasonably representative area compared to the project catchment (809km^2).

Some of these stations have been discontinued and the others are still operational. Station Morape has been submerged in the Kothmale reservoir and stations Bawagama and Mallanda have been discontinued after brief period of operation. Rest of the stations have sufficiently long daily flow records which will be useful in studies on the project catchment.

A station is also operated by the Mahaweli Authority of Sri Lanka at Nawa Devita about 4km downstream of the proposed Moragolla reservoir. However, this station has commenced after construction of Kothmale reservoir and the flow record is not useful for the study since it consists largely of regulated releases from Kothmale reservoir.

Figure 3.6H shows length of available records. ***Figure 3.1(b)*** in the EIA report shows station locations within the project catchment.

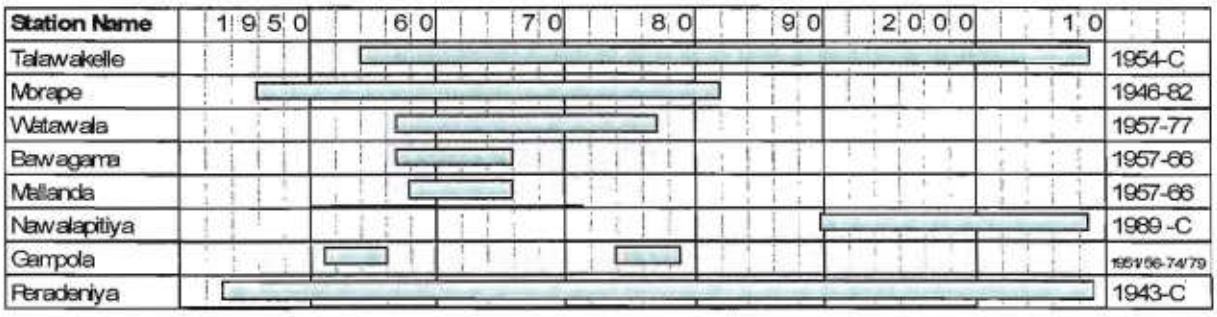

Figure 3.6H Lengths of Available Records of Stream Flow Measuring Stations

2.4.2. Review of Observed Stream Flow Data

Objective of the review of stream flow gauging stations described above is to identify stream flow records which are representative of the rainfall-runoff regime of the project catchment and use the records of the identified stations to derive the inflow series at the point of interest.

Stations Mallanda and Bawagama have relatively short records. Master plan study has concluded that record of Mallanda data as not reliable. Therefore record of Mallanda was not used further in the studies.

Watawala has a record of nearly 20 years from 1957 to 1977 but it measures only an area close to 33km^2 of catchment. Record of Watawala was used to estimate flow duration curves and specific discharges to be compared with the other stations.

Station Bawagama has a short record. Master plan study has found record of Bawagama as reliable. Considering its proximity to station Nawalapitiya which is currently operational, record of Bawagama is used to supplement the record of Nawalapitiya when preparing the daily flow database for calibration of the rainfall-runoff model. In other comparisons such as the one given in ***Table 3.2H***, Bawagama was considered as an independent station.

Station Gampola has been operational for nearly 30 years before regulation by Kothmale reservoir altered its record but the records are not continuous indicating a history of continuous disturbance and low supervision of the station. Record of Peradeniya too is affected by regulation besides this it represents a catchment nearly 05 times the unregulated part of Moragolla catchment.

Station Morape has been discontinued in mid 1980's due to submergence in Kothmale reservoir. However, Water management secretariat of MASL has reconstituted the inflows at this location for the balance period using the reservoir operation data of Kothmale. These data were obtained from MASL during the present study and was used to extend the Morape data series up to 2005. (MASL had prepared data only up to 2005 at the time of the study)

This leaves the stations Talawakele, Nawalapitiya, and Morape as having reasonably long and representative records for consideration in stream flow studies. Records of Bawagama and Watawala too can be used to study the rainfall-runoff regime of the respective sub basins. Records of these stations were collected for the present study. ***Table 3.2H*** summarizes the key parameters of the five stations.

Table 3.2H Key Parameters of Stream Flow Gauging Stations*

Station	Catchment Area (km^2)	Elevation (m asl)	Mean Flow (m^3/s)	Runoff Depth (mm)	Basin Rainfall (mm)	Runoff factor	Specific discharge (l/s/km^2)
Talawakele	297	1200	16.00	1700	2300	0.74	53.87
Morape	555	640	31.00	1760	2700	0.65	55.85
Bawagama	169	578	14.20	2650	4170	0.63	84.02
Nawalapitiya	176	565	14.89	2668	4019	0.67	84.60
Watawala	33	829	2.70	2580	3610	0.71	81.81

* Some values of basin rainfall and mean flows are from Master plan water resources database

Stations Talawakele and Morape are situated in the Kothmale Oya basin and this part of upper Mahaweli basin receives relatively less rainfall compared to the unregulated part of the catchment originating from Hatton. Stations Talawakele and Morape show a lower loss rate due to low evapotranspiration in high altitudes in this basin.

Stations Bawagama and Nawalapitiya of the unregulated catchment show nearly similar high loss rates relative to Kothmale Oya basin.

Data also shows the superiority of unregulated part of Mahaweli Ganga catchment to be exploited by Moragolla hydropower project in terms of high specific discharge. Therefore, although the project catchment is slightly smaller than that of Talawakele it will have nearly double the mean annual flow that at Talawakele.

Figure 3.7 shows that runoff patterns of all stations closely follow the pattern of catchment rainfall and there are no differences in patterns of distributions between the upstream and downstream areas.

Having identified the stream flow gauges that can be used for estimation of inflow series for the project catchment, reliability and consistency of the observed flow records were verified by double mass analysis with the basin rainfall of the respective sub catchments.

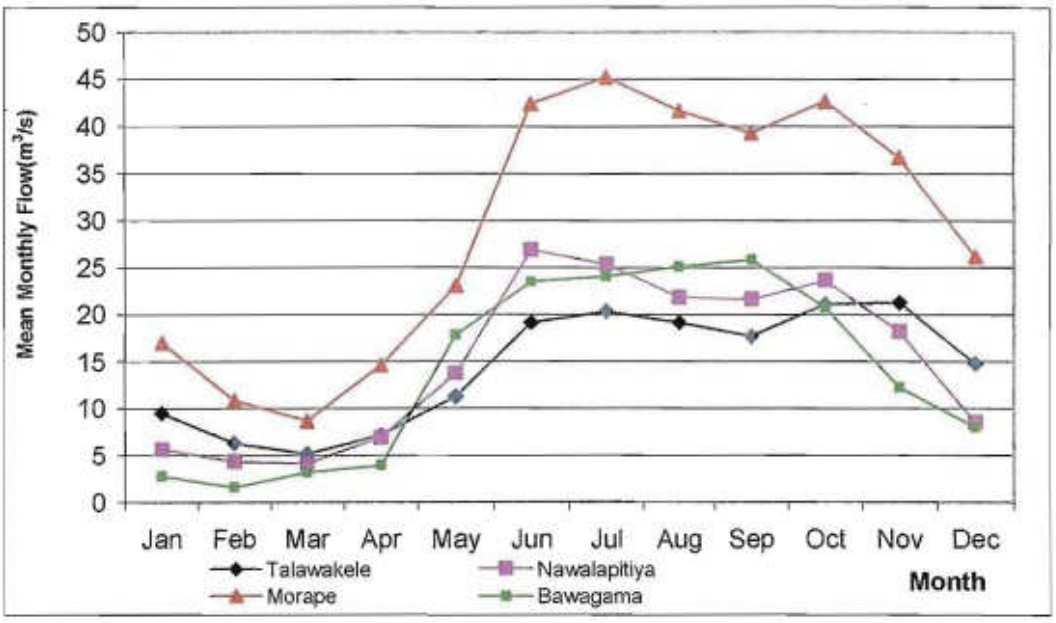

Figure 3.7H Mean Monthly Flows at Gauged Locations

Figure 3.8H shows the normalized Flow duration curves of four gauging stations, Bawagama, Nawalapitiya, Watawala, Morape and Talawakele.

Normalized flow duration curves given in ***Figure 3.8H*** further show the differences in rainfall-runoff regimes of the two parts of the overall catchment. FDCs of Morape and Talawakele are similar but distinct from curves of Watawala, Bawagama and Nawalapitiya.

Table 3.2H shows that in terms of specific discharge, unregulated catchment is different to that of Kothmale Oya catchment.

As discussed above the key parameters listed in ***Table 3.2H*** as well as normalized FDCs clearly showed that rainfall-runoff regime of Kothmale Oya is different to that of the unregulated part of the catchment.

Therefore, observed flow series of Nawalapitiya and Bawagama located in the unregulated part of the catchment were selected for further analysis for deriving inflows at Moragolla dam site.

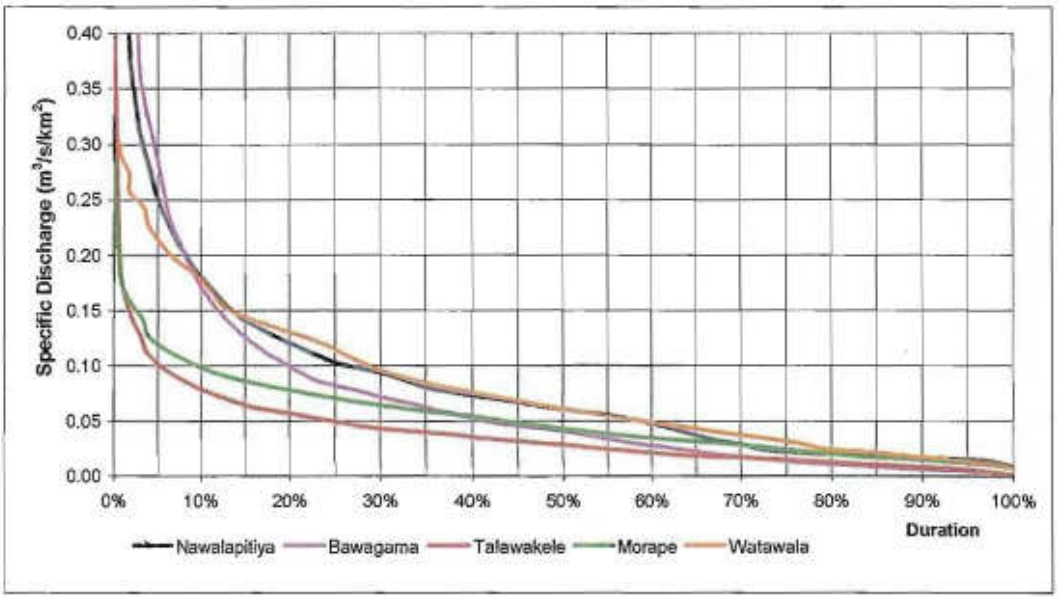

Figure 3.8H Noramlaized FDCs of Gauging stations

2.4.3 Calibration of Rainfall-Runoff Model for Moragolla Catchment

Daily river flows were computed using a rainfall-runoff model developed by M.Sugawara. The model simulates the variations in storage in upper and lower zones of soil cover as well as ground water storage by means of storage reservoirs having liner characteristics in storage recharge and depletion. It had been found suitable for the regions having little soil moisture variations throughout the year such as upper Mahaweli Ganga basin.

Model parameters include storage parameters for different storage types ranging from upper zone to Ground water storage, recession parameters for depletion of storages in different zones and recharge parameters for different zones of storage. Storage parameters range from 3mm to 200mm, recession parameters range from 0.3 to 0.003 and recharge parameters range from 0.10 to 0.02.

Daily rainfall data base prepared for catchment at Nawalapitiya was used to model the runoff at Nawalapitiya. This database consists of daily rainfalls of set of index stations covering the period of calibration 1989-2007. Stations were selected based on the groupings described in section 2.3.3. The stations selected were Hatton, Watawala, Blackwater and Nawalapitiya.

Calibration of the rainfall-runoff model requires information about the distribution pattern of monthly evapotranspiration. Monthly evaporation pattern observed at Peradeniya was adopted to be used in the study. Within a month, daily evaporation was taken to occur at a constant rate. Annual evaporation ranging from 900mm to 1200mm were used to represent different parts of the catchment.

Catchment was divided into zones based on mean annual rainfall isohyets. Each incremental area between two isohyets was represented by the selected index stations. ***Table 3.3H*** gives the index stations used to represent zones of mean annual rainfall and their respective areas.

Table 3.3H Index Stations and Sub-Areas Nawalapitiya

Index Station	Area (km^2)
Hatton	9.14
Watawala	9.20
Blackwater	104.96
Nawalapitiya	52.70

Runoff from each sub area was separately simulated and added up to form the model estimated inflow series for the period 1989-2007. Model parameters were adjusted to obtain a satisfactory fit. Figure 3.9 shows mean monthly flows from the model compared with the observed flows for Nawalapitiya. Nawalapitiya observed flows have shown reasonable consistency with rainfall. ***Figure 3.10H*** shows the observed and modelled mean annual flows.

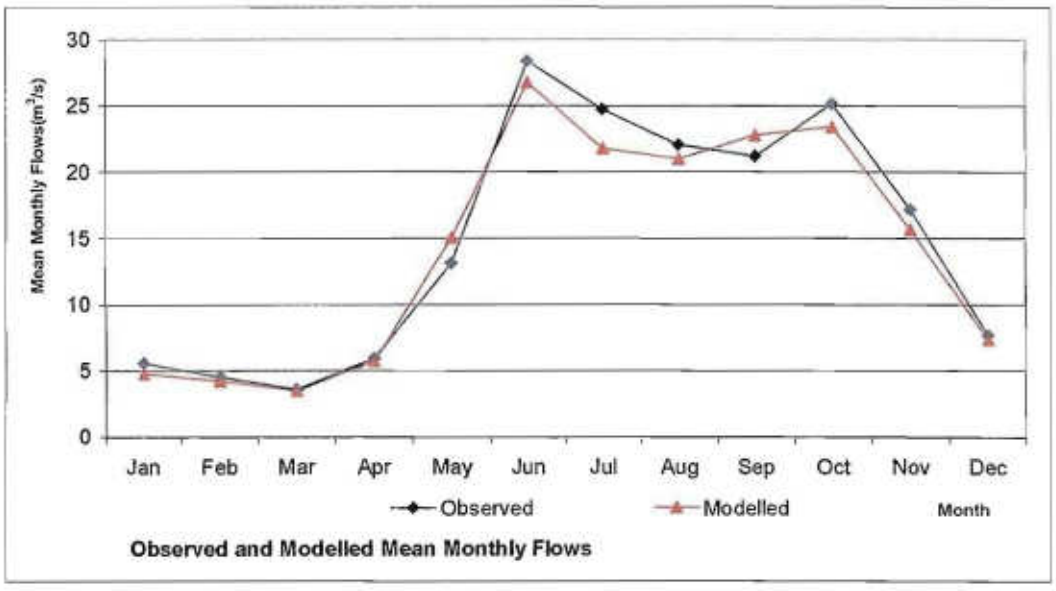

Figure 3.9H Nawalapitiya- Observed and Modelled Mean Monthly Flows

The results from the model compared with the actual observed flows at Nawalapitiya showed that a reasonable calibration can be obtained for the data period from 1989-2001. It was also found that calibration was not very satisfactory for the last 05 years 2005-2007 and it is suspected that this may be due to change in the rating curve, or loss of quality of observation.

Model parameters as calibrated were used to derive the inflow series of Moragolla catchment using the daily rainfall database of Moragolla catchment.

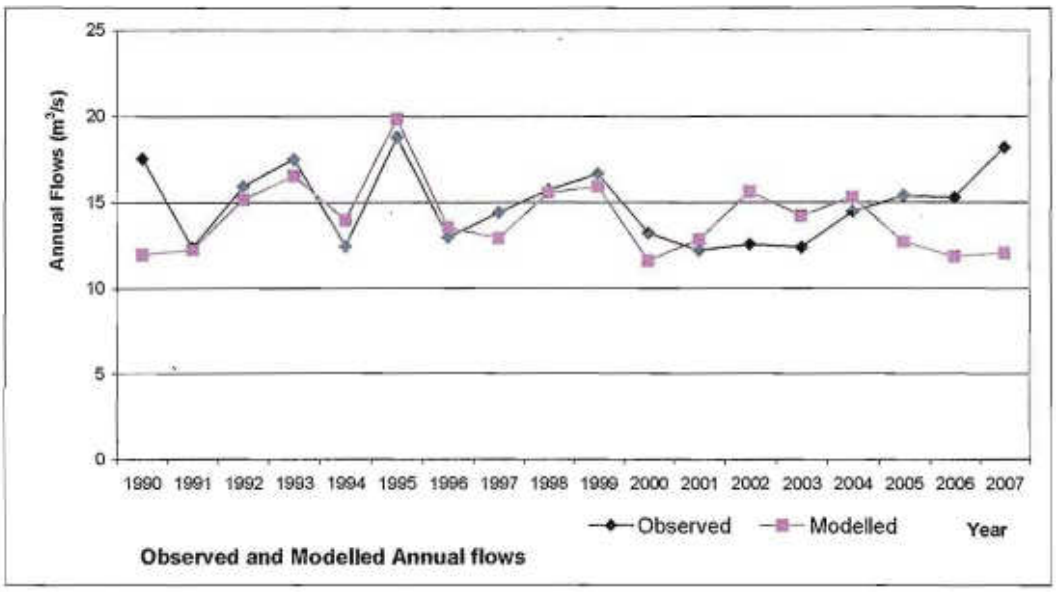

Figure 3.10H Nawalapitiya- Observed and Modelled Mean Annual Flows

2.4.4 Estimation of Daily Flows of Moragolla Catchment

Rainfall-runoff model calibrated for Mahaweli Ganga at Nawalapitiya was used to compute daily flows at the Moragolla dam site. Catchment at Nawalapitiya represents about 73% of the total catchment. Therefore use of rainfall-runoff model calibrated for Nawalapitiya can be reasonably used for estimation of inflows at Moragolla dam site. Daily rainfall database prepared as discussed in sec 2.3.6 covering the period 1968-2007 for the project catchment was used for modelling runoff at Moragolla.

Similar approach as described in modelling daily flows at Nawalapitiya was used in modelling the flows at Moragolla dam site. Additional stations were used to represent the catchment up to Moragolla. ***Table 3.4H*** shows the index stations and respective sub areas.

Table 3.4H Index Stations and Sub Areas- Moragolla

Index Station	Area (km^2)
Hatton	9.14
Watawala	9.20
Blackwater	104.96
Nawalapitiya	77.16
Oonoogaloya	36.56
Sogama	9.98

The daily flow series was then used to prepare the flow duration curve for the catchment. ***Figure 3.11H*** shows the flow duration curve for dam site.

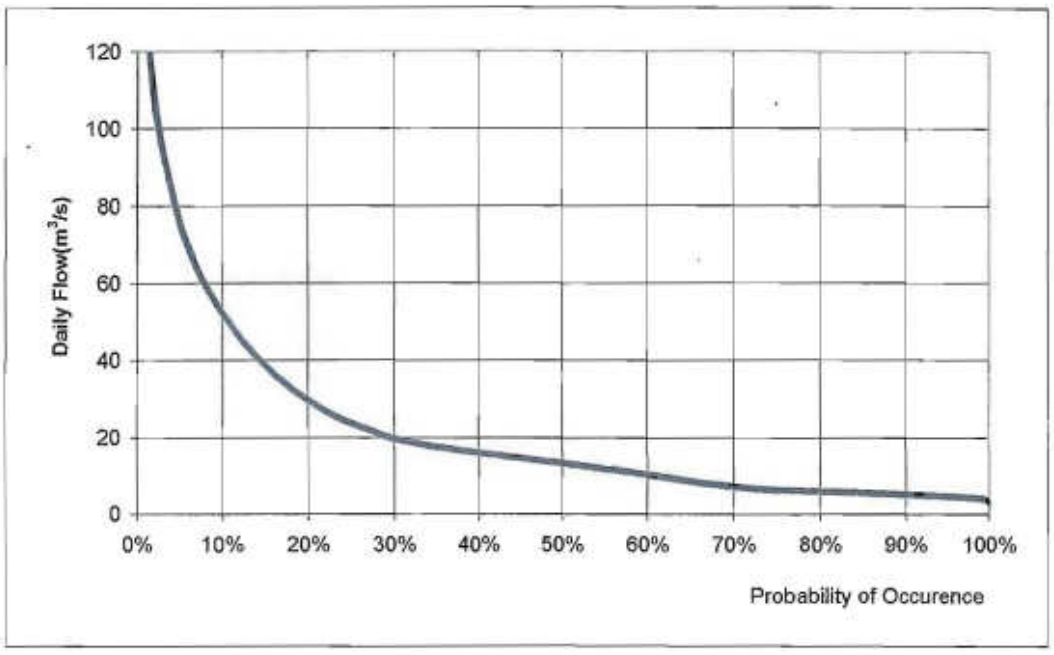

Figure 3.11H Flow Duration Curve at Moragolla Dam site

Figure 3.12H shows the flow duration curves for typical wet and dry years at dam site. Wet and dry years were taken as years having annual flows close to mean annual flow +/- standard deviation. Ordinates of the flow duration curve are given in ***Table 3.5H***. Monthly flows for the period 1968-2007 are tabulated in Section B of Annex A in Volume 6. Flow duration curves for wet and dry years are also given in Section B of Annex A in Volume 6. Long –term mean daily flow at dam site is 21.95m^3/s. 90% probable flow is 5.20m^3/s. 50% and 30% probable flows are 13.0m^3/s and 20.0m^3/s respectively.

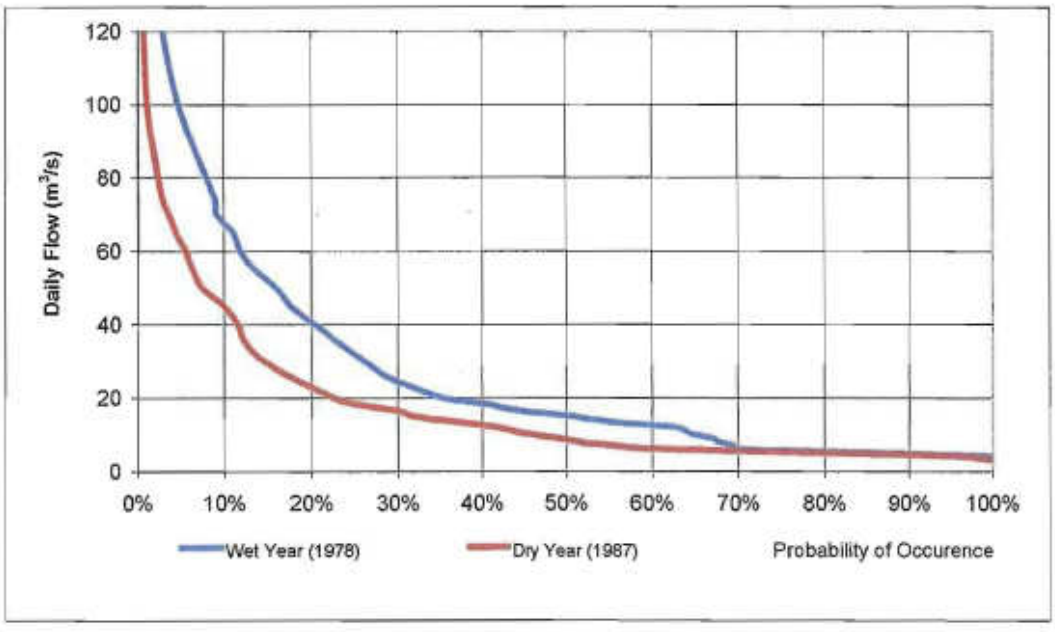

Figure 3.12H Flow Duration Curves for Wet and Dry years

Table 3.5H Flow Duration Curve - Moragolla Dam Site

Flow (m^3/s)	Percentage of Occurrence	Flow (m^3/s)	Percentage of Occurrence
3.00	100.0%	18.00	33.7%
4.00	99.1%	19.00	31.4%
5.00	91.0%	20.00	29.5%
5.50	84.8%	25.00	23.7%
6.00	77.7%	30.00	19.7%
6.50	72.6%	35.00	16.8%
7.00	70.3%	40.00	14.3%
7.50	68.5%	45.00	12.4%
8.00	66.7%	50.00	10.7%
9.00	63.6%	55.00	9.2%
10.00	60.5%	60.00	7.8%
12.00	54.1%	65.00	6.8%
13.00	50.7%	70.00	5.9%
14.00	47.2%	75.00	5.1%
15.00	43.2%	100.00	2.5%
16.00	39.6%	120.00	1.5%
17.00	36.5%	150.00	0.7%

2.5 *Floods in Upper Mahaweli Basin*

Upper Mahaweli Ganga basin receives heavy rainfall during south-west monsoon season. Occasionally the basin would receive rainfall during a tropical cyclonic storm event, which generally covers the whole island.

Information on flood regime of the river basin could be obtained from observed peak flows at the stream gauging stations which are functional at present and those that had been discontinued. As discussed under project formulation, estimation of flood peaks at the proposed dam site which would really represent the probability of such events as desired will be difficult as large part of the catchment concerned is regulated by a reservoir with large capacity.

Kothmale reservoir completed in 1985 regulates 562km^2 out of 809km^2 catchment with a large reservoir having a capacity of 172.5MCM. Having a reservoir with large storage capacity which regulates nearly 69% of the catchment at Moragolla can expect to lower the threat of flooding due to short recurrence period storms. The same cannot be expected for floods of higher return period as reservoir could be full at the time of occurrence of such events.

Safety of Ulapane village which is located about 5 m above the proposed high flood level of Moragolla reservoir has to be ensured by providing adequate capacity in the spillway of Moragolla dam to pass flood peaks of higher return period such as 1:10,000 years.

Therefore the basic approach in determining the flood peaks in the catchment of Mahaweli Ganga up to Moragolla is to consider only the unregulated part of the catchment (247 km^2)

for flood events of shorter recurrence period and to consider the entire catchment of 809km^2 for flood events of longer recurrence period.

Effect of the Kothmale reservoir on floods of large recurrence period was examined and it was noted that if the reservoir is at full supply level at the time of flood, there will be insignificant regulation effect on the peak. It was also noted that effect of regulation is felt only if the reservoir levels at the time of flood were about at least 15m below the full supply level. Considering that most likely scenario would be for the reservoir to be close to full supply level at the time of flood, effect of regulation was not considered in deriving the outflow hydrograph of the reservoir.

Mahaweli Ganga originates at around 1300m asl close to Hatton. River bed level drops to about 600 m over a distance of 20 km. Bed slopes are relatively mild in the following reach. Bed level difference of nearly 100 m occurs over a distance of about 22km up to the dam site. Total length of river reach in unregulated part of the catchment of Mahaweli Ganga at Moragolla is 42 km. River bed profile is shown in ***Figure 2.10*** in the EIA report.

Storm events during south west monsoon and the inter monsoon season lasts for about 1 to 2 days. Areal extent of these events would rarely cover the entire basin. Compared to monsoon storm events, heavy rainfall events due to tropical cyclones such as November 1978 event could cover the entire basin. While the volume of flood flows will be largely determined by areal coverage of the basin by a particular storm event, magnitude of the flood peaks will be determined by the intensity of the storms in relation to the time of concentration of the catchment.

Time concentration of unregulated part of the catchment is estimated to be 10 hrs. Most of the rainfall events due to monsoonal or cyclonic weather conditions would last for periods exceeding the time of concentration of the basin and therefore, determination of peak events for points of interest within the basin does not require techniques employing stream flow routing.

Sufficient information on peak flows is not available to compare the magnitude of peak flows corresponding to single storm rainfall events throughout the basin. An attempt was made to compare the peak flows corresponding to few events for the points of measurements Talawakele (297km^2), Morape (555km^2), and Peradeniya (1167km^2).

Table 3.6H shows the flood peaks corresponding to single storm events at these stations. It can be seen that sometimes larger peak flows have occurred in the upper catchment and the magnitude of the peaks have progressively reduced indicating that the storm events have not covered the larger catchment. In other occasions, such as the event in June 1956 there had been progressively increasing peaks at downstream stations which indicate coverage of the entire catchment by a single storm event.

Table 3.6H Concurrent Flood Peaks Observed at Locations along the River (m^3/s)

Station	Date: 23.06.1956	Date: 25.12.1957	Date: 21.06.1959	Date: 15.07.1977
Talawakele (297km^2)	441	1060	1026	661
Morape (555km^2)	886	557	691	411
Peradeniya (1167km^2)	1600	1727	1479	570

2.5.1 *Estimation of Floods in Project Catchment*

Floods in project catchment can be estimated using statistical as well as deterministic methods. Statistical methods involve use of regional flood frequency envelopes and use of observed annual maximum flood peaks at downstream gauging stations for estimation of the flood peaks of different return periods. These methods are discussed in subsequent sections and the results are compared. Method adopted for the determination of project design flood is discussed in Sec 2.5.5

2.5.2 *Regional Flood Frequency Curves*

An attempt has been made during the study on Master Plan for the Electricity Supply of Sri Lanka for developing regional flood frequency envelopes for the catchments in the island. Observed flood peaks at several stations in different river basins have been analyzed and flood peaks of different return periods have been estimated for each station. These flood peaks have been tabulated against the catchment areas of the respective stations to derive a flood peak-catchment area relationship for different return periods.

During the Master Plan study, envelopes have been prepared for wet zone river basins as well as dry zone river basins. Flood peaks of 10,000-yr and 20-year return periods for the project catchment were estimated using the regional flood frequency envelopes. The flood peak of 10,000-yr return period was estimated as 6347 m^3/s.

Peak flow for a flood of 20-year return period is 2880 m^3/s (entire catchment) and 1133 m^3/s (for unregulated catchment). ***Figure 3.13H*** shows the flood peak envelopes for wet zone river basins from Master plan study.

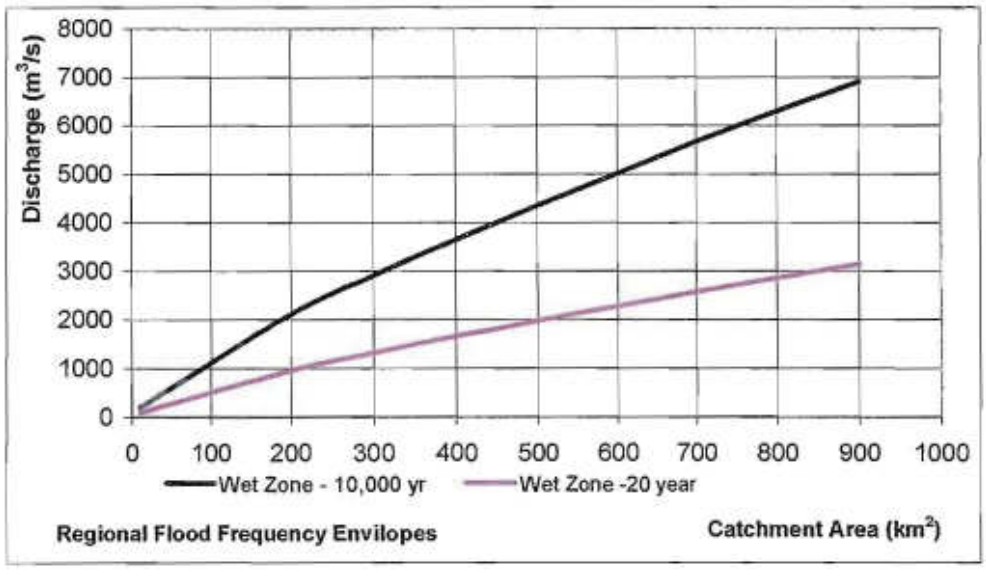

Figure 3.13H Regional Flood Frequency Envelopes -10,000 yr & 20 yr

2.5.3 *Flood Frequency Method*

Annual maximum flood peaks have been recorded at Peradeniya, Gampola, Bawagama, Nawalapitiya, Morape and Talawakelle. These stations monitor catchment areas of different magnitudes and hydrometeorology of the catchments is also slightly different.

However since the cause of floods in these basins are the same storm events either monsoonal or tropical cyclonic, statistically the observations can be grouped together.

Flood peaks observed at these stations were tabulated and transposed to the project catchment using the coefficients of Meyers formula. The data series was analyzed and Gumble probability distribution was fitted to the data. ***Figure 3.14H*** shows the Gumble probability fitting of the data for entire catchment. ***Table 3.7H*** gives the flood peaks for different return periods by flood frequency method for entire catchment as well as unregulated catchment. Reduced variate is defined as $y=-\log_e(\log_e(p))$ where p is the probability of the event.

Table 3.7H Flood Peaks at Moragolla Dam Using Flood Frequency Method

Return Period	Flood Peak (m^3/s)	
	Total Catchment	Unregulated Catchment
02	339	190
05	969	545
10	1386	780
25	1913	1076
50	2304	1296
100	2692	1514
1000	3973	2235
10000	5252	2955

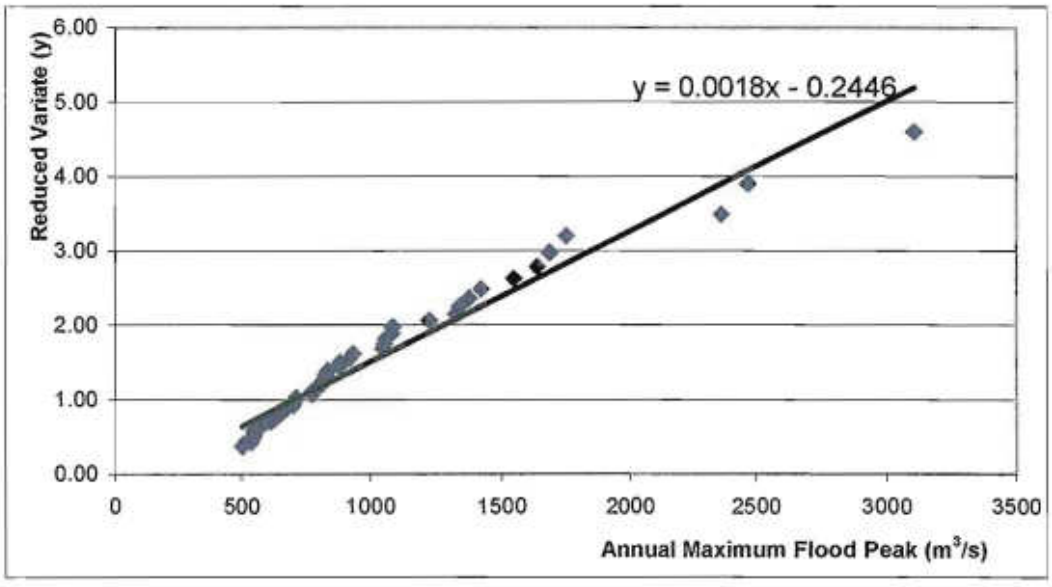

Figure 3.14 Gumble Probability Fitting for Annual Peak Flows – Moragolla Dam

2.5.4 Unit Hydrograph Approach

The methods discussed in Sec 2.5.2 and 2.5.3 in determining flood peaks of different recurrence intervals uses statistical properties of the observed stream flows in the river basin or in the basins in the same climatic region. They can be used only to estimate the peak flow values.

Alternatively, the statistical properties of rainfall observed in the basin can be used to estimate the rainfall events of different recurrence probabilities in the basin and such storm events could be expected to produce flood events of same probability in the basin.

Unit hydrograph approach can be used to determine peak flows as well as volumes of the floods based on rainfall. In determining the unit hydrographs, information of the observed hydrographs could be used to derive the unit hydrographs or alternatively synthetic hydrograph techniques could be used. Since information on observed hydrographs are available only for the station at Morape (555km^2), it was decided to use the synthetic unit hydrograph method.

Synthetic unit hydrograph for the project catchment was estimated using Snyder's method and C_p and C_t parameters of the hydrograph were determined based on some studies available for Sri Lankan catchments.

When estimating the maximum peak flow the time of concentration of the catchment is important as the rain event having the duration equal to the time of concentration of the catchment would produce the maximum peak. Time of concentration of the unregulated part of the catchment is estimated to be close to 10 hours, but in deriving the project flood hydrograph a storm event of 12 hour duration was adopted considering the possibility of losses due to infiltration during the early part of the storm event.

There are only few studies available on rainfall depth-duration-frequency (Return period) relationships for the island. Even these studies have been conducted around 30 years ago needs updating. Carrying out fresh studies on rainfall depth-duration and frequency for a river basin or a region requires reasonably long fluviograph records. Since such records are not available for the Mahaweli Ganga basin, it was decided to adopt the data from the available studies.

However, there is a possibility of analyzing the annual maximum 24-hour rainfall values using the available rainfall records. Representative 24-hour rainfall for the basin was statistically analyzed during the present study and results were compared with the values established in the study by Bagirathan & Elizabeth.M.Shaw - Rainfall Depth-Duration-Frequency studies for Sri Lanka. ***Table 3.8H*** gives the rainfall depths of different return periods and durations from the study by Bagirathan & Shaw tabulated together with the 24-hr values from the present study for Mahaweli Ganga basin based on daily rainfall data of last 40 years.

Tabulated data shows that 24-rainfall depths from the present study closely correspond to the values by previous studies up to around 100-year return period. The differences for higher return periods are due to smallness of the sample.

While the previous flood peak estimates considered the entire catchment, only the unregulated part of catchment was considered in the Unit Hydrograph approach as discussed in sec 2.5.5 under determination of project floods, as it was intended to combine the flood hydrograph of the unregulated part of the catchment with that of regulated part of the catchment already established under the planning and design of Kothmale hydropower project.

Table 3.8H Rainfall Depth –Duration-Frequency Data (mm)

Return period	3-hour	6-hour	12-hour	24-hour	24-hour Present study
2	79	94	105	115	116
5	104	122	135	149	159
10	120	140	155	172	187
25	140	162	180	201	223
50	155	179	199	222	250
100	170	196	217	244	277
1000	220	252	278	314	365
10000	269	307	339	384	452

Rainfall depths of 3 hour durations have been analyzed in tabulated in ***Table 3.8H***. This data can be used to estimate 3 hour incremental rainfall depths for events of different return periods. Therefore, 3-hour unit hydrograph was adopted as the basic unit for computing the flood hydrographs corresponding to rainfall events of higher duration. Thus the flood hydrograph corresponding to a storm event of 12 hour duration was computed by combining four 3 hour unit hydrographs with 3 hour time lag.

3-hour unit hydrograph derived for the project catchment has a peak flow of 7.3m3/s. Time to peak is 7 hours. The hydrograph has a time base of 40 hours.

Flood hydrographs of different return periods were determined using the 3- hour unit hydrograph and the rainfall depths in ***Table 3.8*** and ***Table 3.9H*** give the peak flows by unit hydrograph method.

Table 3.9H Flood Peaks by Unit Hydrograph Method (Unregulated Part)

Return Period	Flood Peak (m^3/s)
02	600
05	788
10	909
25	1058
50	1171
100	1284
1000	1660
10000	2028

Table 3.10H compares the flood peaks estimated by different methods for the unregulated part of the catchment.

Comparison of peaks with regional flood frequency envelopes can only be made for few return periods as data coverage for Regional flood frequency envelopes is limited to 20-year and 10,000 year return periods. It can also be seen that flood peaks by statistical methods are lower than that derived using unit hydrograph methods for floods of low return periods.

For example, flood peak for 02 year return period using flood frequency analysis is $190m^3/s$ while the same using unit hydrograph is $600m^3/s$. This is because unit hydrograph assumes coverage of entire catchment while in practice this condition rarely

happens. The difference in estimates reduces for events of higher return periods since such events generally tend to cover the basin.

Table 3.10H Comparison of Flood Peaks by different Methods (Unregulated Part)

Return Period	Flood Peaks (m^3/s)		
	Based on observed peaks	Unit Hydrograph Method	Regional Flood Frequency
02	190	600	
05	572	788	
10	780	909	
20	1004	-	1133
25	1076	1058	
50	1296	1171	
100	1514	1284	
1000	2235	1660	
10000	2955	2028	2495

Flood hydrographs derived using Unit Hydrograph method were adopted represent the flood volumes and peak flows of the unregulated catchment.

2.5.5 Determination of Project Design Floods

The foregoing analysis discusses floods of different return periods by different methods. For the design of the Moragolla hydropower project, two flood events are of primary importance. For the design of spillway and dam flood with maximum probability is required. Flood of about 25 year return period is of interest for the design of diversion facilities.

As discussed in Chapter 5 under project formulation as well as in the inception report, determination of peak flows of these two largely diverse return periods has to consider the effect of regulation of nearly 69% of the total catchment by a reservoir having fairly large capacity (172.5 MCM) on flood peaks.

Adoption of a design flood peak is a trade off between the project economy, safety of the project, and probable damage to the permanent works. As discussed in detail in Chapter 5 Sec 5.6.2 in Volume 2, it was decided to consider the entire catchment when deriving the 10,000 year flood and to consider only the flood in unregulated part of the catchment when deriving the flood peak of 25 year return period for design of temporary diversion works.

Flood hydrograph of 10,000 year return period for the entire catchment was derived by combining the flood hydrograph of 10,000 year return period for Kothmale reservoir and the hydrograph of same return period for the unregulated catchment.

Design report of Kothmale hydropower project gives the inflow flood hydrograph of the Kothmale reservoir. This is given in Annex A of section B of Volume 06 of the report. Flood hydrograph for 10,000 year return period for unregulated part of the catchment was derived and added with the inflow flood hydrograph of Kothmale reservoir of the same return period to obtain the design flood hydrograph of Moragolla dam and spillway of 10,000 year return period. Peak flow of 10,000 year return period is taken as 6000 m^3/s.

Design flood hydrograph for the temporary diversion works of 25 year return period was derived considering only the unregulated part of the catchment and peak flow of 1058m^3/s (***Table 3.10H***) was adopted as the design flood for temporary diversion works.

Flood of 1000 year return period for the entire catchment as determined by the flood frequency method having a peak of 3973 m^3/s (***Table 3.7H***) was adopted for determining flood levels for the design of power plant.

Design flood hydrographs are given in Annex A of Section B of Volume 06. ***Figure 3.15H*** shows the design flood hydrographs.

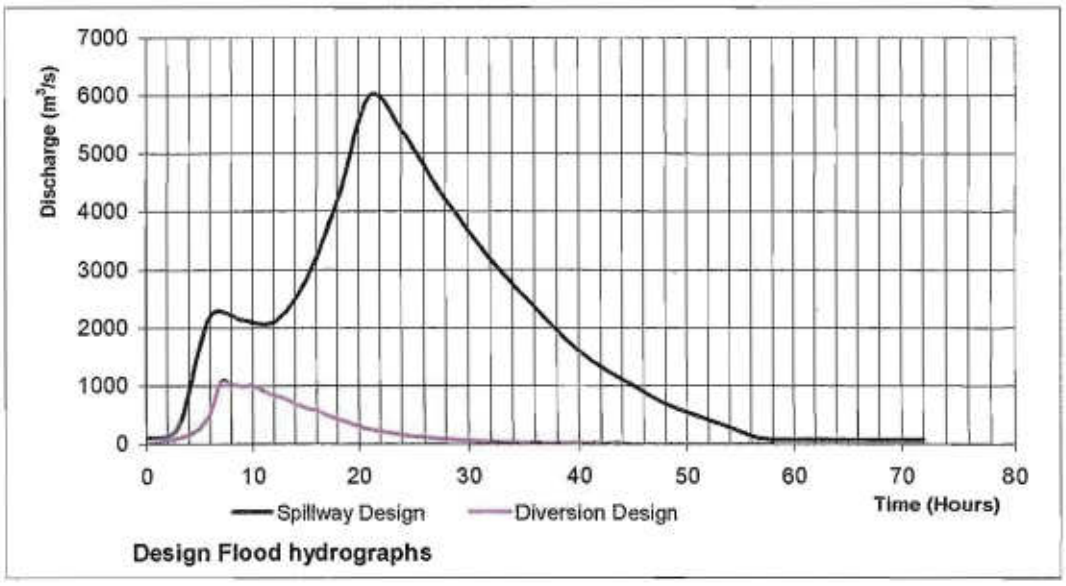

Figure 3.15H Project Design Flood Hydrographs

2.6 *Minimum Stream Flows and Low Flow Analysis*

Minimum stream flows in the river are of interest for the determination of environmental releases for the downstream areas. In addition, probability of occurrence of low flows is also of interest in understanding the river flow regime.

The minimum daily flow according to the computed data series is 3.21m^3/s. Low flows occur during the period of January to March and sometimes in June. When analyzing the low flows either the annual minimum daily flows or the annual minimum of an average of certain number of consecutive days could be used.

Annual minimum 03-day average daily flows were used in the low flow analysis. A Log Pearson Type III probability fitting was applied to the annual minimum 10-day average daily flows for the period of data record 1968-2007. ***Figure 3.16H*** shows the probability fitting. ***Table 3.11H*** gives the low flows of different return periods.

Table 3.11H Annual Minimum 03-day Average Daily Flows of Different Return Periods

Return Period	10-day average daily flow (m^3/s)
02	4.84
05	4.58
25	4.14
50	3.97
100	3.80

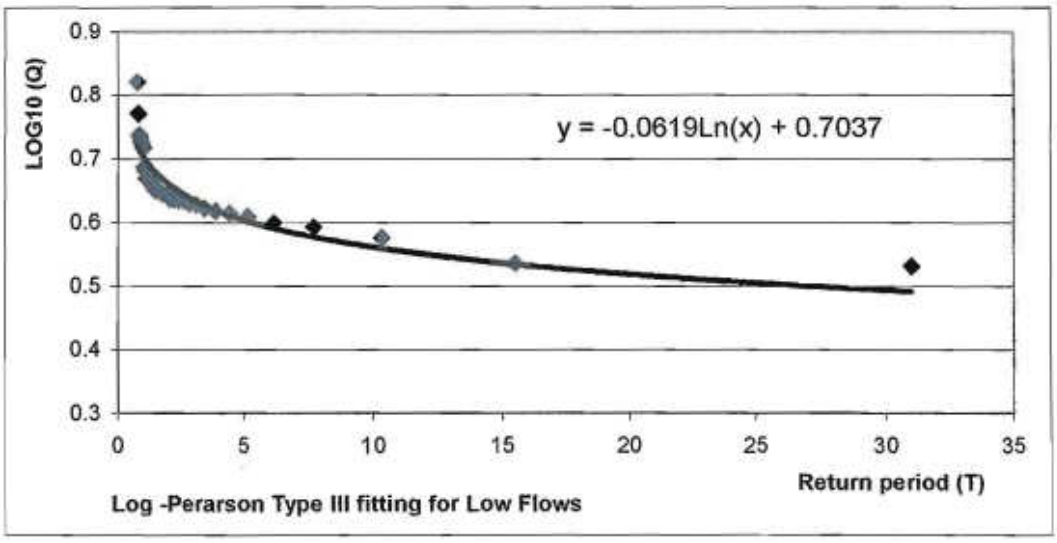

Figure 3.16H Log Pearson Type III Fitting for Low flows

Table 3.9H shows that there is only a small difference in 03-day average daily flows of rare event such as a 100-year and that of more regular event such as 02-years. This indicates that low flows in this magnitude in the river are a common feature of the river flow regime. This is related to the period of low monthly rainfalls during January to March which is a regular feature in the climate of the river basin.

2.7 Sediment Yield

Sediment measurement data are not readily available for all gauging stations operated by the Department of Irrigation throughout the island. When projects are located in the same basin, special sediment measurement campaigns have been implemented. For example Kukule gauging station was used for measurements for Kukule HEP and Talawakele gauging station has been used for measurements for ongoing Upper Kothmale Project. On both occasions, the Department of Irrigation has been entrusted with this task.

There are no gauging stations operated by the Department of Irrigation in the vicinity except at Nawalapitiya which is about 10km upstream. There is a gauging station at a location about 1km downstream of the confluence of Atabage Oya with Mahaweli Ganga at Nawa Devita operated by the Forestry and Environment division of Mahaweli Authority of Sri Lanka. It was planned to use the station during the study. However, by the time of Feasibility study the station was found to be out of order. An attempt was made to resurrect the station during the study, but it was unsuccessful.

Sediment yields of similar catchments in the island which have been used for project design were reviewed during the present study. Feasibility study of Kukule hydropower project has adopted a sediment yield of 250m^3/km^2/year. Study carried out during the planning of Kothmale reservoir based on studies done in 1980 has determined a value of 194m^3/km^2/year. On going upper Kothmale hydropower project too has been adopted a similar value.

Nearly 70% of the project catchment is intercepted by Kothmale reservoir which is deep and is of large capacity. Therefore, sediment yield from the balance catchment of 247 km^2 is only of interest to the project. Catchment is mainly developed for tea estates and they have been in existence over 100 years, hence certain regime condition has established in terms of sediment yield.

A moderate sediment yield of 240m^3/km^2/year has been provisionally adopted.

2.8 Comparison of Stream Flows from Feasibility Study with Pre-Feasibility Study (MAHW263)

Daily inflow series derived during the present study was compared with the inflow series as reported in the Pre-Feasibility level study MAHW 263. The inflow series in the Pre-Feasibility has been estimated on a monthly basis. The daily inflow series of the Feasibility study was used to estimate the long-term mean monthly inflow series for comparison with that by the Pre-Feasibility Report. Time period in the Pre-feasibility Study is from 1950 to 1985 while that of Feasibility study is from 1968 to 2007.

Comparison of mean monthly flows of common period 1968-1984 is shown in ***Figure 3.17H***.

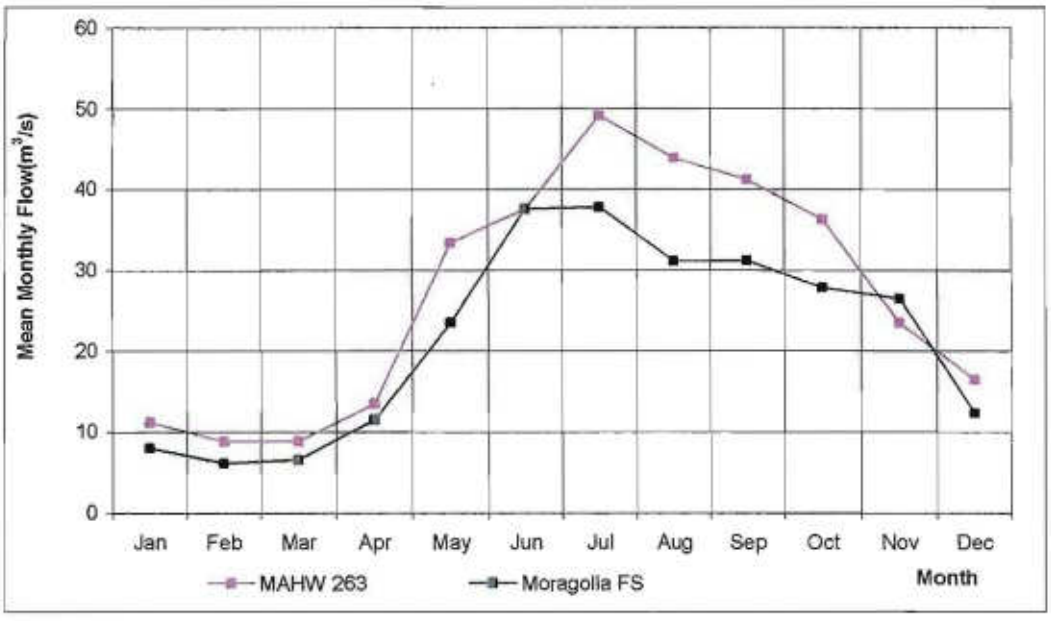

Figure 3.17H Comparison of Monthly Flows from Feasibility Study with MAHW 263

LSSD/SPI/WP/KN/09/31/1598

The Report on the Landslide Hazard Investigation for the Proposed Moragolla Hydropower Project

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August 2009

The Report on the Landslide Hazard Investigation for the Proposed Moragolla Hydropower Project

1. INTRODUCTION

The deputy general manager (water resource management) of Central Engineering Consultancy Bureau (CECB) by her letter dated 7th May 2009 requested National Building Research Organization (NBRO) to carry out a landslide hazard investigation for proposed Moragolla hydropower project at Moragolla / Ulapone area. In this regard, two geologists of NBRO; Mr. Nishantha Peiris and Mr. Mahesh Somaratne investigated the project area on June 9th, 10th, 16th and 26th, 2009. This report is based on the observations made in these inspections and information provided by the CECB.

The information provided by the CECB included candidate hydro project MAHW263 – Supplement to Volume A-1 dated February 1988, laboratory testing results bearing CECB certificate no. LD/ST/20090964 carried out 8 locations around the reservoir area, project layout plan marked on 1:10,000 ABMP sheet No. 61/13, soft copies of borehole log data along dam axis (MD-01 to 09), tunnel trace (MTT-01 to 09) and powerhouse area (MPH-01 to04). Later in early and mid August, the tunnel alignment was modified and relevant drawings were provided.

The Moragolla Project (MAHW263) was first identified in 1962 at the downstream of the confluence of River Mahaweli and Kothmala Oya, but upstream of the tailrace outlet of the existing Kothmale Project. In this project the water of the river Mahaweli will be diverted at Moragolla by a 40m high concrete gravity dam and will be conveying through about 2.9km long NNE trending tunnel and about 130m long penstock to Athgala area where a powerhouse of 27MW capacity is located. Due to the Moragolla dam a reservoir of about 3km length of the upstream will be formed and be filled up to 548m MSL.

2. LOCATION & ACCESSIBILITY

Moragolla hydropower project is located in Kandy District of the Central Province. The project is distributed mainly in two divisional secretariats where the river is the divisional boundary; the left bank belongs to Ganga Ihala Korale while the right bank is in Uda Palatha divisional secretariat. The right bank at the dam location is belongs to Kekulanda GN division while the rest of the right banks belong to Weliganga and Kalugalhinna GN divisions of Uda Palatha divisional secretariat. The left bank of the dam, intake portal, the initial part of the tunnel and reservoir are on Ulapone North GN division. The rest of the left bank of the reservoir is in Ulapone south GN division. The tunnel crosses Udagama and Sinhapura GN divisions. The penstock, powerhouse and switch yard are in Gampolawela GN division.

The dam site can be reached through A5: Peradeniya – Nuwaraeliya road and turning right after passing 22nd km post to Kothmale powerhouse road and then drive about 5km. The powerhouse location can be reached through Gampola – Nawalapitiya (A113) road and turning left at Athgala junction and about 1km away from the junction.

The location map of the project (Part of Sheet No. 61: Nuwara Eliya 1:50,000 topographic map) is given in Fig.1. According to this map the project area is between 176,000E – 179,000E and 210,000N – 215,000N.

3. OBJECTIVES

The evaluation of general aspects of in-situ ground conditions of the project area is the main objective of this investigation. To achieve this object the investigation has been carried out to;

- Identify the existing engineering geological conditions of the selected site for proposed project.
- Determine the vulnerability of future mass movements within the soil mass and the rock fall threats at the project area.
- Describe the subsurface geological conditions of the soil overburden and bed rock.

- Recommendations to avoid or minimize the expected slope failure problems by applying most suitable remedial measures to overcome destructive situations to the project it self and to the surrounding environment.

4. PROJECT FEATURES

In accordance with the information provided by the CECB and gathered from the provided maps the proposed hydropower project consists of following features;

- A concrete gravity dam of approximately 173m long, 40m high on River Mahaweli. The crest elevation is about 550m MSL.
- A Reservoir extending of about 3km upstream from dam with 548m MSL water level.
- An Intake Portal on the left bank at an elevation of about 525m MSL.
- A Tunnel of approximately 2900m long and has a section diameter of 5m.
- A Surge Tank with dimensions approximately 30m high 16m diameter
- A Penstock of about 128m long 4m in diameter
- A Powerhouse, an open air type housing 2 Francis type turbines with total capacity of generating 27MW electricity. The tail water elevation is about 486m MSL gaining about 62m head.

5. LIMITATIONS

Representative sampling and conducting laboratory testing for the determination of strength characteristic of soil overburden and rock layers beneath the proposed structures is beyond the scope of this investigation. Also detail geological/geotechnical mapping of the area is not included into the scope of this study.

6. GEOLOGICAL & GEOTECHNICAL ASSESSMENT

6.1 Regional Geology, Topography & Geomorphology

More than nine tenth of Sri Lankan basement is underlain by Late Proterozoic age high-grade gneissic rocks. This is sub-divided into major crustal units namely Highland Complex (HC), Wanni Complex (WC), Vjayan Complex (VC) and Kadugannawa Complex. The project area is fallen into the western part of

the Highland complex; very close to the boundary between Highland and Kadugannawa complexes. Highland complex which is comprised of the oldest rocks of the island is consisting of high grade meta-sediments and granulitic orthogneisses. A geology map prepared from the 1:100,000 Sheet No.14 published by Geological Survey & Mines Bureau (GSMB) is given in Fig.3. According to this geology map the most part of the reservoir, the dam, entire tunnel trace, penstock and powerhouse are underlain by garnet sillimanite biotite gneiss while some band of quartzite were also observed. The rock strata show N to NNW-strike and dipping into NW direction. The NW trending Kothmale Shear Zone is crossing project area at the middle of the tunnel trace.

Morphologically this area belongs to the middle peneplain of Sri Lanka. The general topography is consisting of ridge and valley with steep slopes. The ridges are heavily dissected by 1st & 2nd order streams. The streams flow in a dendritical pattern and join the River Mahaweli which flows NNE direction. In the study area, River Mahaweli flows in a steep-sided valley with incised bends and meanders. The lowest and highest elevations in the project area are at the northern end close to the tailrace with the elevation of about 475m MSL and about 2km SE from the proposed dam site, the hilltop reaches more than 880m MSL. The local topography is consisting of northerly flowing River Mahaweli with steep rocky embankments, river bend about 500m upstream of the dam location and also meandering with an island close to the tail water outlet. The river shows her youthful stage characteristic with steep 'V' shaped valleys, many potholes and rapids.

6.2 Geological & Geotechnical Assessment of Proposed Site

6.2.1 Dam Site

A concrete gravity dam of about 40m high and 173m long will be constructed across River Mahaweli joining left and right banks at Ulapone and Moragolla respectively. The coordinates at the centre of the N38°W trending dam axis is about 177,600mE & 211,698mN. The crest elevation is about 550m MSL. The location is at a broad 'V' shaped valley about 700m downstream of the sharp

bend. Both banks are somewhat convex consisting of lesser slope at the up and close to the river steep undercutting of the rock. In the right bank a steep slope of 35-45° is extending about 40m from the river and then the upslope reduces to 20-25° and continue about a km. The slope on left bank close to the river is about 25-30° for about 150m and then reduces to about 15° at the upslope until to the hill crest at about another 200m away to the NW.

The bedrock in the vicinity of the dam site is garnet biotite silimanite gneiss. Foliation plane is striking N15°W and dips 27° westward. That is beds are dipping more or less towards the left bank (scarp slope) and thereby right bank is the dip slope. However, close to the river the rock had been undercut to form a steep slope. There are two significant joint sets were observed. One is roughly parallel to the river directions with N30°E and dipping 85° southwesterly. The other is a vertical joint striking N80°W.

The client provided us with the borehole loggings in the dam axis showing that the bedrock is at about 4m below the river-base. The left bank is consisting of very deep residual overburden of about 15-30m while the right bank rock is at shallow depths of 1m to deepen about 13m. Many boulders were observed on the river. Mostly the rock surfaces are well worn due to river aberration. Also the surfaces are slightly to moderately weathered but limited only to outer crust.

The possible failure modes in the right bank is planer failure; that the rock masses can slides on the foliation plane as the dip is more or less parallel to the slope and day lighted.

6.2.2 Reservoir Area

The reservoir area extended about 3km upstream from the proposed dam along the river. It will cover about 461950m² surface area with about 7600m perimeter. The proposed filled up elevation will be 248m MSL.

Generally both banks are consisting of steep to very steep rocky slopes. In the right bank for about 200m upstream of the dam, the slope steepness varies from 35° to 50°. This part of the right bank is in the dip slope and foliation discontinuities are day lighted. The slope is consisting of mainly residual soil with some sporadic distribution of colluvial materials. The country rock in this area is garnet silimanite biotite gneiss with prominent foliation plain with an attitude of N15°W/27°SW. The rock again is dissected by two almost vertical joint sets striking N80°W and N30°E. Many rock blocks and wedges created by above joints were observed and may have strong capacity to be moved along the foliation plain. Therefore this setting is unfavorable in the stability point of view. In the next 400m stretch of the proposed reservoir widen from its usual width of about 150m to about 250m. The average slope of the right bank in this zone is about 10° to 15°. A part of the existing road and the 100m of the right bank will be inundated.

In contrast to that the country rock is dipping into left bank and more favorable against sliding failure. However, toppling may be possible as the rock is dissected by above discontinuities and the steepness of the slope. The average slope is varying from about 40° to 50°. This slope continues in the left bank for about 500m from the dam location.

Another significant affect to the banks of first 500m upstream of the dam location is due to inundation of the bank toes. The water level will be increased about 25-30m in this area thus increasing the height of the saturated soil mass and reducing soil strength. However, most of the inundated area is rock and though it affected through the discontinuities, it is considerably less compare to soil overburden. The Ulapone industrial park complex is at the left bank and the right bank is the main road. Therefore, appropriate remedial measures should be taken to ensure the stability of both banks at the initial 500m upstream region of the reservoir. If a significant fluctuation of the water level of the reservoir excepted, suitable measures should be adopt to prevent the failure of the soil slopes. Removing or strengthen the unstable rock masses and developing up-slope drainage,

applying suitable retaining structures etc., are some suggested mitigation measures.

Ulapone Oya joins to the river Mahaweli at this bend from the left bank and about 500m from the point of confluence, this tributary also inundated. The upstream of the River Mahaweli from this bend will also be inundated gradually decreasing the depth. Most of the banks are steep and rocky. It is recommended to evacuate the dwelling on steep soil slopes whose toes will be inundated. Several such houses were observed in the right bank.

6.2.3 Tunnel Trace

The inlet portal of the tunnel is in the left bank at about 75m upstream of the proposed dam location. The average elevation of the portal is about 528m MSL. It is located on a moderately steep slope of 30°. The initial 350m of the tunnel trends NW direction and then turns NNE direction and traces about 2km. Then again the tunnel turns to NEE direction and travels about 500m to the outlet portal. The total length of the tunnel is about 2964m. The elevation of the outlet portal is about 519m MSL and located at NE trending steep slope of about 35-40°. The tunnel travels through a NNE trending ridge with more or less gentle slope at the NW while steep SE facing slope which ends at the river Mahaweli. The ground surface elevation varies from 480m MSL at the river close to the powerhouse location to 660m MSL in the middle of the tunnel trace.

CECB provided us 7 borehole logs (MT-01, 02, 03, 04, 05, 06, 07) carried out along the tunnel trace. MT-01 & 02 is about 100m away from the new trace, and no bedrock was encountered. The subsurface conditions are poor in these locations and that may be the reason to shift to the present location. According to the borehole logs of MT-03, 04, 05, 06 the tunnel is about 80m below the ground surface and about 60m in the bedrock of garnet biotite gneiss with about 20m thick overburden of residual soil.

The visual inspection of the tunnel trace indicates no old landslides or significant unstable soil masses. Considering the depth of the tunnel, the

affect to the ground surface should be less in respect to the stability except at the portal areas. Considering the slope and the ground condition of the portal area, construction should be carryout very cautiously and supports should be applied as soon as possible.

6.2.4 Penstock Trace

The proposed penstock line is about 250m long and roughly trending at NNE direction. It is descending at an elevation from 518m MSL to 474m MSL on a slope of about 25-30° from outlet portal and surge shaft to the powerhouse site. The soil in this area is residual soil with sporadic boulders. According to the borehole log (MT-08) provided by the CECB, the bedrock of garnet biotite gneiss is at 490m MSL in the middle part of the penstock line. No unstable soils masses were observed in this location. However, the steepness of the slope will suggest careful excavation practices followed by adapting ground supports.

6.2.5 Powerhouse and Switchyard Locations

The proposed powerhouse and the switchyard will be located in two adjacent lands on the left bank of the River Mahaweli. The elevation of this area is about 475m MSL. The proposed area for the powerhouse and switchyard is having 15-20° slope towards NE. The steepness of the slope increases towards the river bank which is about 10m away to the NE. It is about 35-40°. The soil type is mainly residual with some alluvial deposits at the NE part of the site.

According to the borehole logs (MPH-01 to 04) provided by the CECB the bedrock is at about 6-10m from the existing ground level and it is garnet biotite gneiss. Bedrock also can be observed in the river along with many boulders. The river in the powerhouse location and its upstream is meandered. No unstable soil masses observed in these two locations.

7. NATURAL DISASTERS (LANDSLIDE, EARTH SLIPS ETC.)

There are no landslides or earth slips have been reported within the proposed project area. No old landslides or potential landslides were observed during the field investigation except of several gully erosions and some bank failures,

especially upstream of the dam location. Rock falls may be possible on steep slopes along the early part of the rocky banks especially of the reservoir where rocks appeared to be segmented by joints. The steep slope on the tunnel portals, access path and penstock path may lead to unstable during construction unless carefully design and construction procedures are adopted. Considering the vegetation cover and predominant presence of residual soil, no slope failures are to be expected if the construction works carried out appropriately.

In the right bank of the reservoir planer failure or wedge failure of the rocky blocks as the rock masses can slides on the foliation plane as the dip is more or less parallel to the slope and it also day lighted. In contrast to this the country rock is dipping into left bank and more favorable against sliding failure. However, toppling may be possible as the rock is dissected by above discontinuities and the steepness of the slope.

A part of the existing road in the left bank as well as the right bank will be inundated. The water level will be increased about 25-30m in this area thus increasing the height of the saturated soil mass and reducing soil strength. The Ulapone industrial park complex is at the left bank and the right bank is the main road. Therefore, appropriate remedial measures should be taken to ensure the stability of both banks at the initial 500m upstream region of the reservoir.

The upstream of the River Mahaweli will be inundated gradually decreasing the depth. Most of the banks are steep and rocky. The inundation and bank erosion/undercut of these steep slopes may lead to failure.

Based on the landslide hazard zonation map (1:50,000 scale) prepared by NBRO is given in Fig.4. According to this map the project features will be sited on "landslide not likely to occur" and "modest level of landslide hazard" zones.

8. Environmental Impacts

The inundation occurs at the up stream of the dam may cause submergence of slope banks and frequent fluctuation of water level may lead to bank failures, erosion and under-cuts. These processes may cause land degrading. Appropriate mitigation measures can minimize this impact.

Steep slope cuttings for construction of dam, portals, penstock, powerhouse etc. may initiate earth slips unless careful designing and supervision during constriction is practiced.

Tunnel excavation may lead to lower the water table around the tunnel trace thus affecting the dug wells in the vicinity. In this case, the tunnel is not crossing any heavily residential area.

The removal of the vegetation will expose the soil cover and may lead to the soil erosion during the rainy season. This will cause the muddy water to accumulate in the river while the slopes retreat due to denudation.

These impacts can be control and minimize by adopting appropriate engineering remedial measures during the construction period.

9. Conclusion

According to the field observations and the information gathered, this project is feasible without provoking landslides. However, special attention is required while constructing on steep slopes and eroded gullies to avoid slope instabilities. Following recommendations are given to prevent/mitigate manmade instabilities during the constructions of the project.

10. Recommendations

If a significant fluctuation of the water level of the reservoir is excepted, suitable measures should be adopt to prevent the failure of the soil slopes. Since the reservoir will be inundating the surrounding slope, it is recommended to set up toe protections to the both upstream banks consisting of steep soil slopes, by laying suitable builders at least 2m high above the

water level. Further developing up-slope drainage, applying suitable retaining structures etc., are some suggested mitigation measures.

It is recommended to evacuate the dwelling on steep soil slopes whose toes will be inundated. Several such houses were observed in the right bank.

At the dam site and about 500m upstream of this location, the steep rocky slopes are dissected by joints and are consisting of blocks that can move. Therefore, they should be removed or stabilized by using concrete wedging or anchoring/bolting. Similar treatment may require to the boulders in the penstock path and the outlet/inlet portals.

A supervision of qualified geotechnical professionals is recommended during the process of slope cutting, especially steeper slope, in the construction stage as removal of toe may trigger off landslides, or may weaken the stability.

Heavy blasting in the steep slopes is not recommended. Also, deep excavations (slope cuts) are not recommended on steep slopes unless it is essential. Earth retaining structure should be applied to the cut slopes where necessary to ensure its stability.

In order to minimize the soil erosion, minimum removal of the vegetation cover and construction during the dry period are recommended. Natural streams and gullies should be kept free from any obstructions by any kind of construction or waste dumping. Strom water should be freely flowed to the river/natural streams in gullies without any disturbances or accumulation.

Prepared by: Nishantha Peiris (Engineering Geologist)

Certified by:

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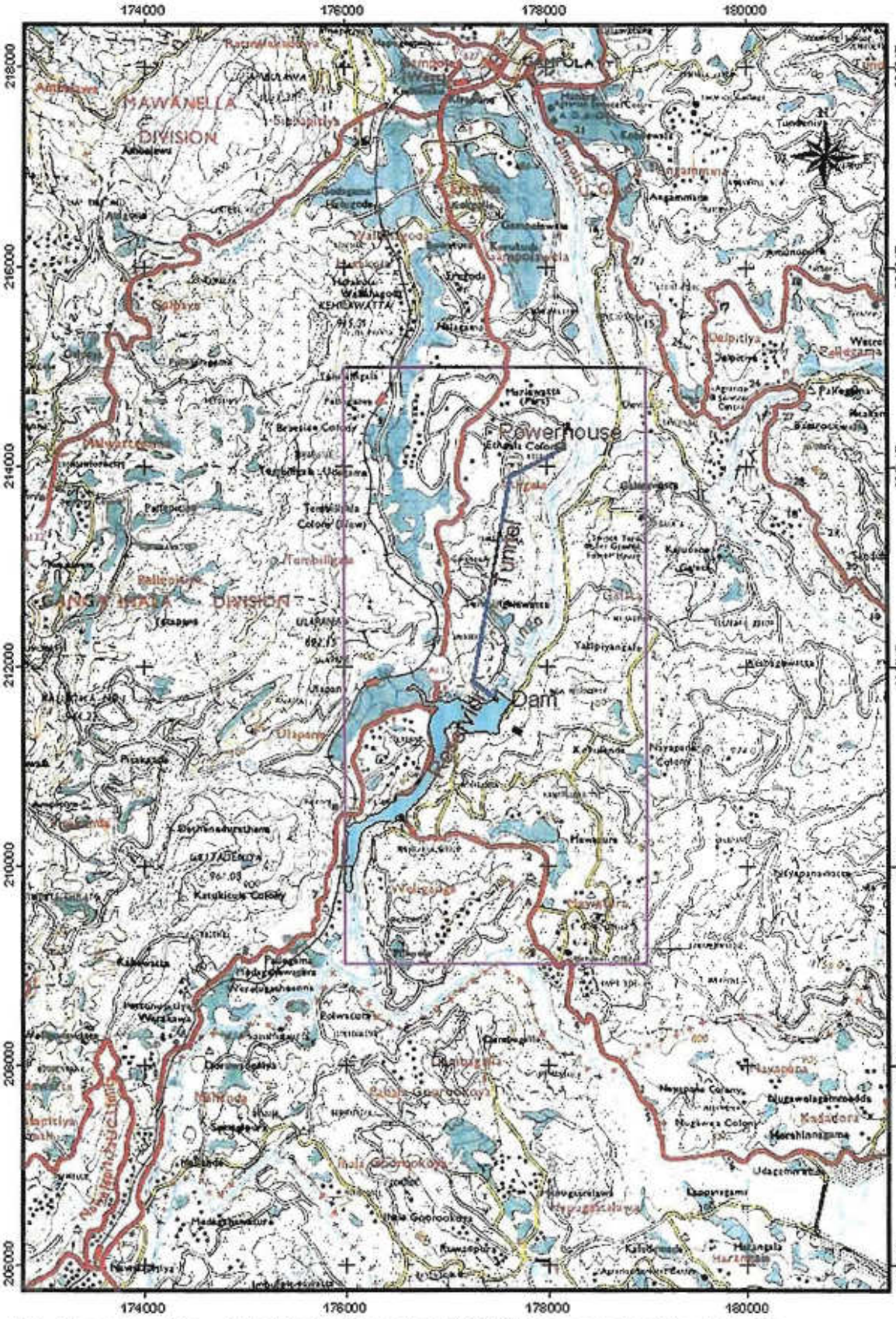
Head / Landslide Studies & Services Division

National Building Research Organization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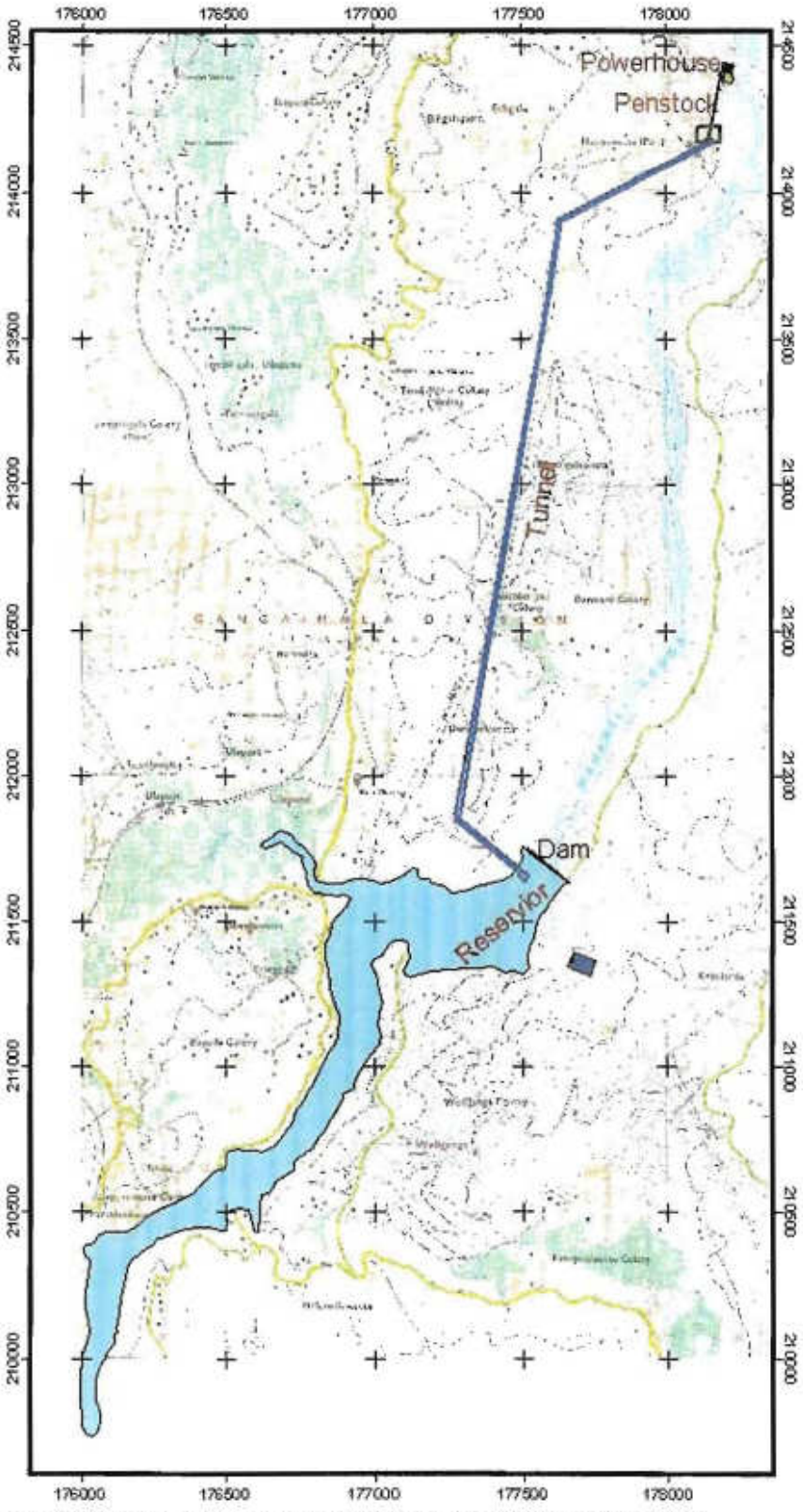


Fig.2 Project Layout Map in 1:10,000 ABMP Sheet No.61/13

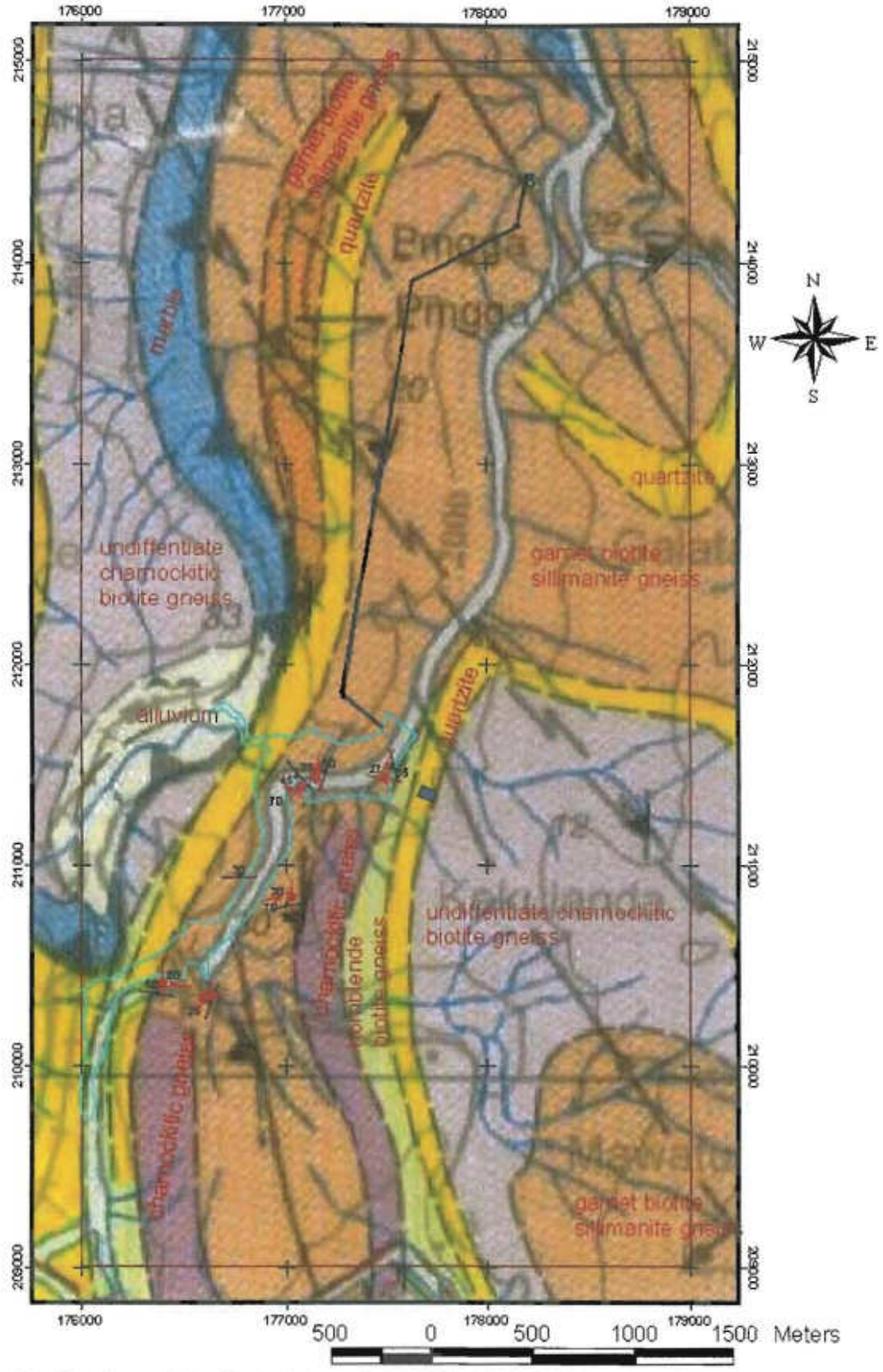


Fig.3 Geology of the Project Area from 1:100,000 GSMB Geology Sheet No. 14

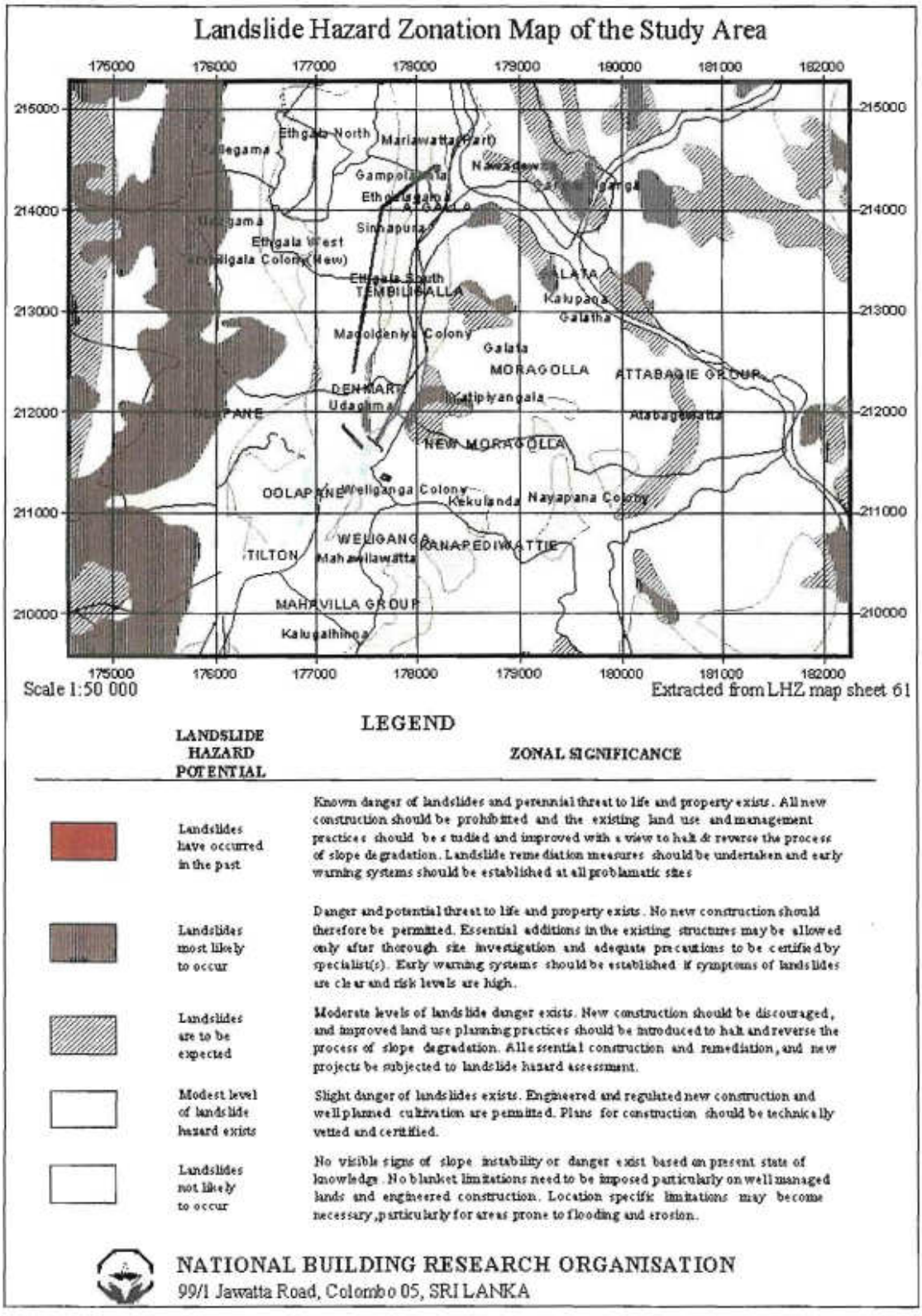


Fig.4 Landslide Hazard Zonation Map of the Project Area



Fig.5 Photograph showing the left bank of the reservoir just upstream of the dam



Fig.6 Photograph showing the steep slopes of left bank of the reservoir

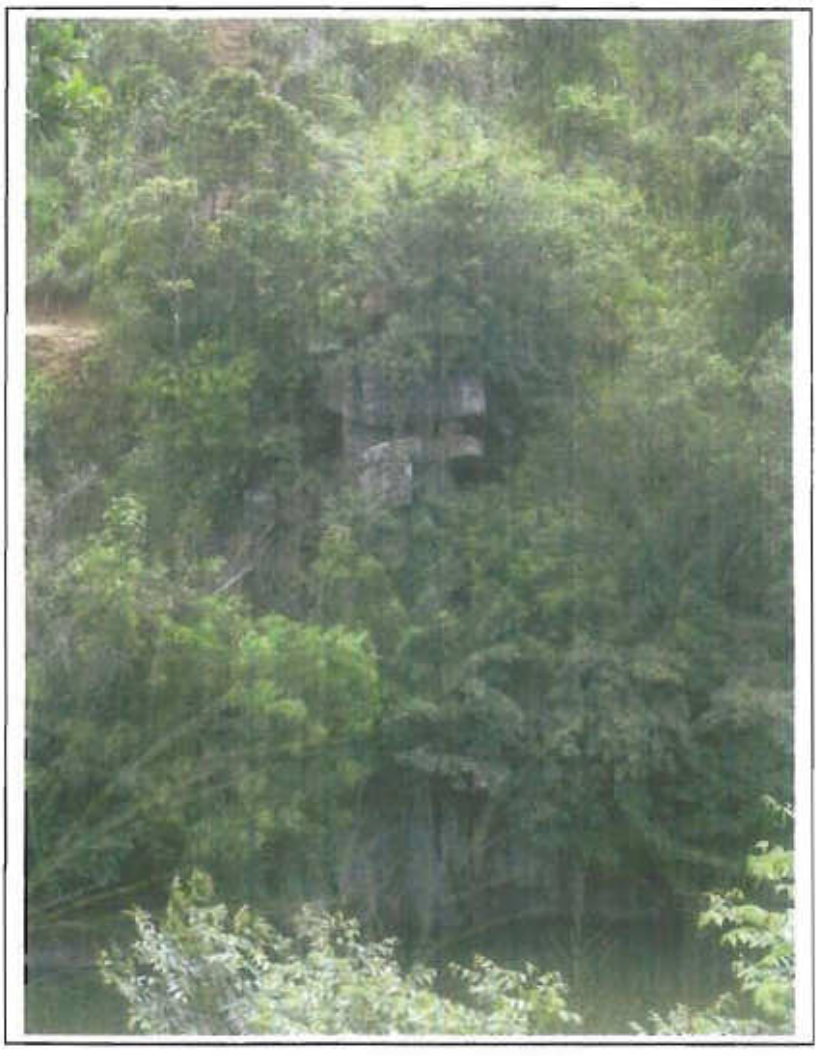


Fig.7 Unstable hanging rock bocks in the left bank of the reservoir

SOIL CONSERVATION PLAN FOR MITIGATION OF SOIL EROSION THREATS FOR PROPOSED HYDROPOWER PROJECT MORAGOLLA



Natural Recourses Management Center
Department of Agriculture
Peradeniya

INDEX

CONTENTS

CHATER	PAGE
Index	1
Introduction	2
Topography	2
Hydrology	6
Soil (Types of soil, susceptibility to erosion)	7
Land use	7
Soil conservation measures within the immediate catchment	11
Storm water drainage plan	12
Recommendations	13

LIST OF MAPS

Map indicating slope classes occurring within the catchment	3
Contour Map of the catchment	4
Land use Map of the catchment	8

LIST OF FIGURES

Digital Elevation Model of the catchment area	5

LIST OF TABLES

The extents under different slope classes	2
Monthly rainfall (RF) at WM2ba agro-ecological region at 75% expectancy level (mm).	6
The extent under different Landuse	7

Proposed Moragolla Hydropower Project: Soil Conservation plan for mitigation of soil erosion threats

Objective of this report is to prepare a soil conservation plan for mitigation of soil erosion threats within the immediate catchment of the Moragolla Hydropower Project, as per to the request of the Central Engineering Consultancy Bureau, Colombo, which is the Project Proponent.

Project site : The proposed hydro-power project at Moragolla is located in Mahaweli catchment. It belongs to mid country and the land use is dominantly tea. The present study was conducted within the immediate catchment area considering the geographical location of which the dam is proposed. The total extent of the immediate catchment is approximately 257 ha. However, extended catchment is spreading into a larger extent but it is suggested to give the priority to the immediate catchment assuming that the project management will give due attention to the periphery after conserving the said immediate catchment. Thus the immediate catchment is the catchment area which is important as far as soil conservation is concern.

Topography

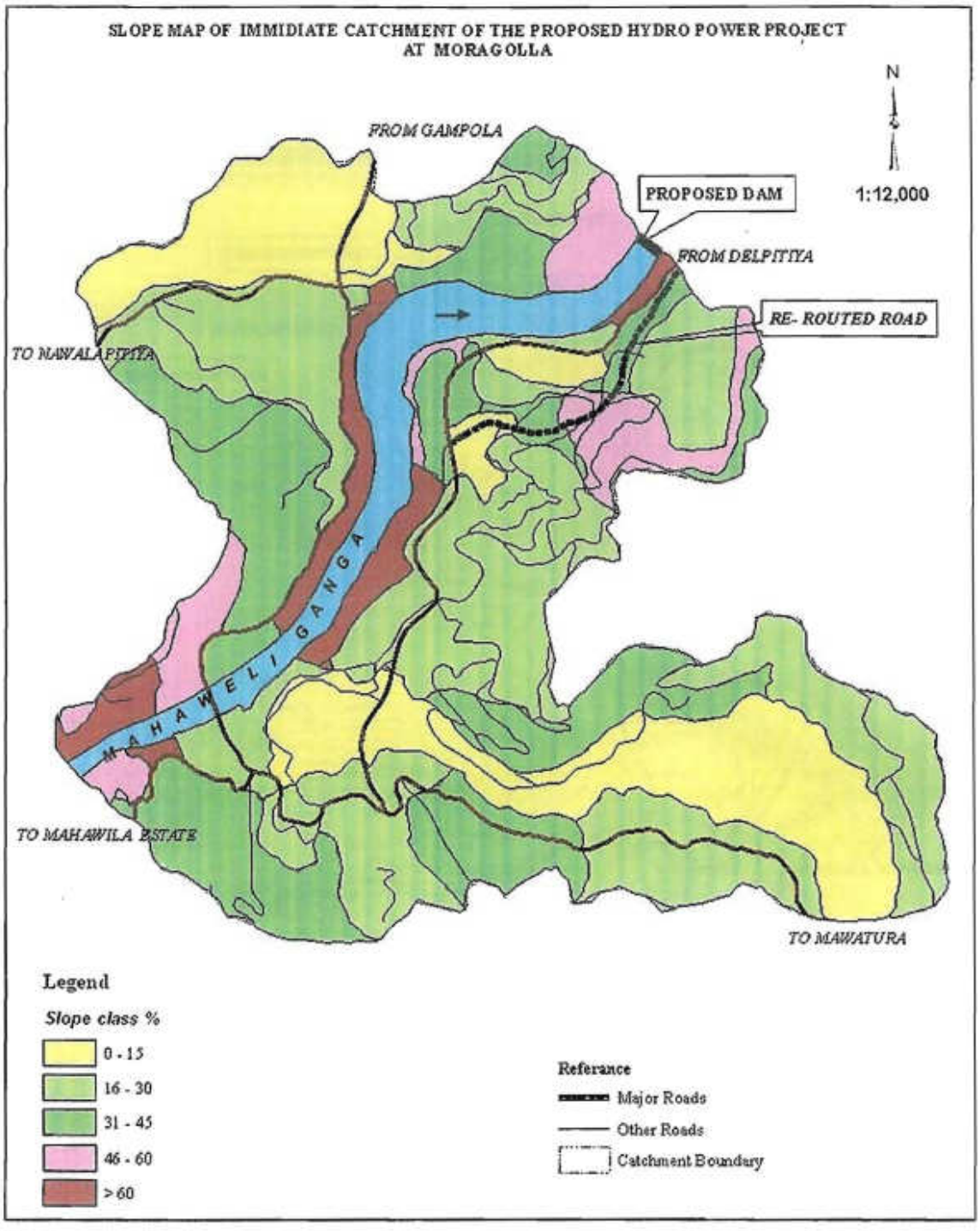
The project area lies in the mid country of Sri Lanka and elevation ranges from 520 – 650 msl. . Land form of the area is rolling to hilly under natural condition. The immediate catchment is dissected with two significant valleys which are broad and nearly undulating topography. The extents under different slope classes are as follows. Slope map prepared based on contour information provided by the project is given as Map 1.

Table No 1 The extents under different slope classes

Slope class (%)	Extent (ha)	Percentage of the catchment
0 - 15	57.4	22
16 – 30	102.0	39
31 - 45	65.3	25
46 – 60	18.2	7
➢ 60	13.8	7

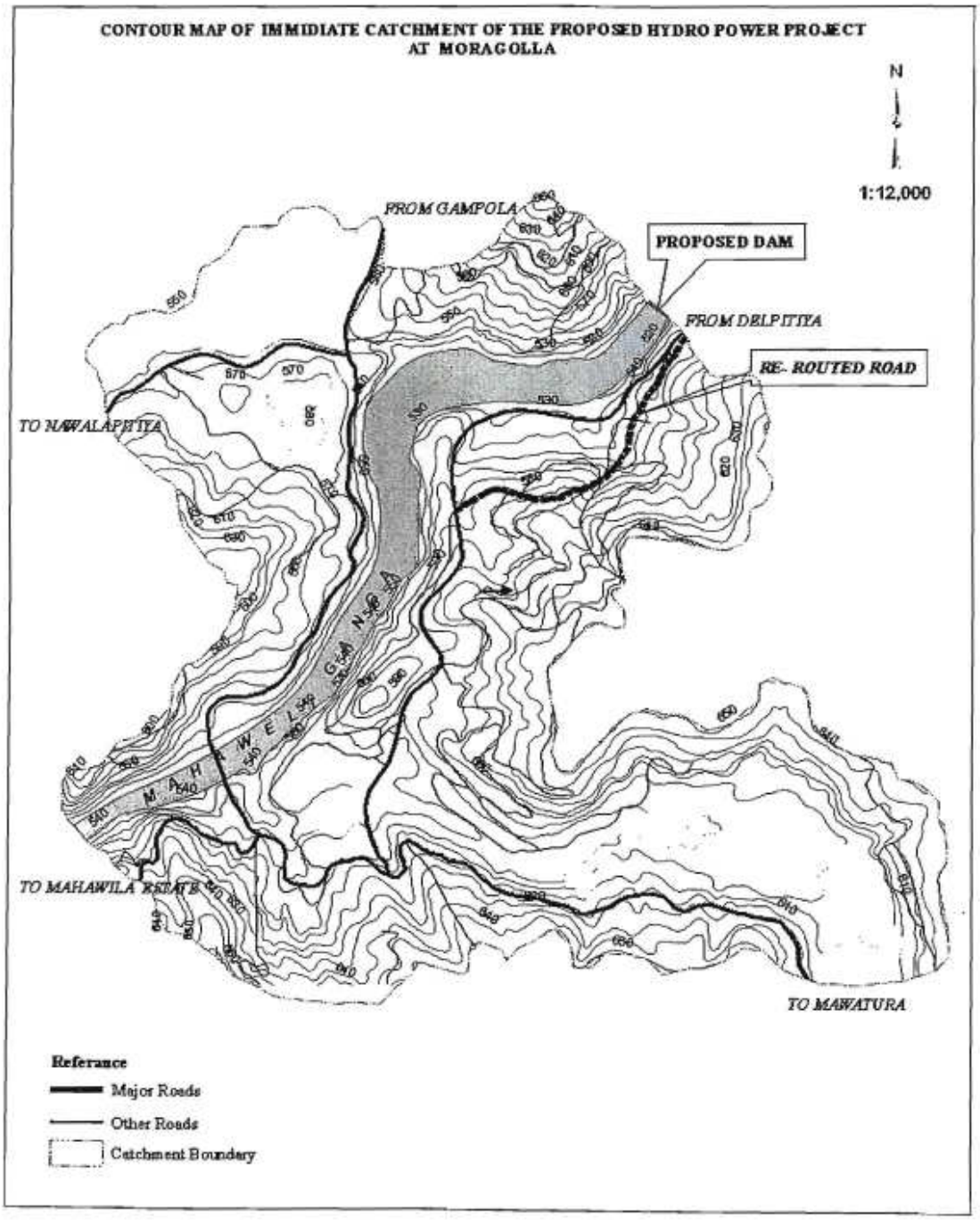
Natural Resources Management Centre, Peradeniya

Map 1: Map indicating slope classes occurring within the catchment



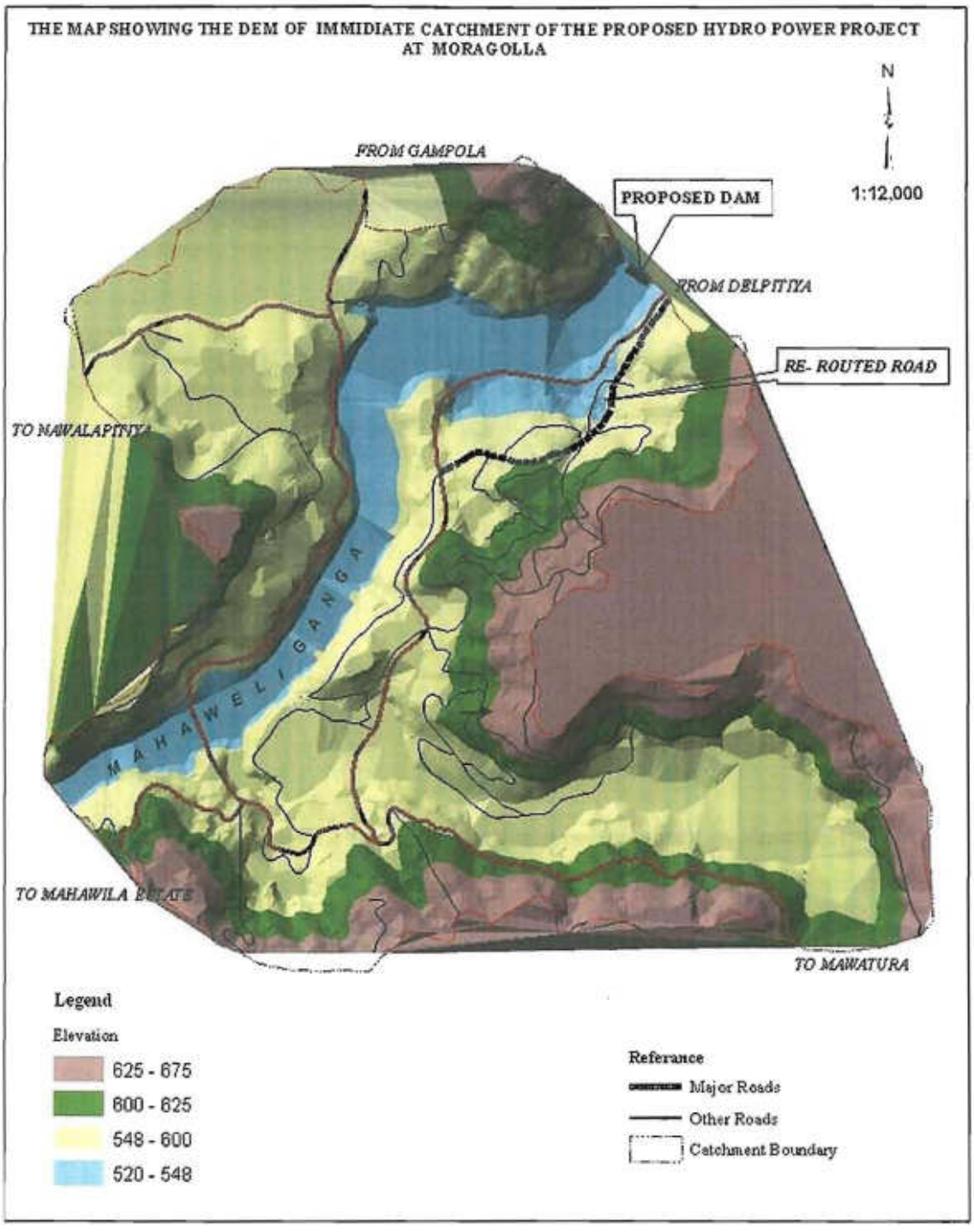
The above slope map was generated through the Contour Map (Map No 2) and the subsequent Digital Elevation Model (Figure No 1) was generated.

Map 2 : Contour Map of the Catchment



Natural Resources Management Centre, Peradeniya

Figure No 1: Digital Elevation Model of the catchment area



Hydrology

This area belongs to the Wet Zone and the ecological sub-zone is WM2a, where annual expectancy of rainfall at 75% probability is more than 2,200 mm. The period starting from late December to March is considered as dry months as monthly rainfall do not exceed 100 mm threshold value. The area generally experiences a Dry weather during the period of mid December to mid March. Short duration and high intense rains along with thunder are generally experienced in this area during April and early May due to intense convectional activity.

Table 2: Monthly rainfall (RF) at WM2ba agro-ecological region at 75% expectancy level (mm).

	WM2A
JAN	30.1
FEB	23.5
MAR	46.3
APR	179.7
MAY	158.7
JUN	226.4
JUL	201.0
AUG	173.7
SEP	176.2
OCT	296.1
NOV	232.8
DEC	82.7

The area drains to Kothmala oya and subsequently to Mahaweli River. There are few perennial streams running across the catchment and most of those are with stable banks and thus stream bank erosion is not significant. Apart from those streams and nick points along the streams, there are no significant surface water collecting structures within the immediate catchment. Surface water available is in good quality and some dwellers are using well water or spring water for drinking purpose.

Soil (Types of soil, susceptibility to erosion)

The predominant Great Soil Group in the site is Reddish Brown Latasolic (RBL) soils in association with Red Yellow Podzolic (RYP) soils in limited locations. Both the RBL and RYP soils are considered to be less vulnerable for soil erosion under moderate topographies such as the project site. However in situations where slope is high and canopy cover is not dense, possibilities of soil erosion is high. In general the catchment is moderately vulnerable for soil erosion.

Land use

The immediate catchment area is dominantly under tea. Other than tea, marginal tea lands which are gradually being converted to homesteads; well developed homesteads; paddy, surface water bodies; are occurring as other landuses.

Table 3: The extent under different Landuse

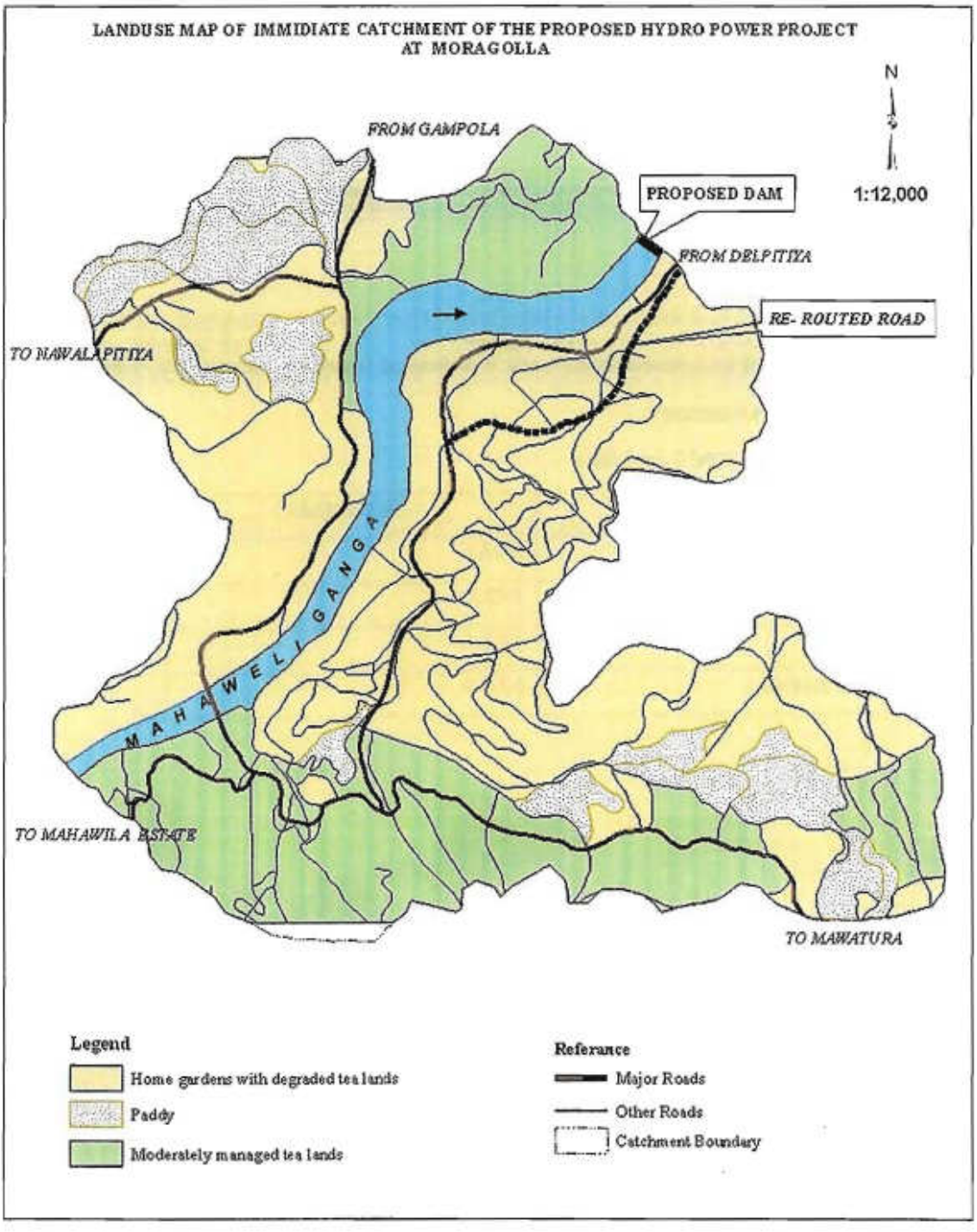
Landuse	Extent (ha)
Tea	63.6
Home garden/ degraded tea	142.4
Paddy	32.1
Water bodies	17.4



Landuse types which are prone to soil erosion under present situation

Natural Resources Management Centre, Peradeniya

Map 3 : Land use Map of the Catchment



Soil conservation measures within the immediate catchment

Soil erosion within the catchment is moderate under the present situation. However, some landuses with less amount of canopy cover such as degraded tea is prone to soil erosion thus mitigatory measures are needed.

Soil conservation measures within the catchment should be planned based on slope, landuse, soil characteristics and rainfall characteristics. However, the catchment is comparatively small thus rainfall characteristics can be considered almost same for the entire catchment. Moreover, dominant soil is RBL which is widely distributed. Thus, these two factors can be considered constant over the catchment. Therefore conservation measures can be decided based on most important two factors that is slope and present landuse.

Soil conservation measures

Lands exceeding 60% slope

This slope class is only 13 ha. within the immediate catchment. The lands with moderately deep to deep soils should be converted into forest. Native trees species existing under natural setting would be more environmentally friendly but if one is aiming at a economical benefits after maturity, Gravilia, Albesia, Ginisapu, Havarinuga, toona etc will be the option. However, these lands should not be disturbed by any means, and even the tree planting program also should be carriedout with minimum soil disturbances. The rainfall distribution characteristics, given in the preceding section can be utilized to decide suitable time periods for initiation of a planting program. However, if the lands are extremely towards high slopes (within the class) planting trees would not be practically feasible. Such lands are occurring just near the stream banks and presently most of these lands are under grass. Therefore, protection of grass from fire is vital and if so, such lands can be left for the natural succession.

Lands within 40 – 60% slope

This slope class is dominantly under tea but most of the tea is degraded at present. The extent is 18 ha . approximately. Therefore intensive rehabilitation program is essential. Construction of stone bunds, terraces, lock & spill drains, construction of leader drains are essential items. However, specifications and horizontal intervals between two measures etc. should be decided based on each and every field inspection. The technical assistance for this can be provided the Department of Agriculture, through training and pilot scale implementation. However, this should be done in consultation with Tea Small Holders Authority.

However if the dwellers are insisting on a landuse change from tea to another, they should not be allowed to cultivate annuals. Instead, fruit tree cultivation or floriculture can be promoted. Followings are the options.

- Doorian, Avocado
- Roses, Gerbera spp, Limonium spp, Anthuriums, Cyprus spp, Agloanema spp, Ceylodendran spp

Lands with 31 – 45 % slope

In extent these lands are 65 ha. approximately and mostly under degraded tea, but milder landscapes are gradually transforming into Homestead/Tea land utilization. If the dwellers are insisting to wean out from tea, cultivation of export crops, fruit trees, floriculture (same spp mentioned above) can considered as alternatives.

Lands with 16 – 30 % slope

This is the highest category in extent-wise and it is 102 ha. Dominant landuse within this category is home gardens. It is vital to improve the canopy cover of home gardens with perennial systems but at the same time milder slopes can be utilized for annual crop if required. However, conservation measures are essential if annual crop are established. Terracing is the most appropriate, but stone bunds, vegetative hedgerows are important and can be established according to the field situations. Training on soil conservation of lands which are under annual cropping can be arranged through Department of Agriculture, on request.

Lands with 0 – 15 % slope

Most of the lands occurring within this category are paddy lands and adjacent valleys. No severe threats of soil erosion.

Off-farm soil conservation

Careful observation within the immediate catchment indicated that there are no considerable lengths / extents of soil erosion particularly in stream banks, except few locations. If, such locations can be protected with boulders (Resulting from tunneling) it would be beneficial.

In places where roads banks are unstable mechanical protection through masonry or Gabion walls are a must. If the road banks are exceeding the height of 1.5 meters such mechanical measures are required. If roads banks are less than 1.5 and stable, those should be protected with vegetative measures such as turfing, cover crop establishment etc. However, if road banks are unstable those should be protected with mechanical means irrespective of the height.

Excavation and dumping of soil

Earth excavation of this project seems to be extensive and it can create heavy soil loss and downstream effects if not properly handled. Selection of dumping sites and its protective measures are vital. The selection of dumping sits should be done with a joint inspection with the Officers representing Project, Pradeshiya Sabha, Department of Agriculture, National Building Research Organization and Divisional Secretary. However, dumping site should be selected in such a way that the dumping process is not blocking any natural stream or drainages.

Dumping of soil can be done according to stages and a stone terrace / bund should be constructed along a contour. This bund can be constructed using boulders resulting from tunneling this bund should be provided at the periphery to protect or to prevent soil erosion. Once this height is filled, then the next stage of filing can be performed by constructing another bund on top of the first stage.

Most importantly, at any stage of dumping, the bund for the protection which is located at the boundary of each stage should be constructed prior to dumping.

Storm water drainage plan

With the construction of residential / office buildings, one will have to expect enhanced runoff from the site as a result of rainfall. Therefore, the proposed storm water drainage plan should be capable of handing this expected enhanced flow. The storm water drainage plan should be implemented within the site in order to ensure safe disposal of runoff water without enhancing soil erosion or causing any damages to infrastructure within the site or surrounding areas. Following general guidelines are suggested.

- Provide an effective drainage-ways for each landscape units
- Avoid blocking of natural drainage ways, but protect and conserve those to ensure efficient and safe disposal.
- In a drain, if the slope is exceeding 5%, use drops to reduce slope.
- Pave drainage ways with concrete. Measurements of those should be based on its feeding area.
- Connect all artificial drainage lines to the nearest natural drainage is through protective measures such as man hole, slit traps etc.
- Establish culverts at suitable locations.
- Take immediate steps to do a proper landscaping coupled with turfing.

Recommendations

Implement soil conservation activities within the immediate catchment without delay and proceed to periphery if the situation demands.

Initiate conservation measures from the crest of the immediate catchment and move downward.

Take steps to create awareness among dwellers in soil conservation and implement conservation programs through forming community groups.

The cost of conservation should be born by the project and if dwellers are implementing those measures, they should be able to reimburse their cost through the project.

It is recommended to allocate a reasonable share from the earnings of the project for catchment management in the long run.

APPENDIX E

EIA TEAM COMPOSITION &

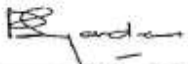
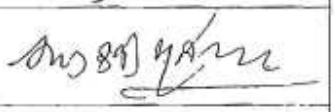
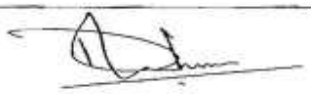
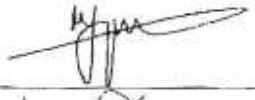
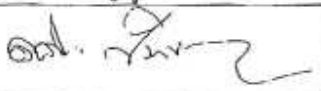
TASK OF MEMBERS

EIA Team Composition and Tasks of Members

Technical and Managerial Staff

No.	Name	Position	Task/Responsibility
1	Ms P.S.F.Siriwardene	Team Leader (EIA study component)	Review all existing data, drawings and reports with other members of the team. Closely work with the feasbility study team and obtain the necessary input to the EIA study. Review all aspects of the hydropower development project and plan out the necessary meetings and discussions with the stake holders including the Client staff.Coordination with the Client and the Consultant and guiding the EIA study team to achieve the project targets, prepare report and compile the final EIA report.
2	T. D. Wickramarathne	Hydrologist	Description of the physical environment on hydrology and drainage, assessment of anicipated environmental impacts of the project on hydrology and drainange and propose mitigatory measures.
3	A.A.V.Dias	Geotechnical Engineer	Study the present status of the project area in respect of the topography and geology of the project area. Analyse the results of the geotechnical and geological investigations and identify the potential areas for landslides and earth slips, assess the impacts on soil erosion and siltation hazards during construction activities and during operation of the project. Propose mitigation measures for environmental impacts and develop a soil conservation plan based on the Report by the Natural Resource Management Centre targeting on reducing soil erosion and land stabilization. Propose suitable environmental management programme and disaster management plan.
4	H.P.R.Gunawardhana	Infratructure Development Engineer	Study the existing infrastructure facilities, existing and planned projects in the area, infrastructure facilities required/provided by the project. Assess the environment impact due to construction activities such as quarries, refuse disposal areas, traffic diversions, work camps, temporary access roads etc. Proposal for emergency action plan with arrangement of early warning systems in case of evacuation of people. Propose environment impact mitigation measures and monitoring programmes.
5	Abdulai Barrie	Environmental Expert	International Environmental Expert of the EIA study team representing the associate Kuwaiti Consultant. Advise and assit the EIA team on the direction of study, assess ecological impacts and suggest mitigatory measures. Preparation of Disaster Managemet Plan and Emergency Action Plan.
6	Dr D.K.Weerakoan	Ecologist	Assessment of the present status of the environment affected by the project, identification of environmental impacts of the project and proposed alternatives; recommend strategies for mitigation of impacts and development of an environmental monitoring plan for the project
7	Dr Mahesh Jayaweera	Expert on environment and water	Interpret and analyse test results/ measurements obtained on environmental elements such as water, air quality, noise and vibration. Study the environmental impacts due to the project on these and recommend mitigation measures, suitble monitoring programmes. Preparation of the EIA report in relation to the above environmental elements
8	K.Jinapala	Sociologist	Study the present status of the Social Environment of the project area and assess the environemental impacts due to the project. Propose mitigatory measures in specific practical terms for both construction stage and operation stage of the project. In conformity with the national involuntary resettlement policy, prepare a resettlement plan. Prepare the EIA report of the project in relation to the social environment.

Professional Contributions made for the EIA

No.	Name	Position	Signature
1	Mrs. P.S.F.Siriwardene	Team Leader (EIA study component)	
2	T. D. Wickramarathne	Hydrologist	
3	A. A. V. Dias	Geotechnical Engineer	
4	H.P.R. Gunawardene	Infrastructure Development Engineer	
5	Abdulai Barrie	Environmental Expert	
6	Dr. D. K. Weerakoan	Ecologist	
7	Dr Mahesh Jayaweera	Expert on environment and water	
8	K.Jinapala	Sociologist	

TERMS OF RFERENCE (ToR)

TERMS OF REFERENCE FOR THE ENVIRONMENTAL IMPACT ASSESSMENT (EIA) REPORT FOR THE PROPOSED MORAGOLLA HYDROPOWER PROJECT ON MAHAWELI GANGA IN KANDY DISTRICT

This TOR is valid only for one and a half years from the date of issue. The EIA report should be submitted within the validity period.

Project Title	:	**Moragolla Hydropower Project**
Project Proponent	:	**Ceylon Electricity Board**
Project Approving Agency	:	**Mahaweli Authority of Sri Lanka**
Outline of EIA Report	:	**Executive Summary**

Chapters

1. Introduction
2. Description of the project and reasonable alternatives
3. Description of the existing environment
4. Descriptions of the anticipated environmental impacts
5. Proposed mitigatory measures
6. Monitoring programme
7. Conclusions and recommendation

Annexes

i Terms of Reference
ii Sources of data, information
iii References
iv List of preparers including their work allocation
v Comments made by the public, NGOs and other agencies during the formal and informal scoping meeting held by the EIA team
vi Complete set of relevant maps, tables, charts, layout plans and other details

Executive Summary

The summary should be a brief, non-technical summary of the justification of the proposed project, description of the salient features of the project and alternatives considered, the existing environment of the project site and its environs, key environmental impacts, the measures proposed to mitigate the environmental impacts, monitoring programme and conclusions. A one page summary table indicating the significant impacts and proposed mitigatory measures should be presented. This should also include the final conclusions and recommendations.

1.0 INTRODUCTION

This chapter should include the following:

- Background of the Project

- Objective of the proposed project and justification of the project
  Summarize the need or problem being addressed by the project and how the proposed project is expected to resolve the problem or the issue

- Objective of the EIA report
  Specify the objectives of the assessment and the relationship of the results to project design and implementation

- Extent and scope of the study

- Methodologies adopted in report preparation

- The approval needed for the proposed development from state agencies
  Such clearances should include

1. Approval from Ceylon Electricity Board for connection to National Grid (Transmission line)
2. Approval from Divisional Secretaries
3. Approval from Pradeshiya Sabhas for construction activities
4. Approval from Mahaweli Authority of Sri Lanka
5. Approval from Road Development Authority
6. Approval from Water Supply & Drainage Board
7. Approval from Dept. of Archaeology
8. Any other relevant organization

- Any conditions laid down by state agencies in granting preliminary clearance for the project

- Conformity with other development plans in the area

2.0 DESCRIPTION OF THE PROPOSED PROJECT AND REASONABLE ALTERNATIVES

2.1 Evaluation of Alternatives

Describe reasonable alternatives considered and the basic environmental engineering and economic parameters used in their investigation and evaluation.

Compare alternatives in terms of potential environmental impacts, mitigatory measures, capital and operating cost, reliability etc.

The following alternatives could be considered.

- No action alternative
- Alternative site/s
- Alternative design, technology and construction techniques

Comparison of the alternatives considered and recommendations should be given.

2.2 Description of the project

2.2.1 Name of the project Developer (Company/firm/individual)

Postal address
Phone / Fax no:
Contact person/Name/Designation/Phone, fax:

Project location:

Give details on the extent of the project area and installed capacity (KW/MW) average annual energy output (MWh/GWh).

Indicate the Divisional Secretariat Division/s and the Pradeshiya Sabha area/s within which the project site falls.

State the present ownership of the project site including the transmission line trace. if state owned, please submit a letter of consent from the relevant state agency.

A location map of reasonable scale (1:10000 scale is preferred) indicating the project site, accessibility to the site, surrounding developments, transmission line trace, land use and infrastructure.

2.2.2 Drawing showing project layout plan covering the entire project area including all major components of the project including weir, water intake/s, penstocks, power house, headrace, tailrace channel, switch yard, related temporary and other permanent structures and ponding area etc. State the present ownership of the project site including the transmission line trace.

If state owned, please submit a letter of consent from the relevant state agency if any private land involved, give relevant details such as acquisition etc.

2.2.3 Give a brief description on major components of the project

Project characteristics including its principle features

Regulation Pond

Inundation area and other details
Including possible inundation areas in Kotmale – Atabage new Mahaweli road, Gampola-Nawalapitiya main road and area of the Ulapane Railway Station.

Forebay tank
Including its details

Tunnel
Type, thickness, length, diameter & no. of lines

Power grid and transmission line routes

Generators and transformers with their capacities

Type of Turbines, negotiations, rated speed

Dam

a. Cross-section of the river taken at the proposed dam site

b. Elevation of the proposed dam showing the existing ground levels, levels of excavation and crest level and openings
c. Plan of the proposed dam including design, length and type etc.
d. Type of spillway (to accommodate impact of the releasing flood waters of the Kothmale dam)

Penstocks

a. Type, thickness, length, diameter and no. of lines

Power Station

a. Type, Sections, Stories, Length and width of the Power house
b. Switch yards, type of turbines, no. of units, rated speed

Temporary Structures

a. Coffer dams, Contractors and Engineer's site offices, Contractor's store Building and store yards, dumping sites, temporary quarry sites, labour camps and access to these structures.

2.2.4 Methodology of Construction

- Materials to be used
- Methods of installations
- Techniques and equipment to be used

2.2.5 Site preparation activities

Site preparation, pre and post project construction activities, other construction activities, including temporary structures.

2.2.6 Details of any phased development activities and time schedule

2.2.7 Any infrastructure facilities required/provided by the project (access road etc.)

2.2.8 Workforce
Requirement and availability (both during construction and operation)

2.2.9 Investment and funding sources/ state the total cost of the project, the time schedule of the construction period and details of phased development if any

2.2.10 In case of civil structures, dimensions, drawings etc.

2.2.11 Arrangement of discharge of forecasted probable maximum flood

2.2.12 Details required to check the adequacy of the proposed dam and associated structures considering probable failure conditions

2.2.13 Proposals for Emergency Action Plan along with arrangements for early warning systems and details required to ensure the dam safety aspects

3.0 DESCRIPTION OF EXISTING ENVIRONMENT

STUDY AREA

The study area for the assignment shall include the following

1. Project site [Area directly affected by the project itself and areas indirectly affected (maintenance area etc.)]
2. Location affected by construction activities (quarries, refuse disposal area, traffic diversions, work camps, temporary access road, etc.)
3. Area beyond the project site where there is potential for environmental impacts

Assemble, evaluate and present baseline data on the following environmental characteristics of the study area

This chapter should provide information on physical, biological socio- economic, archaeological and cultural aspect of the environment likely to be affected by any activity of the project during and after the project. Information should be presented in a comprehensive format using tables, maps and diagrams where appropriate. The methods used to collect data should be clearly stated under each category. All technical terms should be clearly defined. The existing environment should be described under following.

3.1 Physical environment

3.1.1 Topography

Provide concise information on the topography of the study area (attach a contour map with location of the project components, drainage channels, land slide prone/ erodible areas, exposed rock etc.)

3.1.2 Geology

State the detail of the full scale geological investigation of the Dam site, ponding area tunnel/ channel trace, head race penstock and tail race to the extent to determine stability of the soil and other geo – hazards. Provide a site specific map and the source from where the information was obtained.

3.1.3 Provide concise information about the land use within the study area

3.1.4 Hydrology and drainage

- Drainage pattern of the study area
- Mean annual flow of the river
- Mean monthly discharges for a period of 100 years
- Water quality of river regime
- Indicate the approximate level of the highest flood experienced at the site
- Flood frequency analysis giving the flood peaks corresponding to the following return period of 2, 5, 10, 50, 100
  (Describe the method and data used for the analysis)
- The discharge corresponding to the bank full discharge at the Dam site
  (Explain the method and data used for the calculation)
- Find the return period corresponding to the bank full discharge.

- The minimum dry season flow, base flow
- Flow details at the proposed Moragolla Dam-site including the mean natural flow, average flow and the annual variation of the flow at the Moragolla Dam site
- Is the project area prone / subject to natural disasters such as landslides, earth slips? If so give a brief description of hazard potential and the description of disaster management plan.

3.2 Biological Environment:

An assessment of the present ecological status including biodiversity of the project area. The survey team should identify and map the existing habitats of fauna and flora and their distribution in the study area. Information on endangered, rare, and commercially important flora and fauna and ecosystems including in down stream of the river. This study could be conducted to address the following:

- Fauna and flora in the river:
  Study the aquatic fauna and flora from 50 meters upstream of Dam to 50 meters downstream from the tailrace outlet.

- Fauna and flora in the inundation area:
  (a) fauna and flora in the area up to the high flood level
  (b) fauna and flora in the 60 meter reservation area from high flood level

- Fauna and flora along the river reservation:
  Fauna and flora at a distance of 60 meters from the bank along transects at reasonable intervals, Location of line transect will be determined according to habitat variation and 100 meter gradient contours.

- Fauna and flora in the spray zones:
  Study the fauna and flora in different habitats within the spray zone.

- Fauna and flora of the tunnel location:
  Fauna and flora of 25 meters on either side of the tunnel line at reasonable intervals. Positions of the line transects will be determined according to habitat variation and 100 meter gradient contours.

- Fauna and flora at the powerhouse, switch yard and other construction sites should be studied:

3.2.1 Number of trees (species names, height & girth size) that will be felled due to the construction activities should be given.

3.3 Social Environment

- State the demographic and socio economic status of the community
- River users (drinking, agricultural requirements, transportation, commercial purposes and other uses
- Income generation sources and patterns
- Existing environmental considerations, problems or issues prevailing in the area
- Cultural and archaeological aspects/ considerations
- Existing infrastructure facilities, transportation, communications, power supply etc.

- List any social / cultural sensitive areas such as residences, schools, places of worship, protected archaeological sites etc. in the study area with 1 km indicating the approximate distances from the boundaries of the project site

3.4 **Details of existing and planned projects in the area**

4. ANTICIPATED ENVIRONMENTAL IMPACTS OF THE PROJECT

This chapter should show the overall effects on the individual environmental components. Impacts should include the direct and indirect, long and short- term, positive and negative effects. In all cases where an assessment is made it should be quite clear what criteria have been employed to assess impacts. Where possible effects should be quantified, uncertainties highlighted and the basis of predictions should be stated and justified through models, literature etc. Nature of impacts should be considered in terms of magnitude, severity, duration, frequency, risk and indirect effects. Cumulative impacts on the environment which results from the incremental impact of the action when added to the past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions should also be stated. It is preferred that if impact could be indicated has impacts on construction stage and impact on operation stage.

Impacts shall include the following:

4.1 Soil Erosion and Siltation

4.1.1 Soil erosion and siltation hazards during constructions/establishment of penstock, powerhouse and tunnel

4.1.2 River bank erosion during construction and operation of the project.

4.1.3 Impacts during construction of access road/rehabilitation of access road to the Dam. Power house, transmission line etc.

4.2 Water quality impact

4.2.1 Impacts on water quality during construction of weir and power house.

4.2.2 Waste generation and pollution from temporary workers camps

4.2.3 Impacts on water quality of the proposed pond from existing and planned project

4.3 Ecological impacts

4.3.1 Impacts on terrestrial fauna and flora

4.3.2 Impacts on aquatic fauna and flora with special reference to migration of fish species and environment flow requirement of the down stream of the Dam

4.4 Impacts on the discharge capacity of the river.

4.4.1 Calculate the backwater curves for the following discharges for the two cases without and with the structure in place.

2 year return period flood
5 year return period Hood
10 year return period flood

The method of computation and the information used must be explained.

The backwater curve shall be extended until the effect due to the structure becomes insignificantly small. An effect of less than one centimeter rise may be considered insignificant. The gates of the dam must be assumed to be closed.

4.4.2 The flood surcharge owing to the Dam at the Dam site for the bank full discharge must be given for the following cases:

a. All the gates open
b. Up to 10% of gates failing to open. (The higher numeral must be taken in case of the 10% being non integral)

4.4.3 The flood surcharge owing 'o the Dam at the Dam site for 50 and 100 year return period floods, with all the gates open.

The method adopted for 4.4. 2 and 4.4.3 must be explained.

4.4.4. Impacts on existing Polgolla and Kotmale water management area

4.4.5 Indicate the method of diversion the existing water during construction stage, indicate in the operation and maintenance plan the inclusion of proper surveillances of the possible hazards that may arise due to breaching of coffer dams / dams in the event of an emergency floods, due to water release in case of emergency operations in the Kotmale reservoir, possible hazards that may arise due to disease outbreaks as a result of ponding, and also indicate communication facilities or arrangement between Kotmale Dam in case of an emergency.

4.4.6 State what construction hazards have taken into account in project construction planning, especially those relating to silt runoff, health and safety of workers.

4.4.7 Will the project activities including the Tunneling change the flow path, deprive or alter the water flow, flow pattern of the existing waterways ground water table? If so give the details of any effect to water users, details of health hazards (such as insect epidemics) and effect on the vegetative cover.

4.4.8 Will the project activities effect to the normal water management operations of the Kotmale reservoir and the Polgolla diversion.

4.4.9 Will the Dam is designed to facilitate the discharge the environment flow requirement (down stream) and to facilitate the drinking water requirement of Gampola and Peradeniya water supply intake and irrigation water requirement in case of severe drought (bottom out let etc.).

4.4.10 Impacts of the dumping of the tunnel muck (including the location of the dumping site of the tunnel muck).

4.5 <u>Impacts on bedrock stability</u>

4.5.1 Construction of dam
4.5.2 Penstock installation
4.5.3 Power house construction
4.5.4 Tunnel construction
4.5.5 Transmission path

4.6 Sociological impacts

4.61 Existing water usage of the downstream
4.6.2 Impacts on land use pattern
4.6.3 Impacts on commercial activities
4.6.4 Impacts due to material transportation
4.6.5 Noise pollution and air pollution due to dust
4.6.6 Impacts on existing water extraction for drinking purposes by the National Water Supply & Drainage Board at downstream of the river
4.6.6 Impacts on irrigation and flood protection work.
4.6.7 Will the project result in uncontrolled migration of people in to the area. If yes the regulatory measures proposed and the basis.
4.6.8 Will the project activities create relocation of families? If so,

1. State number of potential families affected
2. The resettlement plan
3. Compensation package and their acceptability by the affected and the local authorities.
4. Location of the resettlement

4.7 Impacts of the existing and planned project activities in relation to the Components of the project proposal

- Impacts due to the ongoing construction work of proposed Ulapane industrial estate and the predicted impacts of the project after implementation of the estate on the proposed reservoir should also be addressed in the EIA.

5. PROPOSED MITIGATORY MEASURES

This chapter should set out the proposed measures to minimize the impacts identified in Chapter 4 to acceptable levels including conformity to gazetted standards of the CEA. Alternative methods of mitigation should be discussed and the effectiveness of the proposed measures that are to be provided should be stated. Mitigation methods should be defined in specific practical terms. A rationale should also be presented for selection of chosen mitigatory measures. It is preferred if mitigatory measures could be indicated as mitigatory measures;construction stage and mitigatory measures; operation stage.

Special emphasis should be given on the following:

- Environment Management Programme including compensatory afforestation programme (no. of trees, species name, location of planting, cost etc)
- Soil conservation management plan including soil erosion control/land stabilization measures
- Resettlement plan (in conformity within national involuntary resettlement policy)
- Noise and vibration control measures.
- Debris/waste/tunnel muck/disposal facilities method and location
- Restructuring of the surrounding environment including Landscaping of the construction areas.
- Public health measures to control vector and water born diseases
- Disaster management plan
- Reestablishment / restoration of infrastructure
- Facilitate of the environmental now requirement down stream of the Dam

(this would include the water requirement release for the E. flow and the mechanism /design of the dam to release the water requirement)

6. ENVIRONMENTAL MONITORING PROGRAMME

A suitable monitoring programme should be submitted to monitor the changes of Environment and implementation of mitigatory measures. This plan should include the following.

- Parameters to be monitored
- Frequency of monitoring
- Location/timing of sampling
  Institutional framework for mitigation of impacts
- Responsible agency /agencies of monitoring
- Availability of funds, expertise, facilities

7. CONCLUSION AND RECOMMENDATION

The environmental acceptability of the proposed project and the key findings and recommendations of the assessment should be given. The consultants should make a firm recommendation on one of the alternatives based on the findings of the assessment.

Any programme to improve general environmental conditions can also be stated here.

APPENDIX F

List of correspondences made lately with stakeholder (s) / organizations

List of letters received lately from stakeholder organizations with regard to various conditions stipulated by these organizations on granting the approval for the EIA and other details with regard to the Project.

1. Sample MOU between CEB and MASL for managing spoil disposal sites.
2. Letters PM/MOGL/EIA dated 03.01.2012 and 15.03.2012 of Deputy General Manager, Tr. & Gen. Plan., CEB
3. Letter RDA/ESD/CEB dated 13.01.2012 of Director General, RDA
4. Letter DS/UP/MHP/17 dated 30.11.2011 of Divisional Secretary, Udapalatha, Gampola
5. Letter ගඉකෝ/ඉලේ/6/1/ dated 25.10.2011 of Divisional Secretary, Ganga Ihala Korale
6. Letter එවිඩබ්/කොත්මි/22 dated 03.08.2011 of EIC, Kothmale Project, MASL
7. Letter කේ/ආරඑස්/ඉඩබ්/මොරගොල්ල ජලවිදුලි බලාගාරය dated 02.06.2011 of Resident Project Manger, Victoria /Kothmale Project, MASL
8. Letter කේ/ආරඔප්/ඉඩබ්/මොරගොල්ල ජලවිදුලි බලාගාරය dated 02.06.2011 of Resident Project Manger, Victoria /Kothmale Project, MASL
9. Letter MC/KOT/RP/MHP dated 26.04.2011 of Chief Engineer, Kothmale Power Project, CEB
10. Letter DGM/RSC-C/SP/08/01 dated 14.02.2011 of Deputy General Manager, Regional Support Centre, Central, NWS&DB
11. CPC/GIPS/01/07/මොරගොල්ල විදුලි dated 04.11.2010 of Chairman, Ganga Ihala Korale Pradeshiya Sabha – Kurunduwatte Bazaar
12. සිපිසි / යුමිඑස්/12/පෙරිසර dated 22.10.2012 of Chairman, Udapalatha Pradeshiya Sabha – Delpitiya, Atabage
13. Minutes of the Meeting of the farmer awareness meeting held by CEB on 08.05.2012
14. Minutes of the Meeting of the farmer awareness meeting held by CEB on 18.10. 2012
15. Minutes of the discussion held between CEB and Farm's Pride (Pvt.) Ltd. on 21.08.2012
16. Minutes of the discussion held between CEB and Farm's Pride (Pvt.) Ltd. on 21.09.2012
17. Memorandum of Understanding (tentative) between CEB and Irrigation Department.
18. Letter from the Hon. Minister of Sports to the Chairman of the Land Reforms Commission for the release of land for resettlement.

Memorandum of Understanding (MOU)

between

Mahaweli Authority of Sri Lanka

and

Ceylon Electricity Board

During the Implementation of the Moragolla Hydropower Project

This Memorandum of Understanding (MoU) entered into on this ..... day ..... in Colombo, Sri Lanka by and between the Mahaweli Authority of Sri Lanka (hereinafter called as MASL); a body duly established under the ..... having its Head Office at 500, T.B. Jayah Mawatha, Colombo 10 on the one part and the Ceylon Electricity Board (hereinafter called as CEB) a body duly established under the Ceylon Electricity Board Act No. 17 of 1969 having its Head Office at No 50, Sir CA Gardiner Mawatha, Colombo 02.

The CEB being the Executing Agency of the Government of Sri Lanka for the Moragolla Hydropower Project and based on the outcome of the Environment Impact Assessment Report and the instructions given to CEB by the MASL letter no .....dated.....hereby agrees to implement the following activities.

A. PROPOSED LAND BELONGING TO MASL FOR DUMPING OF TUNNEL MUCK/SOIL

A1. Obligations of CEB

1 Since this land is located forming a steep slope towards river bank, adequate care will be exercised (including rubble packing and/or retaining walls where appropriate) during the initial preparatory works and the dumping/storage of the rubble, quarry muck etc., in order to prevent erosion, failure of river banks or siltation of river bed.

Before execution of the work, design proposal need to be submitted to MASL for concurrence, for constructions of retaining walls, earth retaining/slope protection structures or any similar structures.

2. The existing trees located within the river reservation will be preserved, while suitable plants will be grown along the river bank for additional protection.

3. The waste water from the project site would be sent through sand traps as appropriate, before releasing to the river/streams. Such releases should comply with the relevant standards, which will be confirmed by testing. Authorized off icers should have the access into the said land for inspection.

4. A river and bank protection plan will be prepared giving due consideration to the above items, and will be adhered during the execution of preparatory works of the land and the dumping of materials.

5. CEB will implement the above activities in accordance with the relevant standards and associated cost will be borne by CEB.

6. CEB may reuse the dumped material from said land anytime during the project period, and MASL will possess the ownership of the dumped material after the official completion of the project (including defect liability period)

A2. Obligations of MASL

1. MASL will reserve the said land for the purpose of above mentioned activities.

2. MASL will allow CEB free access to the said land during the implementation of the project for the dumping and reusing of the materials, and other activities mentioned above.

B. TEMPORARY HUTS INCLUDING LABOUR CAMPS

B1. Obligations of CEB

1. Where temporary huts including labour camps are located in steep slopes towards river bank, adequate care will be exercised (including rubble packing and/or retaining walls where appropriate) during the initial construction works, in order to prevent erosion, failure of river banks or siltation of river bed.

2. The felling of existing trees located within the river reservation will be minimized to the maximum practical extent, while suitable plants will be grown along the river bank in place of the fallen trees. The remaining trees will be preserved.

3. The waste water from the project site would be sent through sand traps as appropriate, before releasing to the river/streams. Such releases should comply with the relevant standards, which will be confirmed by testing. Authorised officers should have the access into the said land for inspection.

4. A disposal system including septic tanks and sockage pits of adequate size should be constructed for the disposal of sewerage, solid waste and waste water from the labour camps. If there is a chance of Industrial used oil/burned oil from servicing vehicles and other heavy machineries to be generated within this site a proper disposal system with the agreement of MASL should be installed to avoid contamination of ground and spillage to river .

5. A river and bank protection plan will be prepared giving due consideration to the above items, and will be adhered during the execution of preparatory works of the temporary huts including labour camps.

6. Care will be exercised not to damage or disturb the existing landscape or vegetation during the removal of Temporary structures, which will be transported off the site in order to avoid unnecessary accumulation.

7. The disturbed areas will be restored, and planted with a suitable vegetation cover after removing the temporary structures.

8. CEB will implement the above activities in accordance with the relevant standards and associated cost will be borne by CEB.

B2. Obligations of MASL

1. MASL will reserve the land/s earmarked for temporary huts including labour camps for the purpose of above mentioned activities.

2. MASL will allow CEB free access to the land/s earmarked for temporary huts including labour camps during the implementation of the project, in order to perform the activities mentioned above.

In witness whereof the parties have set their hands to this Memorandum of Understanding in duplicate on the day and year first above written.

Director General	Additional General Manager (Transmission)
Mahaweli Authority of Sri Lanka	Ceylon Electricity Board
For and behalf of Mahaweli Authority of Sri Lanka	For and behalf of the Ceylon Electricity Board
1. Witness	1. Witness
Witness	2. Witness

Attachment I

ලංකා විදුලිබල මණ්ඩලය
(1969 අංක 17 දරන පාර්ලිමේන්ත පනතින් ස්ථාපිතයි)
இலங்கை மின்சார சபை
(1969ம் ஆண்டின் 17ம் இல. பாராளுமன்ற அதிகாரச் சட்டத்தின் பிரகாரம் தாபிக்கப்பட்டது)
CEYLON ELECTRICITY BOARD
(Established by Act of Parliament No. 17 of 1969)

Transmission & Generation Planning Branch
Fifth floor, Ceylon Electricity Board
50, Sir Chittampalam A. Gardiner Mawatha
P.O. Box 540 Colombo 00200 SRI LANKA

Tel: +94 112390952, +94 112324842 Fax: +94 112324842, +94 112434866, +94 112449572 Email – dgmtgp@ceb.lk

My No: PM/MOGL/EIA Your No: Env/526(Kan ii) Moragolla Date: 03/01/2012

Director General,
Department of Irrigation.

Rehabilitation of Dunhinda Minor Irrigation Canal, Ethgala, Ulapone under proposed Moragolla Hydro Power Project

As you are aware, Ceylon Electricity Board (CEB) is currently perusing the Feasibility Studies of the above project under a grant received from the Kuwait Fund for Arab Economic Development (KFAED). Moragolla HPP is a national project, and is an element of the "Mahinda Chinthanaya" 10-Year Economic Development Plan. The Central Engineering Consultancy Bureau (CECB) has been entrusted with carrying out of the feasibility studies including the Environment Impact Assessment (EIA) for the project.

Moragolla is a 26.5 MW Project consist of a 35 m high dam across the Mahaweli Ganga at Ulapane which diverts water via a 3 km long tunnel to a powerhouse located near the Mahaweli Ganga confluence with the Atabage Oya. According to the EIA report the intake of Dunhinda Minor Irrigation Canal, Ethgala which belongs to the Irrigation Department is located between the Moragolla Dam and the power station.

While assuring the continuous supply of water to the above irrigation scheme by maintaining a minimum flow in the river basin; CEB is in the opinion that it may be required to rehabilitate or redesign the irrigation canal structures including the intake; in order to minimize waste of water. Hence a budgetary cost estimate for the same is required.

Therefore please be kind enough to provide us a budgetary cost estimate of the work to be done in the Dunhinda Minor Irrigation Canal, Ethgala, early in order to include in our EIA report.

Thanking You.

Yours faithfully,
CEYLON ELECTRICITY BOARD

A.D.T.

(Ms) A.D. Tillekeratne
Deputy General Manager
Transmission and Generation Planning

Copy : AGM (Transmission) : f.i. Pl.

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இலங்கை மின்சார சபை
(1969ம் ஆண்டின் 17ம் இல. பாராளுமன்ற அதிகாரச் சட்டத்தின் பிரகாரம் தாபிக்கப்பட்டது)
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Tel: +94 112390952, +94 112324842 Fax: +94 112324842, +94 112434866, +94 112449572 Email – dgmtgp@ceb.lk

My No: PM/MOGL/EIA Your No: Env/526(Kan ii) Moragolla Date: 15/03/2012

Director General,
Department of Irrigation

Rehabilitation of Dunhinda Minor Irrigation Canal, Ethgala, Ulapone under proposed Moragolla Hydro Power Project

This is further to our even number letter dated 03/01/2012 regarding the above subject (attachment 1).

The Ceylon Electricity Board (CEB) is about to finalise the EIA Report of the Moragolla Hydropower Project and the Report will be open for Public Hearing at the end of March 2012.

The next stage of studies i.e. Detailed Design and Preparation of Tender Documents will be started within next 3 months with the ADB Funds. Hence it is required to obtain EIA clearance before the consultants' start carrying out the Design study in Sri Lanka.

In view of the envisaged lengthy process of EIA approval, and the commencement of the detail Design studies, CEB urgently requires the cost estimate for the rehabilitation and/or redesigning of the Dunhinda Oya irrigation canal structures including the intake.

Under these circumstances CEB has prepared a cost estimate (attachment 2) for the same. Therefore please be kind enough to provide your comments and consent for the above budget or forward us your own fresh estimate early, in order to include in our EIA report.

Thanking You.

Yours faithfully,
CEYLON ELECTRICITY BOARD

A. D. T.

15/03/2012

(Ms) A.D. Tillekeratne
Deputy General Manager
Transmission and Generation Planning

Cc:
1. Addl. General Manager (Transmission), CEB
2. Divisional Irrigation Engineer, Kandy Division, Department of Irrigation

Attachment II

Moragolla Hydropower Project

Rehabilitation and/or Redesigning of Dunhinda Irrigation Intake, Department of Irrigation

ITEM	DESCRIPTION	Quantity	Unit	Total Cost US$
				Total
1	Construction of access bund to control structure		LS	15,000
2	Rock and soil excavation for intake structure and canal		LS	20,000
3	Construction of control gate and associate structure		LS	20,000
4	Demolision, Modification and and reconstrcting concrete canal with necessary embankments for a max length of 200m down stream of intake		LS	40,000
	Sub Total		**US$**	**95,000**

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வீதி அபிவிருத்தி அதிகாரசபை
Road Development Authority

"සෙත්සිරිපාය", බත්තරමුල්ල. ශ්‍රී ලංකාව.
"செத்சிறிபாய", பத்தரமுல்லை, இலங்கை.
"Sothsiripaya", Battaramulla, Sri Lanka.

මගේ අංකය / எனது இல / My No. RDA/ESD/CEB

ඔබේ අංකය / உமது இல / Your No. .....

දිනය / திகதி / Date 13th January 2012

D. G. M.
(TRANSMISSION & GENERATION PLANNING)
16 JAN 2012
(949)
BRANNCH
C.E.B.

Ms. A.D. Thilakaratne
Deputy General Manager,
Transmission and Generation Planning,
Ceylon Electricity Board.

Subject: Consent of RDA on Proposed Moragolla Hydropower Project on Mahaweli Ganga (27MW)

With reference to your letter (PM/MOGL/EIA) dated 29th December 2011, we would like to grant our consent for the above project subject to following conditions.

1. Ceylon Electricity Board (CEB) should bare the cost of all new road constructions, modifications to existing roads and bridges, repairing of existing roads and other road infrastructure with respect to above project or any other national road (Class A or B) damaged due to any action pertaining to the above project

2. Overloading of construction and transport vehicles work for the project is strictly prohibited. All the project staff and contractors of the project should be made aware of the allowable lengths, widths, heights and loads of the construction and transport vehicles to be used for the project. A copy of the relevant gazette notification is attached herewith

3. All road infrastructure related developments carried out under the project should comply with RDA design standards

4. CEB is to submit all details/designs of new road sections to bypass inundated section of Mawathura – Atabage road and all proposed modifications to existing roads and bridges to RDA for approval well in advance the commencement of such work

5. Proper coordination should be maintained with respective Chief Engineer (CE) and relevant Executive Engineers (EE) of RDA in road related activities and Environmental and Social Development (ESD) Division of RDA during future major project activities

PM (Moragolla PS)

Copy: PM (Moragolla DD) – To be taken into account in Design Phase

Telephones :-
Chairman 2862767, Director General 2862795, Working Director 2865779, General Numbers ++94-11-2871821-30
Additional Director Generals {Projects 2862485, AO&M 2864804, AD 2882194, P&P 2887463}
Directorates {Administration 2865245, Engineering Services 2864803, Finance 2864799, Highway Designs 2874024, Internal Audit 2865764, Lands 2889350, Legal 2885491, Mechanical 2872273, MM&C 2864804, Planning 2882995 Procurement 2787077, Rural Bridges 2623896, R&D 2632649, Training 2869342, Works 2864388}

6. Mitigation measures should be strictly followed as specified in the EIA report to minimize any impact on road infrastructure during construction phase of the project.

Director General
Road Development Authority

Cc:

Director General, Mahaweli Authority of Sri Lanka *f.in.pl*
RDA/ESD/MASL *(file)*
RDA/ESD/ Cron Vol I *(file)*

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The Gazette of the Democratic Socialist Republic of Sri Lanka
EXTRAORDINARY

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No. 1380/14 – WEDNESDAY, FEBRUARY 16, 2005

(Published by Authority)

PART I : SECTION (I) — GENERAL

Government Notifications

L.D.—B 24/51

MOTOR TRAFFIC ACT (CHAPTER 203)

REGULATIONS made by the Minister of Transport under section 237 read with section 19 of the Motor Traffic (Chapter 203).

FELIX PERERA,
Minister of Transport.

Colombo.
08th October, 2004

Regulations

1. These regulations may be cited as the Motor Traffic (Dimensions and gross vehicle weight), Regulations, 2004.

2. The dimensions of any motor vehicle shall not exceed the dimensions specified in Column II below in respect of motor vehicles of the class or description specified in the corresponding entry in Column I:-

	Column I *Class or description of motor vehicles*	Column II *Dimension in Millimetres*
(i)	Overall width of the motor vehicle	2,500
(ii)	Height of motor vehicle (other than a double decked motor coach)	3,800
(iii)	Height of a double decked motor coach	4,600
(iv)	Overall length of motor vehicle with two axles other than a motor coach	10,000
(v)	Overall length of motor vehicle with more than two axles	11,000
(vi)	Overall length of an articulated vehicle	14,000
(vii)	Overall length of motor coach	10,700
(viii)	Overall length of a combination vehicle with one trailer	17,000

3. The Gross vehicle weight of any motor vehicle shall not exceed the gross vehicle weight as specified in Column II below in respect of motor vehicles of the description specified in the corresponding entry in Column I :-

	Column I *Description of motor vehicles*	Column II *Gross vehicle weight in Kilogram*
(i)	motor vehicle with a four wheeled rear axle	15,275
(ii)	motor vehicle with an eight-wheeled dual rear axle	20,000
(iii)	articulated or combination vehicle with a four-wheeled rear axle for driving unit and a four-wheeled axle for trailer	21,000
(iv)	articulated or combination vehicle having a lesser number of wheels than as is mentioned in item (iii)	16,500
(v)	articulated or combination vehicle with eight wheeled dual axle for driving unit and four wheeled axle for trailer	26,500
(vi)	articulated or combination vehicle with two wheeled front axle and four wheeled rear axle driving unit and dual axle eight-wheeled trailer	27,500
(vii)	articulated or combination vehicle with two wheeled front axles and eight wheeled rear axle driving unit and eight-wheeled dual axle trailer	30,500

4. "Motor Vehicle" shall have the same meaning as in the Motor Traffic Act, (Chapter 203).

5. The regulations published in *Gazette Extraordinary* No. 1315/20 of November 21, 2003 are hereby rescinded.

03-53

PRINTED AT THE DEPARTMENT OF GOVERNMENT PRINTING, SRI LANKA.

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பிரதேச செயலகம்
உடபளாத்த - கம்பளை
DIVISIONAL SECRETARIAT
UDAPALATHA – GAMPOLA

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(සම්ප්‍රේෂණ)
08 DEC 2011
Ceylon Electricity Board
A. G. M. (Transmission)

~~DS/UP/3/3/OTCA/9~~ PM/MOGL/EIA 2011-11-30

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දිනය / Date / திகதி:

General Manager.
Transmission And Generation Planning,
Ceylon Electricity Board,
50, Sir Chittampalam A. Gardiner Mawatha.
P.O. Box 540,
Colombo 2.

D. G. M.
(TRANSMISSION & GENERATION PLANNING)
09 DEC 2011

Dear sir.

Environmental impact assessment for the proposed Moragolla hydro power project

With reference to your letter no: PM/MOGL/EIA and dated 10th Oct 2011 for the above subject.

02. We would like to grant permission to the Environmental impact assessment report of the *Moragolla hydro power project. considering your environmental impact assessment report we* observed following impacts caused by the above project

I Resettlement of person affected by the construction for the tank and the power *house*
II Due to removing of higher number of trees will be affected to the reservation areas so new forestry program should be implemented.
III *Blockage of river due to construction of dam will affect man and animals who* depends on river area of the project.
IV Disturbance to man and wildlife due to noise and vibration caused by machineries.
V *Pollution of air and water*
VI Soil erosion

02. So please make necessary arrangement to avoid the above mentioned impacts and *minimized the harmfulness to the man, wildlife and trees caused by the noise, vibration and* pollution of air and water. This will make Moragolla hydro power project a less environmental impacted project.

Yours truly.

(2) DGM (26P)

(1) AGM (Pr)
PD Moragolla (HPP)
Forwarded pls.

(3) PM (Moragolla FS)

B.M.Nimal Balasooriya
Divisional Secretary
Divisional Secretariat
Udapaltha

B. M. NIMAL BALASOORIYA
DIVISIONAL SECRETARY
DIVISIONAL SECRETARIAT
UDAPALATHA
GAMPOLA

D.G.M Co
For General Manager

ප්‍රාදේශීය ලේකම් : 081-2352585 ගණකාධිකාරී : 081-2351352 ෆැක්ස් : 081-2352236
සහකාර ප්‍රාදේශීය ලේකම් : 081-2352236 කාර්යාලය : 081-2352236 ඊමේල් : ds@udapalatha.ds.gov.lk

ප්‍රාදේශීය ලේකම් කාර්යාලය - ගඟ ඉහල කෝරලේ
பிரதேச செயலகம் - கங்க இஹல கோரளே
DIVISIONAL SECRETARIAT - GANGA IHALA KORALE
කුරුඳුවත්ත බසාරිය குருந்துவத்த கட வீதி Kurunduwatta Bazaar
"සාමුහිකත්වයෙන් සෙසේ සියලු දියුණුවක්"

ප්‍රාදේශීය ලේකම්
பிரதேச செயலகம்
Divisinol Secretary
081235103

කාර්යාලය
காரியாலயம்
Office
0812352604

ෆැක්ස්
பக்ஸ்
Fax
0812352604

මගේ අංකය
எனது இல
My No
යූසෙකො/ප්‍රාලේ/ඉ/11

ඔබේ අංකය
உமது இல
Your no

දිනය
திகதி
Date
2011.10.25

Ceylon Electricity Board
A. G. M. (Transmission)
03 NOV 2011

D. G. M.
(GENERATION PLANNING)
11 NOV 2011
BRANCH
C. E. B.

02 NOV 2011
General Manager's Office
CEYLON ELECTRICITY BOARD

RECEIVED
08 NOV 2011
AGM (PROJECTS)
CEYLON ELECTRICITY BOARD

නියෝජ්‍ය කොමසාරිස්,
ඉ කා විදුලි බල මණ්ඩලය,
50,
ජීතේ විත්තම්පලම් ඒ ගාර්නිර් මාවත,
තැ. පෙ. 540
කොළඹ 02.

<u>මොරගොල්ල යෝජිත ජල විද්‍යුත්නිය</u>

උක්ත කරුණේ සම්බන්ධයෙන් 2011.10.10 දිනැති ලිපිය හා බැඳේ.

ඒ අනුව මොරගොල්ල යෝජිත ජල විද්‍යුත්නියට අදාල සංවේදීත කටයුතු සිදු කිරීමේදී සිදුවන යම්කිසි ආර්ථික පාරිසරික බලපෑම් සඳහා බලා පහත සඳහන් කරුණු යෝජනා කරමි.

01. ජලාශයට අයත් වන උළපනේ දකුණ ග්‍රාම නිලධාරී වසමේ කෝනොල්ල ජනපදයේ පදිංචිකරුවන් හය / හිඟුරක්ගොඩ දේවාල ඉඩම් හා එම ඉඩම්වල පදිංචිකරුවන් හට / උළපනේ උතුර ග්‍රාම නිලධාරී වසමේ සර්මාන්තපුරය පිටුපස ඉඩම් ප්‍රතිසංස්කරණ කොමිෂන් සභාවට අයත් ඉඩම්වල පදිංචිකරුවන් හට විකල්ප ඉඩම් දේපල නානි සඳහා සුදුසු වන්දි මුදල් ලබා දීම සුදුසුය.

02. උළපනේ උතුර ග්‍රාම නිලධාරී වසමේ පිටපැල ඇළ අසල කුඹුරුවලට දෙපලවලට සිදුවන හානි සඳහාසුදුසු ඉඩම් වන්දි මුදල් ලබා දීම සුදුසුය.

03. උළපනේ ඔය දෙපස පදිංචිකරුවන් හට නානියක් සිදු වෙනම ඒය දහාද සුදුසු වන්දි මුදල් ලබා දීම සුදුසුය.

04. විදුලි බලාගාරය ඉදි කිරීමේදී දුන්සිද වාර්තෝත ඇල්ට හානියක් සිදුවේනම් එකී ඇළ මාර්ගය ප්‍රතිපත්තර කළ යුතුය.

05. උළපනේ තල්මාන්ත පුරය හුණියට යම් බලපෑමක් නිසේනම් ඒ පිළිබඳව සුදුසු ක්‍රියාමාර්ග ගැනීම කළ යුතු වේ.

ප්‍රාදේශීය ලේකම්,
ගඟ ඉහල කෝරලේ.

ටී. ඒ. ඩී. ඩබ්. දයාසාන්ත
ප්‍රාදේශීය ලේකම්
ගඟ ඉහල කෝරලේ
කුරුඳුවත්ත නව නගරය
(ගම්මෙපොල හරහා)

මාගේ අංකය:-එච්ඩබ්/කොත්/පි/22ල
කාර්යභාර ඉංජිනේරු කාර්යාලයල
මු ගවැග පාග ක්‍රි ගන අංශයල
කොත්මලේ ව්‍යාපාරයල
රිවර්සයිඩ් / මාවතුර ල
2011- 08-03

අධ්‍යක්ෂ
මු. වැ. පා, ක්‍රි. හා න. අංශය,
දිගන.

මොරගොල්ල ජල විදුලි ව්‍යාපෘතියේ කලුගල්/මෙටිල්/කොරි මක්/ගල් කුඩු ගබඩා කිරීමට ඉඩමක් ඉල්ලීම

ඉහත කරුණ සම්බන්ධයෙන් ඔබ ඇමැතූ නේවාසික ව්‍යාපාර කළමණාකරු(වික්ටෝරියා/දිගන) ගේ අංක කේ/ආර්එස්/1/මොරගොල්ල ජ.වි. ව්‍යාපෘතිය හා 2011-07-13 දිනති ලිපිය හා බැඳේ.
එයට අනුව මාගේ නිළධාරීන් මෙම ඉඩම් කොටස (පිඹුර පත් අංක 913) පරීක්ෂාකර ඇති අතර එය සම්පූර්නයෙන්ම ගග රක්ෂිතය තුල පිහිටා ඇති බව මා වෙත දන්වා ඇත.

නමුත් මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය ජාතික වශයෙන් වැදගත් කමක් ගන්නා බැවින් හා වෙනත් සුදුසු ඉඩමක් සොයා ගැණීමේ ඇති අපහසුතාවය පිලිබඳවද නේවාසික ව්‍යාපාර කළමණාකාර මහතා දන්වාද ඇති නිසා පහත සඳහන් කොන්දේසි යටතේ මෙම ව්‍යාපෘතිය නිසා ඇති වන කලුගල්/මෙටිල්/කොරි මක්/ගල් කුඩු ආදිය ගබඩා කිරීමට මෙම ඉඩම ලබා දීම නිර්දේශ කර අවශ්‍ය කටයුතු සඳහා කාරුණිකව ඉදිරිපත් කරමි.

- මෙම ඉඩම ගගට ඉතාමත් බැවුම් සහිතව පිහිටා ඇති බැවින් ඉඩම සකස් කිරීමේදී ගං ඉවුරු කඩා හැලීමකට හෝ ගගට පස් හා මඩ සොදා නොයන සේ ආරක්ෂක ගල් වැට් යොදා සකස් කල යුතුය.
- දැනට ගංගා රක්ෂිතයේ ඇති ගස් කොලන් හා මහවැලි අධිකාරිය විසින් සිටුවා ඇති උණ ගස්ද ආරක්ෂා කලයුතු අතර ගං ඉවුරේ සුදුසු පැලෑට් සිටුවා ආරක්ෂා කිරීමද සිදු කල යුතුය.
- මෙම ව්‍යාපෘතිය නිසා ඇතිවන අපද්‍රව්‍ය ජලයට එකතු විය හැකි නිසා විධිමත් වැලි පෙරහන් තුලින් යවා ස්වාභාවික ඇලවලට හා ගගට මුදා හැරිය යුතුවේ. මෙම ජලය නියමිත ප්‍රමිතීන්ට අනුකූල විය යුතු අතර ඒවායේ ප්‍රතිපල අප වෙත ඉදිරිපත් කල යුතුවේ. අවශ්‍ය අවස්ථාවලදී බලය ලත් නිළධාරීන්ට මෙම භූමිය පරීක්ෂා කිරීමට ඉඩ දිය යුතුය.
- ඉහත කරුනු සියල්ල සැලකිල්ලට ගෙන ගග සහ ගං ඉවුරු ආරක්ෂා කිරීම පිළිබඳව සහ ඉඩම සකස් කර ගන්නා ආකාරය පිලිබඳව විස්තර සහිතව සැලසුමක් ඉදිරිපත් කල යුතුවේ,

(ඉංජි ඩබ් එම් පේ වීරසේකර)
කාර්යභාර ඉංජිනේරු/කොත්මලේ ව්‍යාපාරය

පිටපත්
නේවාසික ව්‍යාපාර කළමණාකාර, වික්ටෝරියා/දිගන - කා දැ ගැ ස. සහ අ.ක.ස.

PM (Moragolla FS)
Gangl.
15/08

19/09/11

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ශ්‍රී ලංකා මහවැලි අධිකාරිය
නේවාසික ව්‍යාපාර කළමනාකාර කාර්යාලය - වික්ටෝරියා
இலங்கை மகாவலி அதிகாரசபை
வதிவிடதிட்ட முகாமையாளர் காரியாலயம் - விக்டோரியா
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විද්‍යුත් තැපෑල් | மின்னஞ்சல் | E-mail
වෙබ් අඩවිය | இணையத்தளம் | Website

මගේ අංකය : කේ/ආර්එස්/ඉඩම්/මොරගොල්ල ජල විදුලි බලාගාරය.

2011.06.02.

ත්‍යෝජ්‍ය සාමාන්‍යාධිකාරී,
සම්පේෂණ හා ජනක සැලසුම්,
මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය,
ලංකා විදුලිබල මණ්ඩලය,
අංක : 50, සර් චිත්තම්පලම් ඒ ගාඩිනර් මාවත,
තැ.පෙ.540 – කොළඹ.

මොරගොල්ල ජල විදුලි යෝජනා ක්‍රමය ඉදිකිරීමේදී
බැහැර කරන පාෂාණ කොටස් රැස් කිරීම.

උක්ත කරුණ සම්බන්ධව මා අමතන ලද ඔබේ අංක පිඒම්/එම්ඩ්පීඑල්/ඊඅයිඒ හා 2011 මාර්තු 23 හා 2011.04.25 දිනැති ලිපි හා බැඳේ.

ඔබගේ ඉල්ලීමට අනුව ශ්‍රී ලංකා මහවැලි අධිකාරියට අයත් කොත්මලේ ජල විදුලි බලාගාරයේ ඉදිකිරීම් වැඩ භූමිය සඳහා අත්පත්කර ගන්නා ලද මු/පි/මහ/2203 සැලසුමට අයත් ඉඩමෙන් අටබාගේ යුධහමුදා කඳවුරට වෙන්කරන ලද අංක : මහ/කොත්/241 සැලසුමේ සඳහන් ඉඩම් කොටසද සැලසුම්පත් අංක : 2897 සැලසුමෙන් පැළ තවාතක් සඳහා වෙන් කරන ලද ඉඩම් කොටසද හැර මහවැලි ගඟ රක්ෂිත මාර්ග රක්ෂිත හා අනෙකුත් නියමයන් හා කොන්දේසිවලට යටත්ව විටීමත් මැණුමකින් තහවුරු කර ගන්නා ලද හිස් තිරවුල් බිම් කොටස රජයේ ඉඩම් ආඥා පනතේ විධිවිධානයන්ට යටත්ව කෙටි කාලීන බදු පදනම මත ඔබ වෙත ලබාදීමට සලකා බැලීම සඳහා අදාළ ඉදිරි ක්‍රියාමාර්ගයන් ගනිමින් පවතින බව මෙයින් ඔබ වෙත කාරුණිකව දන්වා කරමි.

(ඩබ්.එම්.ආර්.ඩබ්.විජේතුංග),
නේවාසික ව්‍යාපාර කළමනාකාර,
වික්ටෝරියා/කොත්මලේ ව්‍යාපෘතිය.

19/09/2011

සු/කැ

ශ්‍රී ලංකා මහවැලි අධිකාරිය
නේවාසික ව්‍යාපාර කළමනාකාර කාර්යාලය - වික්ටෝරියා
இலங்கை மகாவலி அதிகாரசபை
வதிவிடதிட்ட முகாமையாளர் காரியாலயம் - விக்டோரியா
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විද්‍යුත් තැපැල් / மின்னஞ்சல் / E-mail:
වෙබ් අඩවිය / இணையத்தலம் / Website:

මගේ අංකය! කේ/ආර්එස්/ඉඩම්/මොරගොල්ල ජල විදුලි බලාගාරය.
2011.06.02

නියෝජ්‍ය මාසාන්‍යාධිකාරී,
සම්පේක්ෂණ හා ජනක සැලසුම්,
මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය,
ලංකා විදුලිබල මණ්ඩලය,
අංක: 50, සර් චිත්තප්පලම් ඒ ගාඩ්නර් මාවත,
තැ.පෙ. 540 – කොළඹ.

මොරගොල්ල ජල විදුලි යෝජනා ක්‍රමය ඉදිකිරීමේදී
බැහැර කරන පාෂාණ කොටස් රැස් කිරීම.

උක්ත කරුණ සම්බන්ධව මා අමතන ලද ඔබේ අංක: පිඑම්/ඒම්ඕපිඑල්/ඊඅයිඒ හා 2011 මාර්තු 23 හා 2011.04.25 දිනැති ලිපි හා බැඳේ.

ඔබගේ ඉල්ලීමට අනුව ශ්‍රී ලංකා මහවැලි අධිකාරිය මගින් අත්පත්කර ගන්නා ලද මු.පි.මහ 2203 සැලසුමට අයත් ඉඩමෙන් මහ/කොත්/241 දරණ කට්ටි කැඩීමේ සැලසුමටද අයත් ඉඩම් කොටස්ද 2897 දරණ කට්ටි කැඩීමේ සැලසුමේ අංක: 01 ලෙස වෙන් කරන ලද ඉඩම් කොටසද ගඟ රක්ෂිත හා මාර්ග රක්ෂිතද නැර ඉඩම් කට්ටි කිරීමට අදාළ නියමයන්ට යටත්ව කොත්මලේ ව්‍යාපෘතියේ ඉඩම් නිළධාරී මහතාගේ සහභාගිත්වයෙන් ලබන මැන සැලසුම්පතක් සකස්කර මා වෙත ඉදිරිපත් කරන මෙන් කාරුණිකව දන්වා සිටිමි.

අදාළ සැලසුම් පත ඉදිරිපත් කළ පසු එම ඉඩම් කොටස බැහැර කිරීම සම්බන්ධව භෞතික සැලසුම් කමිටු අනුමැතිය සඳහා ඉදිරිපත් කර එම අනුමැතියද සමඟ විධිමත් අනුමැතිය සඳහා ශ්‍රී ලංකා මහවැලි අධිකාරියේ, අධ්‍යක්ෂ ජනරාල් වෙත ඉදිරිපත් කිරීමට කටයුතු කරන බව මෙයින් කාරුණිකව දන්වා සිටිමි.

(ඩබ්.එම්.ආර්.ඩබ්.විජේතුංග),
නේවාසික ව්‍යාපාර කළමණාකාර,
වික්ටෝරියා/කොත්මලේ ව්‍යාපෘතිය.

19/09/11

සු/කු

මගේ අංකය: MC/KOT/RP/MHP

(TRANSMISSION & GENERATION PLANNING)
27 APR 2011
(519) BRANCH
C. E. B.

නියෝජ්‍ය සාමාන්‍යාධිකාරී
(සම්ප්‍රේෂණ හා ජනක සැලසුම්)

<u>මොරගොල්ල ජලවිදුලි යෝජනා ක්‍රමය</u>
<u>ඉදිකිරීමේදී බැහැර කරන පාෂාණ කොටස් රැස්කිරීම</u>

ඉහත හිසින් පැවති සාකච්ඡාව හා ක්ෂේත්‍ර පරීක්ෂණය හා බැඳේ.

කොත්මලේ බලාගාරය සතු භූමියේ වහරු අංශනය හා කැලඹුම් ලිද දක්වා මාර්ගය දෙපස ඇති බිම් කොටස් අප විසින් පරීක්ෂා කරන ලදි. එහිදී අනාවරණය කරගත් කරුණු අනුව මාර්ගයේ වම්පස කොටසේ ස්ථාන 04 කින් එකතුව හෙක්ටයාර් 05 ක පමණ භූමි ප්‍රමාණයක් ඉහත කරුණ සඳහා භාවිතා කල හැකි බව හඳුනා ගන්නා ලදි.

මේ සඳහා මා සමග ඉං.සහකාර(සිවිල්) කොත්මලේ හා විදුලි අධිකාරී (මොරගොල්ල) යන මහත්වරු සහභාගි විය. එබැවින් එම බිම් කොටස් බාධාවකින් තොරව භාවිතා කල හැකි බව දන්වා සිටිමි.

ප්‍රධාන ඉංජිනේරු
කොත්මලේ විදුලි බලස්ථානය.

ප්‍රධාන ඉංජිනේරු
කොත්මලේ විදුලි බලස්ථානය
ලංකා විදුලි බල මණ්ඩලය
මාවතුර

2011 අප්‍රේල් මස 26 වැනිදා
කොත්මලේ විදුලි බලස්ථානය,
ලං.වි.ම.
මාවතුර.

PM (Moragolla)

ජාතික ජලසම්පාදන හා ජලාපවහන මණ්ඩලය
தேசிய நீர் வழங்கல், வடிகாலமைப்புச் சபை
National Water Supply & Drainage Board

ප්‍රාදේශීය සහාය සේවා මධ්‍යස්ථානය - මධ්‍යම
பிரதேச சேவை மத்தியஸ்தானம் - மத்திய
Regional Support Centre - Central

දුරකථනය / தொலைபேசி / Telephone : 081-2388086 081-2389077
: 081-2388962 081-2387175
ෆැක්ස් / பெக்ஸ் / Fax : 081-2388027

No. (1)

නියෝජ්‍ය සාමාන්‍යාධිකාරී
பிரதி முகாமையாளர்
Deputy General Manager
081-2387149

ඔබේ අංකය
உமது இல
Your No.

කැටම්බේ, පේරාදෙණිය.
கெட்டம்பே பேராதனை
Getambe, Peradeniya.

මගේ අංකය
எனது இல
My No. DGM/RSC-C/SP/08/01

200.....2011.02.14

(Ms) A.D Tillekeratne
Deputy General Manager
Transmission and Generation Planning
Fifth Floor, Ceylon Electricity Board
50, Sir Chittampalam A Gardiner Mawatha,
P.O Box 540, Colombo.

D. G. M.
(TRANSMISSION & GENERATION PLANNING)
21 FEB 2011
BRANCH
226 C. E. B.

Dear Madam,

CE(GPAD)
Jmpl.
23/02/2

PROPOSED MORAGOLLA HYDROPOWER PROJECT
REQUEST FOR INFORMATION ON WATER INTAKE POINTS

This refers to your letter No: PM/MOGL/EIA dated 16.12.2010 on the above.

As requested, following are the locations of the National Water Supply and Drainage Board intakes in Gampola water supply scheme.

Copy: PM (Mor

Intake	Location		MSL	Remarks
	X	Y		
Dartry	0179675	0216195	614	
Gampolawatta	0180090	0217845	599	
3rd Mile post (Welikanda)	0174930	0216399	639	
Nayapana	0182192	0211199	871	
Paradeka	0182500	0212650	850	
Ulapane	0175000	0211250	607	
Athgala	0178667	0215114	506	Will be used (under rehabilitation.)

24/02/11

ප්‍රධාන කාර්යාලය
தலைமை அலுவலகம்
Head Office
Telephone : 011-2634488
Chairman
සභාපති
தலைவர்
011-2636449
General Manager
ප්‍රධාන කාර්යාලය
தலைமை அலுவலகம்
Head Office
011-2635261-3 / 2635867
011-2635247 / 2635996
011-2634631
Address : 14
P.O. Box
Mt. Lavinia
Galle Road
Ratmalana, Sri Lanka
Telex : 011-21482 NWSDB CE
FAX : 011-2636449 / 2637178 / 263599

The map showing the above locations is attached as an annex -01.

Currently water demand in Gampola area is catered by Ulapane, Gampolawatta, Paradeka, Nayapana, Dartry, 3rd Mile post intake whereas water demand in Peradeniya area is catered by Meewathura intake (x - 0180259, Y - 0227393 & 476MSL). With on going increasing demand, National Water Supply and Drainage Board has a long term plan to rehabilitate both existing intakes in Gampola and Peradeniya.

Therefore, we would be very much grateful to you take required mitigatory measures in your EIA study to ensure necessary dilution.

Further, I wish to draw your attention that details of the tailrace (Length, Width, Height etc.) and the velocity of the outlet water are not available in the submitted report of the proposed Moragolls MHP. Therefore, please send us the required details and the coordinates and of the water discharge point (end of the tailrace) of the Proposed Moragolla MHP.

Thanking you,
Yours faithfully,

Eng. M.A.M.S.L Attanayake
Deputy General Manager
Regional Support Centre - Central

Deputy General Manager
(Central)
Regional Support Centre
National Water Supply & Drainage Board
Getambe - Peradeniya.

D. G. M.
(TRANSMISSION & GENERATION PLANNING)
15 NOV 2010
BRANCH
C. E. B.

"ඔබේ සංවර්ධනයට අපේ සහාය"
"OUR CO-OPERATION FOR YOUR DEVELOPMENT"
මධ්‍යම පළාත

ගඟ ඉහළ කෝරළේ ප්‍රාදේශීය සභාව - කුරුඳුවත්ත කඩවීදිය
இரத்தினபுரி கோரள பிரதேச சபை - குருந்துவத்த கடவீதி
GANGA IHALA KORALE PRADESIYA SABHA - KURUNDUWATTA BAZZAR

Project Manager
(Moragolla Hydro Power Project)
CEYLON ELECTRICITY BOARD

මගේ අංකය / எமது இல / our No: CPC/GIPS/ 01/07/1 සෙවණ්ණ

දුරකථන අංක

සභාපති - 2352689
කාර්යාලය - 32998361

ඔබේ අංකය / உமது இல / Your No:

දිනය - 2010/11/04

එස්.එච්. මිදිගස්පෙ මයා,
(ව්‍යාපෘති කළමණාකරු, මොරගොල්ල ජල විදුලි ව්‍යාපෘතියශබ්‍යතා අධ්‍යන,)
සිවිවෙනි මහල,
ශ්‍රී ලංකා විදුලිබල මණ්ඩලය,
50 වත්තම්පලම් ඒ ගාඩිනර් මාවත,
තැ:පෙ: 540,
කොළඹ.

මොරගොල්ල යෝජිත විදුලි ව්‍යාපෘතිය.

ඔබගේ සමාංක පි.එම./එම්.ඕ.පී.එල්./එෆ්.එස්. හා 2010-10-27 දිනැති ලිපිය හා බැඳේ. උක්ත කාරණය සම්බන්ධයෙන් මා විසින් මගේ සමාංක සිපිසි/පි.අයි./පි.එස්.07/මොරගොල්ල විදුලි හා 2006-08-28 දිනැති ලිපියේ අදාල ව්‍යාපෘතිය සඳහා අනුමැතිය ලබා දී ඇති බව දන්වන අතර ඔබගේ දැනගැනීම පිණිස මේ සමඟ පිටපතක්ද යොමු කරමි.

එසේම 2010-10-07 වන දින කොළඹ 10, ඊ.බී. ජයා මාවතේ මහවැලි අධිකාරියේදී පැවති තාක්ෂණික කමිටු සාකච්ඡාව පරිදි අවශ්‍ය සංශෝධනයද සහිතව අපගේ අනුමැතිය මේ සමඟ යොමු කරන බව දන්වමි.

ඒ. මෙමෙයුම්කරු
සභාපතිතුමා
ගඟඉහළ කෝරළේ පු
කුරුඳුවත්ත කඩ

"ඔබේ සංවර්ධනයට අපේ සහාය"
"OUR CO-OPERATION FOR YOUR DEVELOPMENT"
මධ්‍යම පළාත

ගඟ ඉහළ කෝරළේ ප්‍රාදේශීය සභාව - කුරුඳුවත්ත කඩවීදිය
கங்க இஹல கோரல பிரதேச சபை - குருந்துவத்த கடவீதி
GANGA IHALA KORALE PRADESIYA SABHA - KURUNDUWATTA BAZZAR

මගේ අංක / எமது இல / our No: CPC/GIPS/ 01/07/~~1-2 වෙනම~~ 2010/10-07

දුරකථන අංක
සභාපති - 2352689
කාර්යාලය - 32998361

ඔබේ අංකය / உமது இல / Your No:

දිනය - 2010/11/04

මොරගොල්ල යෝජිත ජල විදුලිබල ව්‍යාපෘතිය.

උක්ත කාරණයට අදාලව 2010-10-07 වන දින කොළඹ 10 ශ්‍රී ලංකා මහවැලි අධිකාරියේ නව වැනි මහලේ පැවති තාක්ෂණික කමිටු රැස්වීම හා බැඳේ.

ඒ අනුව මොරගොල්ල ජල ව්‍යාපෘතියට අදාලව සමාජ ආර්ථික පාරිසරික බලපෑම් පිළිබඳව සලකා බලා යෝජනා සැලකිල්ලට ගන්නා ලෙස දන්වා සිටිමි.

01. ව්‍යාපෘතිය නිසා ඉඩම් හා නිවාස අහිමි වන්නන්හට විකල්ප ඉඩම් හා නිවාස ලබා දීම.

02. ව්‍යාපෘතියට අයත් නව කලාපයේ දැනට භාවිතා කරන ජල ලිං වලට වන බලපෑම අවම කිරීම.

03. එම කලාපයේ පිහිටි නිවාස සඳහා ගමන් කරන අතුරු මාර්ග සඳහා මාර්ග පහසුකම් ලබා දීම.

04. වගාවන් හා සතුන්ට වන හානි අවම කිරීම.

05. ව්‍යාපෘතිය නිසා ඉවත් වන පස් අවසරයකින් තොරව ස්ථාන ගත නොකිරීම හා එම පස් සභාව නම් කරන පාසල් හා පොදු ස්ථාන, පිට්ටනි සකස් කර ගැනීමට එකඟ වීම.

06. ගඟේ ආවේණික මත්ස්‍ය වර්ග සංරක්ෂණය කිරීම.

07. ගඟට නිදහස් කලයුතු හා කර්මාන්ත වලට ඉවත් කළ යුතු ජලය නිදහස් කිරීම.

08. වැසි කාලයේදී පිට කරන අතිරික්ත ජලය මුදා හැරීමේදී ව්‍යාපෘතියට පහළ ජනාවාස වලට වන බලපෑම් අවම කිරීම.

09. පාරිසරික වශයෙන් දුනිහිද, ඇල්ලට හෝ ජලාශයට නියමිත ජල ප්‍රමාණය නිදහස් කළ යුතුය.

10. ප්‍රාදේශීය සභාවේ අධීක්ෂණ නිලධාරීන්ට ඕනෑම වේලාවක පරීක්ෂා කිරීමේ අයිතිය තහවුරු කළ යුතුය.

මෙම ව්‍යාපෘතිය ක්‍රියාත්මක කිරීම නිසා පැන නගින ඕනෑම පාරිසරික ගැටළුවකදී ප්‍රාදේශීය සභාව හා මධ්‍යම පරිසර අධිකාරිය යෝජනා කරන විසඳුම් ක්‍රියාත්මක කිරීමේ කොන්දේසියටද යටත්ව ව්‍යාපෘතිය සඳහා අනුමැතිය දීම සුදුසුය.

"ඔබේ සංවර්ධනයට අපේ සහාය"
"OUR CO-OPERATION FOR YOUR DEVELOPMENT"

මධ්‍යම පළාත

ගඟ ඉහළ කෝරලේ ප්‍රාදේශීය සභාව - කුරුඳුවත්ත, මීතලාව.
கங்க இஹல கோரல பிரதேச சபை - குருந்துவத்த, மீதலாவ.
Ganga Ihala Korale Pradeseeya Sabawa - Kurunduwatta, Meetalawa.

මගේ අංකය / எமது இல. / Our No. } සීපීසී/ජීඅයි/පීඑස්/07 මොරගොල්ල විදුලි බලාගාරය,

දුරකථන අංකය : 2352689
ෆැක්ස් අංකය : 2352689

ඔබේ අංකය / உமது இல. / Your No. }

දිනය 2006.08.28

එම්.පී.එල්.ආර්.ගුණවර්ධන මහතා,
පරිසර නිදහැරි,
ශ්‍රී ලංකා විදුලිබල මණ්ඩලය,
අංක 50, ශ්‍රීමත් සිරිතුන්පලම් හාඩිනර් මාවත,
තැ.පෙ.540, කොළඹ 02.

මොරගොල්ල විදුලිබල යෝජනා ක්‍රමය නිසා මතුවිය හැකි පාරිසරික ගැටලු

ඉහත කරුණ සම්බන්ධව ඔබ විසින් මාවෙත එවන ලද 2006.06.13 දින දරණ ලිපිය හා බැඳේ.

2. ක්‍රියාත්මක කිරීමට යෝජිත මොරගොල්ල විදුලි යෝජනාක්‍රමය හේතුවෙන් අනාගතයේදී මතුවිය හැකි ගැටලු පිළිබඳව 2006.08.08 දින කරන ලද ක්ෂේත්‍ර පරීක්ෂනය අනුව පහත සඳහන්වේ. එම කරුණු කෙරෙහි ඔබගේ අවධානය යොමු කරවමි.

01. උලපනේ කර්මාන්ත පුරයට අයත් ඉඩමේ ගඟ දෙසට ඇති බැටුමේ බැවුම පස් සහිත කන්දකි. වේල්ලක් බැඳ ජලය පිරවීමෙන් පොලව ආසන්නයට ජලය උරා ගෙන පස් බුරුල් වී කඩා වැටීමට හා නාය යෑමට නිසා කර්මාන්ත ශාලා වලට විය හැකි බලපෑමි.

02. එසේ කඩා වැටීමෙන් ආයෝජිකයින් ආයෝජනය කිරීමට මැලි වීම හා දර්ශනීයත්වය වන බලපෑම්

03. කර්මාන්තපුරය පිහිටි වම් ඉවුර පස් කන්දකින් ආවරණය වී ඇති නිසා වේල්ල ඉදි කිරීමේ දී තද කලුගල දක්වා පෑදීමට ඉඩ ඇත. එවැනි අවස්ථාවක කර්මාන්තපුරය පිහිටි භූමියට ඇතිවන බලපෑම

04. ජලාශයට ඉහලින් කර්මාන්තපුරය පිහිටන බැවින් කර්මාන්ත වලින් පිට කරන අප ජලය සහ රසායනික මිශ්‍ර අප ජලයන් , අපද්‍රව්‍යයන් ජලයට එක්වීමට ඇති ඉඩකඩ පිළිබඳ ගැටලුව

04. ත්‍රිස්බෝ (පෑම් ප්‍රයිඩ්) නැමැති කර්මාන්තය මධ්‍යම පරිසර අධිකාරිය අනුමත කර්මාන්තයකි. මෙම ජලාශ නිසා එම ආයතනයට ඇති වන බලපෑම්.

05. ගංවතුර තත්වයකදී පිටාර ගැලීම වලින් සිදුවිය හැකි හානි පිළිබඳ ගැටලුව.

06. ප්‍රදේශ වාසීන් ස්ථාන කිපයක නානා තොටු පලවල් පිහිටුවා ගෙන ඇති බව දර්ශනය වුණි. ඒ සඳහා විකල්ප පිළිබඳ ගැටලු.

ඉහත සඳහන් කරුණු වලට අමතරව අනාගතයේදී ඇති විය හැකි වෙනත් පාරිසරික ගැටලු සඳහා පලාත් පාලන ආයතනය විසින් යෝජනා කරන විසඳුම් වලට එකගත්වය මත නිර්දේශය ලබා දෙමි.

හෙට දකින ලොවට අද වැඩ කරමු.
நாளை காணும் உலகுக்கு இன்று சேவை செய்வோம்

උඩපළාත ප්‍රාදේශීය සභාව
உடபளாத பிரதேச சபை
UDAPALATHA PRADESIYA SABA

☎ 081- 2 352 218
081- 2354 796

මාගේ අංකය
எனது இலக்கம் සිපිසි/යුපිඑස්/ 12 /පරිසර
My No

ඔබේ අංකය
உங்கள் இலக்கம்
your No

දැල්පිටිය - අටබාගේ
தெல்பிட்டிய அட்டபாகை
Delpitiya - Atabage

දිනය :- 2012 . 10 . 22

නියෝජ්‍ය සාමාන්‍යධිකාරී
සම්ප්‍රේෂණ හා ජනක සැපසුම්
නො 50 චිත්තම්පලම් ඒ ගාර්ඩිනර් මාවත
ලංකා විදුලිබල මණ්ඩලය
පස්වන මහල
කොළඹ 02

(294)



<u>මොරගොල්ල යෝජිත ජලවිදුලි ව්‍යාපෘතිය ලංකා විදුලි බල මණ්ඩලය</u>

උක්ත මැයෙන් ඔබේ අංක පීඑම්/එම්ඕපීඑල්/එෆ්එස් හා 2012.09.05 දිනැති ලිපිය හා බැඳේ.

02 උක්ත ව්‍යාපෘතිය වෙනුවෙන්,

I. අවතැන් ජනතාව සඳහා විකල්ප ඉඩම් හා අනිකුත් පහසුකම් සැලසීම
II. මධ්‍යම පරිසර අධිකාරියේ පාරිසරික නිර්දේශය
III. ස්භාවික සම්පත් කළමනාකරණ අංශයේ නිර්දේශය
IV. නාය යෑම් අධ්‍යන අංශයේ නිර්දේශය
V. අවශ්‍යතාවය පරිදි අනිකුත් ප්‍රාදේශිය ආයතනයන්ගේ නිර්දේශය

යන එකඟතා හා නිර්දේශ ලබා ගැනීම සුදුසු බවටත්, එම එකඟතාවයන්ට යටත්ව මෙම ව්‍යාපෘතිය සඳහා අප සභාවේ විරුද්ධත්වයක් නොමැති බවද කාරුණිකව දන්වමි. ඒ සඳහා වන ගරු මහා සභා තීරණය මේ සමඟ අමුණා එවමි.

සභාපති 22/10/12
උඩපළාත ප්‍රාදේශිය සභාව

ඩී.පී. ගුණසේන
සභාපති
උඩපළාත ප්‍රාදේශීය සභාව
දැල්පිටිය අටබාගේ

PM (Moragolla PS)
30/10/2012

05/11/2012

Copy - PM (Moragolla DD)

ලංකා විදුලිබල මණ්ඩලය

මොරගොල්ල ජලවිදුලි වයාපෘතිය - ගොවි සංවිධාන දැනුවත් කිරීම 2012 මැයි මස 08 දින

අංකය	නම	ලිපිනය	අත්සන
01	[illegible]	64 [illegible]	[illegible]
02	[illegible]	[illegible]	[illegible]
03	[illegible]	[illegible]	[illegible]
04	[illegible]	[illegible]	[illegible]
05	N W G [illegible]	[illegible]	[illegible]
06	W.G.N [illegible]	[illegible]	[illegible]
07	[illegible]	[illegible]	[illegible]
08	[illegible]	[illegible]	[illegible]
09	[illegible]	[illegible]	[illegible]
10	[illegible]		[illegible]
11	S A [illegible]	[illegible]	[illegible]
12	S.R.P [illegible]	[illegible]	[illegible]
13	W.M. [illegible]	[illegible]	[illegible]
14	[illegible]	[illegible]	[illegible]
15	[illegible]	[illegible]	[illegible]
16	[illegible]	[illegible]	[illegible]
17	[illegible]	[illegible]	[illegible]
18	[illegible]	[illegible]	[illegible]
19	P.W. [illegible]	[illegible]	[illegible]

10/15

(190)

ලංකා විදුලිබල මණ්ඩලය

මොරගොල්ල ජලවිදුලි වයාපෘතිය - ගොවි සංවිධාන දැනුවත් කිරීම 2012 මැයි මස 08 දින

අංකය	නම	තනතුර හා ආයතනය	අත්සන
01	[illegible]	[illegible]	[illegible]
02	[illegible]	[illegible]	[illegible] 071 6533212
03	[illegible]	[illegible]	[illegible]
04		[illegible]	0755408515
05	[illegible]	[illegible]	[illegible]
06		543 [illegible]	077 8267064
07	[illegible]	CEB	[illegible]
08	S.H. [illegible]	CEB	[illegible]
09	RMKB [illegible]	CEB	[illegible]
10	PK [illegible]	CEB	[illegible]
11			
12			
13			
14			
15			
16			
17			
18			
19			

අමුණුව II

දුන්හිඳ ඇල වාරිමාර්ග ව්‍යාපෘතිය සම්බන්ධ ගොවි මහතුන් දැනුවත් කිරීමේ සම්මන්ත්‍රණය - මොරගොල්ල ජල විදුලිබල ව්‍යාපෘතිය ලංකා විදුලිබල මණ්ඩලය

දිනය : 2012/05/08

ස්ථානය : මාළිගාපුරාණ පන්සල, ගම්පොල

වේලාව : 10.00 පෙ.ව.

සහභාගිවූවන්:

නිලධාරීන්

ඩී.එම්.ආර්.කේ.බී. ගුණරත්න මයා - ව්‍යාපෘති කළමණාකරු - මොරගොල්ල (සවිස්තරාත්මක සැලසුම් හා ටෙන්ඩර් පත්‍රිකා සැකසීම), ලං.වි.ම.

එස්.එච්. මිදිගස්පේ මයා - ප්‍රධාන ඉංජිනේරු (ජනක සැලසුම්), ලං.වි.ම.

කේ.වී.එස්.එම්. කුඩලිගම මිය - ව්‍යාපෘති කළමණාකරු - මොරගොල්ල (ශක්‍යතා අධ්‍යයනය), ලං.වි.ම.

පී.එම්.සී.පී.කේ අඹේරත්න මයා - විදුලි අධිකාරි, ලං.වි.ම.

ඒ.ඩී. ඉලේපෙරුම මයා - කෘෂිකර්ම පර්යේෂණ හා නිෂ්පාදන සහකාර, මාලිගාපුරණ

යූ.ජී. රණතුංග මයා - ඉංජිනේරු සහකාර, ව්‍යාපෘති කළමණාකරු, වාරිමාර්ග කාර්යාලය, කුණ්ඩසාලේ

ඩී.ඒ.සී. උක්වත්ත මයා - ගරු සභාපති, 543 මාලිගාපුරණ, ගම්පල

ජී.ජී. තිලකසිරි මයා - ගරු ලේකම්, පල්ලෙවෙල ගොවි සංවිධානය, ගම්පලවෙල, ගම්පල

ගොවි සමිති නියෝජිත මහතුන්

පල්ලෙවෙල ගොවි සංවිධානය

මංගලඅකන ගොවි සංවිධානය

මාලිගාපුරාණ ගොවි සංවිධානය

රැස්වීම ආරම්භයේදී පල්ලෙවෙල ගොවි සංවිධානයේ ගරු ලේකම් ජී.ජී. තිලකසිරි මහතා විසින් රැස්වීමේ අරමුණ පැහැදිලි කල අතර පැමිණ සිටි ලං.වි.ම. නිලධාරී මහතුන් සහ ගොවි මහතුන් පිලිගනු ලැබීය. මීට අමතරව මාලිගාපුරණ කෘෂිකර්ම පර්යේෂණ හා නිෂ්පාදන සහකාර ඒ.ඩී. ඉලේපෙරුම මහතා විසින් මොරගොල්ල ව්‍යාපෘතිය පිළිබඳ කෙටි හැදින්වීමක් පවත්වනු ලැබූ අතර ජලවිදුලිය අවශ්‍යතාවය රටේ සීඝ්‍ර සංවර්ධනයක් සිදුවන මෙවන් වකවානුවක අත්‍යවශ්‍ය සේවාවක් බවට තවදුරටත් සඳහන් කරනු ලැබීය. තවද, ලං.වි.ම. නිලධාරී මහතුන්ට සවන්දී ගොවිසංවිධාන නියෝජිතයින්ගේ අදහස් ලං.වි.ම.ට ඉදිරිපත් කරන ලෙසද ඉල්ලා සිටින ලදී.

මීලඟට ලං.වි.ම. වෙතුවෙන් ව්‍යාපෘති අධ්‍යක්ෂ (මොරගොල්ල සවිස්තරාත්මක සැලසුම් ටෙන්ඩර් පත්‍රිකා සැකසීම) ඉංජිනේරු ඩී.එම්.ආර්.කේ.බී. ගුණරත්න මහතා විසින් පරිගණක මාධ්‍යයෙන් (powerpoint presentation) ව්‍යාපෘතිය පිළිබඳ ගොවීන් දැනුවත් කලා. (එහි පිටපතක් මේ සමඟ අමුණා ඇත). තවද මහු විසින් මෙම ව්‍යාපෘතිය පිළිබඳ ගොවීන් කිසියම් බියකින් හා සැකයකින් පසුවේ නම් එය අවශ්‍ය නොවන බව පැහැදිලි කල අතර දැනට ගොවීන් සහ ජල සම්පාදන හා ජලාපවහන මණ්ඩලය අතර දැනට උද්ගතවී ඇති තත්වය මෙන් තත්වයක් ලං.වි.ම. සමඟ ඇති නොවන බව තවදුරටත් පැහැදිලි කලා. ගුණරත්න මහතාගේ පැහැදිලි කිරීම අවසානයේ ගොවි මහතුන්ගේ අදහස් සදහා කාලයක් අවධානය යොමුවූ අතර එම අදහස් සංක්ෂිප්ත පහත සඳහන් පරිදි වේ.

1. මෙම ගොඩ/මඩ ඉඩම් මහතුවර දළදා මාළිගාවේ නිත්දගම් වන අතර (අමුත් 65ක වපසරියක්) මෙය පාරම්පරිකව ගොවීන්ට උරුම වේ. මාළිගාවේ නියෝජිත බදු එකතු කරන මහතකුට ගොවීන් සෑම කන්නයක් අවසානයේම ප්‍රවේනි බදු ගෙවිය යුතුයි. එම බදු එකතු කරන මහතා සමඟ ඉදිරියේ මෙවන් සාකච්චාවක් පැවැත්වීම අත්‍යවශ්‍යය.

2. රජ ඇලේ ප්‍රධාන අමුනේ වතුර ජාතික ජල සම්පාදන හා ජලාපවහන මණ්ඩලය විසින් වෙල්ලක් යොදා ඉහලින් හරස් කර ඇති අතර මේ වන තෙක් පහලට ජලය මුදාහැර නැත. මේ නිසා ගොවීන් බදු ගෙවාගත නොහැකිව ඉතා අසීරු තත්වයකට පත්වී ඇත. මෙවැනි තත්වයක් දුන්හිද ඇලෙහි ඇති නොවන බවට ලං.වි.ම. වගබලාගත යුතුයි.

3. මෙම ඇල, නිලමේ ව්‍යාපෘතිය මෙන් ඉතාමත් අලංකාරව වෙලි සකස් කර ගොවීන් සමඟ ඉතා සුහදව පවත්වාගෙන යා යුතු අතර ලං.වි.ම. වියදමෙන් පිලිසකර කර දෙන මෙන් සහ ව්‍යාපෘතියේ රැකියාවල් කීපයක් ගොවි පවුල්වල සාමාජිකයන් සඳහා වෙන්කරන ලෙස ඉල්ලා සිටින ලදී. මෙම ප්‍රදේශය ජලය නැතිව මුඩු බිමක් බවට පත් වුවහොත් ඉදි පරම්පරාවට ජීවත් වීමට මාර්ගයක් නැතිවන බවට ප්‍රකාශ කරන ලදී.

4. ඇලෙන් ජලය ලබාගෙන කුඹුරු වගා නොකලහොත් ප්‍රදේශයේ ලිං වලද ජල මට්ටම අඩුවී, හිඳී යන තත්වයක් උද්ගත වන බව ගොවීන් විසින් පැහැදිලි කරන ලදී.

5. මෙම ව්‍යාපෘතියේ වැඩ ඉවර කිරීමට කොපමන කල් යනවාද කියා එක් ගොවි මහතකු ප්‍රශ්ණ කල අතර එයට පැහැදිලි කිරීමක් වශයෙන් ප්‍රධාන ඉංජිනේරු (ජනක සැලසුම්), ලං.වි.ම. එස්.එච්. මිදිගස්පේ මහතා විසින් සවිස්තරාත්මක සැලසුම් අවසාන කිරීම සඳහා තව අවුරුදු 2 කුත් ඉදිකිරීම් සඳහා අවුරුදු 4 කුත් යන බවත් මෙය සම්පූර්ණයෙන් විදේශ ණය ආධාර යටතේ ඉදිවනු ඇති බවට සඳහන් කලා. තවද එකී ආයතන වලින් ණය ලබාදීමේදී කොන්දේසියක් ලෙස ලං.වි.ම. විසින් සවිස්තරාත්මක පාරිසරික අධ්‍යයනයක්

සිදුකර පාරිසරික බලපෑම් පිළිබඳ වාර්තාව (EIA Report) සකසා ඇති බවත් දැනට පවතින පාරිසරික නීති රාමුව තුල එය අනුමත කලයුතු බවත් ඉන් පසුව ණය ආධාර එම ආයතන වලින් මුදා හරින බවත් සඳහන් කරන ලදී. එම අනුමත කිරීමේ පටිපාටියේ එක් අවස්ථාවක EIA වාර්තාව මහජන ප්‍රදර්ශනය සඳහා අදාල ප්‍රාදේශීය ලේකම් කාර්යාල වල විවෘතව තබන බවත් මිනැම ප්‍රද්ගලයකුට එහි අඩුපාඩු පෙන්වා දිය හැකි බවත් සඳහන් කරන ලදී. මීට අමතරව මහවැලි ගඟේ ජලය, ජල කළමණාකර ලේකම් කාර්යාලය විසින් සභියකට වරක් එක්රැස්වී අදාල සියලුම ආයතන විසින් ගන්නා තීරණයන් අනුව පාලනය කරන බවත් ලා.වි.ම.ට අන්තනෝමතිකව පාලනය කල නොහැකි බවත් පැහැදිලි කරන ලදී.

6. ජල සම්පාදන මණ්ඩලය විසින් ඇතිවූ තත්වය තවදුරටත් පැහැදිලි කල මාලිගාපුරණ කෘෂිකර්ම පර්යේෂණ හා නිෂ්පාදන සහකාර ඒ.ඩී. ඉලේපෙරුම මහතා එකඟතා ගිවිසුම් අත්සන් කිරීම ජල සම්පාදන මණ්ඩලය විසින් ප්‍රතික්ෂේප කල බවත් 2011 දෙසැම්බර් මස රජ ඇලෙහි ජලය අඩුවූ බව දැන්වූ අවස්ථාවේ ගොවීන්ට ජලය ලබාදෙන බවට පොරොන්දුවූ නමුත් පෙබරවාරි වනතෙක් ජලය ලබා නොදුන් බව සඳහන් කලා. ජල සම්පාදන මණ්ඩලය විසින් ඉහත එකඟතා ගිවිසුමේ වගන්ති ගොවීන්ගේ ඉල්ලීම මත වෙනස් කල බව සඳහන් කරන ලදී.

7. මෙයට පිළිතුරු වශයෙන් කුණ්ඩසාලේ ව්‍යාපෘති කළමණාකාර වාරිමාර්ග කාර්යාලයේ ඉංජිනේරු සහකාර, යූ.පී. රණතුංග මහතා එම ගිවිසුම ඉදිරියේදී සැකසෙන බවත් සඳහන් කරන ලදී.

8. මෙම අමුනේ ඇරම්භක ප්‍රදේශයේ ස්ථාන තුනක ජලය කාන්දුවන බවත් ජලයෙන් 30% ක පමණ අපතේ යන බවත් ගොවීන් සඳහන් කරන ලදී. එම නිසා ඇල ලා.වි.ම. විසදමෙන් කොන්ක්‍රීට කර දෙන ලෙස ඉල්ලා සිටින ලදී.

10. මෙයට අදහස් දැක්වූ ලා.වි.ම. නිලධාරීන් මුල් අවස්ථාවේ ඇල පිලිසකර කරදීමටත් පසුව ලා.වි.ම. භූමි භාගයට අයත් කොටස නඩත්තු කිරීමටත් හැකි බවට දන්වා සිටියා.

රැස්වීම අවසානයේ නැවත ගොවි සමිති 3, අදාල ප්‍රාදේශීය ලේකම් තුමා, ග්‍රාම නිලධාරී මහතුන්, දළදා මාලිගාවේ බදු නිලධාරි සහ වාරිමාර්ග දෙපාර්තමේන්තුවේ නිලධාරීන් රැස්කර දැනුවත් කිරීමේ රැස්වීමක් පවත්වන ලෙස ගොවීන් විසින් ඉල්ලා සිටින ලදී.

[illegible]

2012.10.18

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]
1	A. D. Tillekeratne	Deputy General Manager Transmission Generation Planning - 0714240476	[illegible]
2.	[illegible]	[illegible] 0714240492	[illegible]
3.	[illegible]	[illegible] 0714150635	[illegible]
4.	R. K. B. Gunaratne	Project Manager (Mangalla DD) 071-4538922	[illegible]
5.	P.M.C.U.K. Abeyaratne	E.S - Mangalla N.P.P - CEB 0718014025	[illegible]
6	[illegible]	[illegible]	[illegible]
7	[illegible]	[illegible]	[illegible]
8.	W. M. D. B. [illegible]	[illegible]	[illegible]
9.	[illegible]	[illegible]	[illegible]
10.	[illegible]	[illegible]	[illegible]
11.	[illegible]	[illegible] 0717640215	[illegible]
12.	A. D. [illegible]	[illegible] 0779313247	[illegible]
13.	K A S [illegible]	[illegible] 0779877360	[illegible]
14.	T. D. [illegible]	[illegible] 071-9872491 0755408515	[illegible]
15.	[illegible]	[illegible]	[illegible]
16.	[illegible]	[illegible]	[illegible]
17.	N W G [illegible]	[illegible]	[illegible]
18.	[illegible]	[illegible]	[illegible]
19.	[illegible]	[illegible]	[illegible]
20.	[illegible]	[illegible]	[illegible]
21.	[illegible]	[illegible]	[illegible]
22.	W. G. Palugamuwa	Add. RDI, Irrigation	[illegible]

මොරගොල්ල ජල විදුලි යෝජනාව - ලංකා විදුලිබල මණ්ඩලය

රජයේ ආයතන හා ගොවි සංවිධාන නියෝජිතයන් දැනුවත් කිරීමේ වැඩසටහන

දිනය	: 2012.10.18
වේලාව	: පෙ.ව.9.30
ස්ථානය	: ගහ ඉහළ කෝරළේ ප්‍රාදේශීය ලේකම් කාර්යාලයිය ශ්‍රවණාගාරය

පිළිගැනීම හා අරමුණ පැහැදිලි කිරීම

ගහ ඉහළ කෝරළේ ප්‍රාදේශීය ලේකම්තුමා විසින් ලංවිම නියෝජිතය කරමින් පැමිණි නිලධාරීන් ඇතුළුව පැමිණ සිටි සියළු දෙනාම සාදරයෙන් පිළිගන්නා ලදී.

2012.09.07 දින පැවති ගම්පොලවෙල රජඇල ව්‍යාපාරයේ මහකන්න රැස්වීමේදී මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය පිළිබඳව පැන නැඟුනු යම් යම් නොපැහැදිලිකාරයන් පිළිබඳව කරුණු සාකච්ඡා කර, ඒ සම්බන්ධයෙන් අදාල පාර්ශව දැනුවත් කිරීම මෙම වැඩසටහනේ අරමුණ විය.

එසේම මොරගොල්ල ජල විදුලි ව්‍යාපෘතියේ අරමුණ හා එය රටට හා ප්‍රදේශයට වැදගත් වන ආකාරය පිළිබඳවද ප්‍රාදේශීය ලේකම්තුමා විසින් පැහැදිලි කරන ලදී.

සහභාගී වූ පාර්ශව හඳුනාගැනීමෙන් අනතුරුව ව්‍යාපෘතිය පිළිබඳව දැනුවත් කිරීම සඳහා විදුලිබල මණ්ඩලයේ නියෝජිතයන්ට ආරාධනා කරන ලදී.

අනු අංකය	ඉදිරිපත් කළ අය	ඉදිරිපත් කළ කරුණු
01	ඩී.එම්.ආර්.කේ.බී.ගුණරත්න මහතා, ව්‍යාපෘති කළමණාකරු (සමිස්තරාත්මක සැලසුම්)	මෙම ව්‍යාපෘතිය රජයේ මහින්ද චින්තනය ප්‍රතිපත්තියෙන් හා ලංවිම දිර්ඝකාලීන ජනක සැලසුම් වාර්තාවේ ඇතුළත් ප්‍රධාන ව්‍යාපෘතියක් බවත්, මෙය 2009 වසරේ හිටපු නිලධාරී විදුලිබල හා බලශක්ති ඇමති ගරු මහින්දානන්ද අළුත්ගමගේ මැතිතුමාගේ කාලයේ අධ්‍යයන කටයුතු ආරම්භ කළ බවත් දන්වා සිටින ලදී. මොරගොල්ල ව්‍යාපෘතියේ ප්‍රධාන අංග, පිහිටීම හා අනාගත සැලසුම් පිළිබඳවද පැහැදිලි කරන ලදී.
02	එම්.පී.එල්.රෝහිත ගුණවර්ධන මහතා, පාරිසරික අංශ ප්‍රධානී	මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය හා සම්බන්ධ පාරිසරික බලපෑම් අධ්‍යයන, ක්‍රියාවලිය හා ගහ ඉහළ කෝරළේ ප්‍රාදේශීය ලේකම් බල ප්‍රදේශයට ව්‍යාපෘති අංග නිසා සිදුවන බලපෑම විස්තර කරන ලදී. අවයානයේ අපේක්ෂිත පාරිසරික හා සමාජයීය බලපෑම් අවම කිරීම සඳහා යෝජිත ක්‍රමෝපායන් හා ව්‍යාපෘතිය මගින් බලාපොරොත්තු වන සමාජමය සංවර්ධනය පිළිබඳවද සාකච්ඡා කරන ලදී.

පැන නැගුනු ගැටළු

අනු අංකය	ඉදිරිපත් කළ අය	ගැටළුව	පිළිතුර
1.	ටී.ඩී.ගංගානන්ද ප්‍රේමරත්න මයා, ග්‍රාම නිලධාරී, මාලිගාපුරණ	යෝජිත උමං මාර්ගය නිසා මතුපිට නිවාස හා දේපල වලට හානි සිදුවීමට ඇති ඉඩකඩ හා උමං මාර්ගයතුල පිපිරවීම හානිදායක වීම පිළිබඳව	මෙම උමං මාර්ගය පොලොව මතුපිට සිට මීටර් 50-60 ක් අතර ප්‍රමාණයකින් (දළ වශයෙන් කට්ටු 20 ක් පමණ පහලින්) ගමන් ගන්නා බවත් එනිසා දේපල හානි සිදු වීමට ඇති ඉඩකඩ ඉතා අල්ප බවත් පෙන්වා දෙන ලදී.
		මොරගොල්ල ව්‍යාපෘතිය සඳහා අවශ්‍ය මාර්ග පුළුල් කිරීමේදී නව නිවාස ඉදි කරන්නන් අපහසුතාවයට පත්වීම වළක්වා ගැනීම සඳහා පූර්ව දැනුවත් කිරීමක් සිදු කිරීමට කටයුතු කරන ලෙසත්, (විශේෂයෙන් ඇත්ගාල ප්‍රදේශයේ) ඒ සඳහා අවශ්‍ය වන බිම් ප්‍රමාණ සළකුණු කරන ලෙසත් ඉල්ලා සිටින ලදී.	ප්‍රාදේශීය ලේකම් සමග සාකච්ඡා කර අවශ්‍ය ක්‍රියා මාර්ග ගැනීමට එකඟ විය.
		ජලාශයට යටවන ප්‍රදේශයේ දිය නෑම සඳහා ගඟ භාවිතා කරන බවත්, වර්ෂාව අඩු කාල වලදී එම අවශ්‍යතාවය තදින්ම බලපාන බවත් දන්වන ලදී.තවද ඒ සඳහා ගන්නා ක්‍රියාමාර්ග පිළිබඳවත් විමසන ලදී.	දිය නෑමට සුදුසු ආකාරයේ ආරක්ෂා සහිත තටාක සහ පඩිපෙළවල් ඉදි කිරීමට සැළසුම් කර ඇති බව දන්වන ලදී.තවද මෙම ජලාශයට යටවන ප්‍රදේශයේ නාන තොටුවලවල් කිහිපයක් පමණක් පිහිටා ඇති බව දන්වන ලදී.
2.	කේ.ඒ.එස්.කෙහෙල් වලතැන්න මයා,ග්‍රාම නිලධාරී, ගම්පොලවෙල	ජලාශය ඉදිකිරීමෙන් පසු උලපනේ ප්‍රදේශයේ වගා බිම් ජලයෙන් යට වීමට ඉඩ ඇති බැවින් එම ජල මට්ටම පිළිබඳව ප්‍රශ්ණ කරන ලදී.	ඒ හේතුව නිසාම යෝජිත ජලාශ බැම්ම උපරිම ජල මට්ටම මීටර් 550 සිට 548 දක්වා අඩු කර ඇති බව දන්වන ලදී.
		යෝජිත නැවත පදිංචි කරවන ස්ථානය පිළිබඳවද ඒ සඳහා නිවාස වාසීන්ට ලබා දෙන මූලික පහසුකම් පිළිබඳවත් එම කටයුතු ඉක්මන් කර සංවර්ධන කලාපයක් ලෙස වෙන් කර දෙන ලෙසත් ඉල්ලන ලදී.	නැවත පදිංචි කරවීම සඳහා මහවිලවත්ත තැඹිලිගල කොට්ඨාසයේ 10 වන කොටසෙන් අක්කර 5 ක භූමි භාගයක් වෙන් කර ඇති බවත් ගරු මහින්දානන්ද අළුත්ගමගේ ඇමතිතුමාගේ අධීක්ෂණය යටතේ එම ඉඩම වෙන් කර ගැනීමට කටයුතු කරගෙන යන බවත් දන්වන ලදී.
3.	කේ.ඩී.විමලරත්න මයා,ගරු සභාපති,මංගලකෙත ගොවි සංවිධානය	රජඇල ව්‍යාපෘතියේ ජාතික ජල සම්පාදන හා ජලාප්‍රවාහන මණ්ඩලය හා වාරිමාර්ග දෙපාර්තමේන්තුව අතර අවබෝධතා ගිවිසුමක් නිසි පරිදි අත්සන් නොකිරීම නිසා ඇති වී තිබෙන ප්‍රශ්න යලි මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය නිසාද ඇති නොවීමට කටයුතු කරන ලෙස ඉල්ලා සිටින ලදී.	ලංකා විදුලිබල මණ්ඩලය හා වාරිමාර්ග දෙපාර්තමේන්තුව අතර අවබෝධතා ගිවිසුමක් ව්‍යාපෘතිය ආරම්භ කිරීමට ප්‍රථම අත්සන් කිරීමට සැලසුම් කර ඇති අතර එය අවශ්‍ය පරිදි සංශෝධනය කරගත හැකිය.
		දුන්හිඳ ඇලෙහි ගලන ජලය වැඩි කොටසක් අපතේ යන බවත්, ඒ සඳහා මෙතෙක් නිසි ක්‍රියා මාර්ග ගෙන නොමැති බවත්, එම නිසා වාරි ඇල	යෝජිත මොරගොල්ල බලාගාර භූමිය තුල ඇල මාර්ගය මුළුමනින්ම සකස් කර නඩත්තු කිරීමට ලංකා විදුලිබල මණ්ඩලය

		මුළුමනින්ම අළුත්වැඩියා කර දෙන ලෙසත් ඉල්ලා සිටින ලදී.	විසින් භාර ගන්නා බවත්, රජඇල දක්වා ඉකිරි කොටස වාරිමාර්ග දෙපාර්තමේන්තුව සමග සාකච්ඡා කර ඒ සඳහා අවශ්‍ය සහයෝගය ලබා දෙන බවත් ප්‍රකාශ කරන ලදී.
		ව්‍යාපෘතියේ ඉදිකිරීම් කටයුතු ආරම්භ කරන විට වාරි ඇලේ ඉදි කිරීම් කටයුතු වලට ප්‍රමුඛතාවය ලබා දෙන ලෙස ඉල්ලා සිටින ලදී.	ව්‍යාපෘතියේ මූලික ඉදිකිරීම් කටයුතු යටතේ යටිතල පහසුකම් සංවර්ධනය කිරීම සිදුවන බැවින් ඊට සමගාමීව වාරි ඇල ඉදිකිරීම් කටයුතු සිදු කිරීමට එකඟතාවය පළ කරන ලදී.
		බලාගාරයේ ඉදිකිරීම් කටයුතු සිදු කරන කාලය තුල වාරි ඇලෙහි ජල සැපයුම් නතර කිරීමට කටයුතු කරන්නේදැයි විමසන ලද	ඉදිකිරීම් කාලය තුලදීද අඛණ්ඩ ජල සැපයුමක් ලබා දෙන බවට දන්වන ලදී.
		ජල සම්පාදන මණ්ඩලය දැනට රජඇල හරස් කර ලබා ගන්නා ජලය වෙනුවට මොරගොල්ල ජලාශයෙන් ජලය ලබා ගැනීමට යෝජනා කළ අතර එමගින් රජඇලේ ජල ප්‍රශ්නය විසඳිය හැකි බවත් ප්‍රකාශ කරන ලදී.	මේ පිළිබඳව අදාල පාර්ශව සමග සාකච්ඡා කිරීමට කටයුතු කරන බව දන්වන ලදී.
		ක්‍රිස්ලෝ ආයතනය මගින් භාවිතා කර මහවැලි ගඟට මුදා හරින ජලය නිසි පරිදි කළමණාකරණයකට ලක් නොකරන්නා බවත්, එම ආයතනය පරිසරයට අයෝග්‍ය ලෙස ක්‍රියාකිරීම නිසා වාරි ඇලෙහි අපද්‍රව්‍ය ගලා එන බවත් ඒ සඳහා සුදුසු ක්‍රියාමාර්ග ගන්නා ලෙසත් ඉල්ලා සිටින ලදී.	ක්‍රිස්ලෝ ආයතනයේ අපවහන ජල මාර්ගය මොරගොල්ල බලාගාරයේ ජල පිටවුම දක්වා ගෙන ගොස් ගඟට මුදාහැරීමට කටයුතු කරන බවත්, එම ජලයේ ප්‍රමිතිය පිළිබඳව සොයා බැලීමට පහසු වන ආකාරයෙන් එම ඉදිකිරීම් සැලසුම් කරන බවත් දන්වන ලදී.
4.	ජී.ජී.තිලකසිරි මයා,ගරු ලේකම්, පල්ලේවෙල ගොවි සංවිධානය	ගම්පලවෙල වගා බිම් දළඳා මාලිගාවට අයත් ඉඩම් වන අතර ඒ සඳහා ගොවීන් විසින් බදු මුදල් ගෙවන බවත්, ව්‍යාපෘතියේ ඉදිකිරීම් කටයුතු නිසා වගා කිරීමට නොහැකි වුවද බදු මුදල් ගෙවීම අනිවාර්ය බව දන්වන ලදී.මෙම ව්‍යාපෘතිය නිසා කන්නයක් හෝ කිහිපයක් වගා කිරීමට නොහැකි වුවහොත් ගොවීන් අපහසුතාවයට පත් වන නිසා මේ පිළිබඳව දළඳා මාලිගාවේ පාලක මණ්ඩලය දැනුවත් කර සහන ලබා දෙන ලෙස ඉල්ලා සිටින ලදී.	මේ යන විටත් දළඳා මාලිගාවේ ඉඩම් භාර නිලධාරී සහ බදු මුදල් අය කිරීම භාර සමාගම දැනුවත් කිරීමට කටයුතු කර ඇති අතර ඉදිරියේදී දියවඩන නිලමේ තුමා ඇතුළු පාලක මණ්ඩලය දැනුවත් කිරීමට කටයුතු කරන බව දන්වන ලදී.
5.	යූ.ජී.සෝමරත්න මයා,ගරු සභාපති,වැව ගොවි සංවිධානය	ව්‍යාපෘතිය ඉදිකරන අවස්ථාවේදී බිඟිවන නව රැකියා අවස්ථා ලබා ගැනීම සඳහා අපහසුතාවයට පත් වන ගොවි සංවිධාන සාමාජිකයන්ට ප්‍රමුඛත්වය ලබා දෙන ලෙස ඉල්ලා සිටින ලදී.	ඒ සඳහා අවස්ථාව ලබා දීම් කටයුතු කරන බව දන්වන ලදී.

වෙනත් කරුණු

මෙම ව්‍යාපෘතිය පිළිබඳව අදහසක් ලබා ගැනීම සඳහා නිල්ලඹ විදුලි යෙදවුම් ක්‍රමයේ ක්ෂේත්‍රය නැරඹීමට සාමට ලංකා විදුලිබල මණ්ඩලය විසින් යෝජනා කරන ලදී.

මොරගොල්ල ජල විදුලි ව්‍යාපෘතිය පිළිබඳව පාරිසරික අධීක්ෂණ කණ්ඩායමක් පත් කරනු ලබන අතර එම කණ්ඩායම සතියකට වරක් හෝ කිහිපවරක් රැස්වී මේ සම්බන්ධයෙන් තීරණ ගනු ඇත.

ඉදිරියේදී පවත්වනු ලබන ගම්පොලවෙල රජඇල ව්‍යාපාරයේ කන්න රැස්වීම්වලට ලංකා විදුලිබල මණ්ඩලය සහභාගී වීමට තීරණය කරන ලදී.

මෙම ව්‍යාපෘතිය පිළිබඳව අදහස් හා යෝජනා යොමු කළ හැකි ලිපිනය :-

නියෝජ්‍ය සාමාන්‍යාධිකාරී (සම්ප්‍රේෂණ හා ජනක සැලසුම්),
වන මහල,
නෑ.පෙ.540,
ලංකා විදුලිබල මණ්ඩලය,
කොළඹ 02.

දුරකථන අංකය :- 011-2324842

ස්තුතිය හා සමාප්තිය

මොරගොල්ල ජල විදුලි ව්‍යාපෘතියේ සැලසුම් හා ඉදිරි කටයුතු පිළිබඳව දැනුවත් කළ ලංකා විදුලිබල මණ්ඩලයේ නිලධාරීන් ඇතුළුව සහභාගී වූ සියළු පාර්ශවයන්ට ගඟ ඉහළ කෝරළේ ප්‍රාදේශීය ලේකම්තුමාගේ ස්තුතිය පිරිනැමීමෙන් පසු ප.ව.12.00 ට පමණ වැඩසටහනේ කටයුතු අවසන් විය.

ටී.ඒ.ඩී.ඩබ්.දයානන්ද,
ප්‍රාදේශීය ලේකම්
ගඟ ඉහළ කෝරළේ

(99) 4/15

ක්‍රිස්ක්‍රෝ ගොවිපලේ අප වහන ජල පිටවුම සම්බන්ධව ගොවිපල සමඟ සාකච්ඡා කිරීම

දිනය : 21/08/2012

ස්ථානය : ක්‍රිස්ක්‍රෝ ගොවිපල

වෙලාව : 09.00 පෙ.ව.

නිළධාරීන්

(1) රජීව ගුණවර්ධන මහතා – කර්මාන්ත ශාලා කළමණාකරු (ක්‍රිස්ක්‍රෝ, ඇත්ගාල)

(2) ෆොන්සේකා මහතා – පරිසර නිලධාරී (ක්‍රිස්ක්‍රෝ, ඇත්ගාල)

(3) ඩී.ඇම්.ආර්.කේ.බී ගුණරත්න මහතා – ව්‍යාපෘති කළමණාකරු (මොරගොල්ල සවිස්තරාත්මක සැලසුම් හා ටෙන්ඩර පත්‍රිකා සැකසීම, ලං.වි.ම.)

(4) කෑළුම් නිරන්ජන් මහතා – සිවිල් ඉංජිනේරු (සම්ප්‍රේෂණ නිර්මාණ හා පාරිසරික අංශය, ලං.වි.ම.)

(5) පී.ඇම්.සී.ජී.කේ.අබේරත්න මහතා – විදුලි අධිකාරී (මොරගොල්ල සවිස්තරාත්මක සැලසුම් හා ටෙන්ඩර පත්‍රිකා සැකසීම, ලං.වි.ම.)

21.08.2012 දින ක්‍රිස්ක්‍රෝ ගොවිපලේහි අප වහන ජල පිටවුම (waste water outlet) මොරගොල්ල ව්‍යාපෘතිය නිසා මහවැලි ගඟේ ජල පරිමාවෙහි සිදුවන වෙනස්කම් වලට අනුව, පරිසරයට යෝග්‍ය පරිදි නැවත ස්ථානගත කිරීම සඳහා පහත සඳහන් කරුණු සාකච්ඡා කරන ලදී.

(1) අප වහන ජලය සෑම්විටම පිටවුමට යොමුකිරීමට ප්‍රථම තැන්පත්වීමේ වැංකි (settling pond) පැය 24 කාලයක් රඳවා තබන බව සනාථ කෙරිනි.

(2) අප වහන ජලය පෙරහන් කිහිපයක් හරහා පිටවුම් නල පද්ධතියට යොමුවන නිසා එහි සන අපද්‍රව්‍ය කොටස් නොමැති බව තහවුරු කෙරිනි.

(3) අප වහන ජලය දිනකට ලීටර 300000 ක් පමණ රාත්‍රී කාලයේදී ගඟට මුදාහරින බව දන්වන ලදී.

(4) අප වහන ජල පිටවුම් නලයේ විෂ්කම්භය අඟල් 6 වන අතර එය 1000 සතකම්න් යුත් PVC නල වලින් සමන්විත වේ.

(5) යෝජිත මොරගොල්ල වෙල්ල සමඟ මහවැලි ගඟෙහි ගලන ජල පරිමාවේ සැලකියයුතු අඩුවීමක් දැනට අප වහන ජලය මුදාහරින ප්‍රදේශයේ සිදුවන බව ලං.වි.ම. විසින් ක්‍රිස්ඛ්‍රෝ ආයතනය දැනුවත් කරන ලදී.

(6) එම නිසා එමගින් සිදුවන පාරිසරික ගැටළු අවම කර ගැනීමට අප වහන ජලය වැඩි ජල ප්‍රමාණයක් ගලන ගඟෙහි ප්‍රදේශයකට නැවත ස්ථාපිත කල යුතු බව අවධාරනය කෙරිනි.

(7) මේ සඳහා අප වහන ජල පද්ධතියේ කල යුතු සියළු වෙනස් කිරීම් සඳහා අදාල නිර්මාණ සහ ඉදි කිරීම් වල වියදම් ලං.වි.ම. මඟින් දරන බව අවධාරනය කෙරිනි.

(8) ඒ අනුව නැවත ස්ථාපිත කිරීමට යෝජිත අප වහන ජලය ගලාගෙන යන නල පද්ධතියේ දල සැලැස්මක් ක්‍රිස්ඛ්‍රෝ ආයතනයට යොමු කල යුතු බව තීරණය කරන ලදී.

(190) 6/15

Minutes of the meeting with Farm's Pride Pvt. Ltd. at Jayamalapura

Date: 21.09.2012
Location: Office of the Farm's Pride Pvt. Ltd. at Jayamalapura
Time: 9.30 am
Participants:

1. Mr. M.P.L.R Gunawardana	- Head, Environmental Unit, CEB
2. Mr. R.K.B. Gunaratne	- Project manager (Moragolla HPP DD), CEB
3. Mr. Kalum Niranjan	- Civil Engineer, Environmental Unit, CEB
4. Mr. M Imtiaz	- Chairman, Farm Pride Pvt. Ltd
5. Mr. R. Gunawardana	- Factory Manager, Crysbro, Atgala
6. Mr. Fonseka	- Environmental Officer, Crysbro, Atgala

1. The Farm's Pride Pvt. Ltd. explained that the Crysbro Processing Plant has been set up at the present location near Athgala mainly based on the advantage of easy access to the Mahaweli River water, which is pure enough and available sufficiently for the requirements of Crysbro Processing Plant even in past heavy drought.

2. CEB explained the project and its anticipated impact to the Crysbro processing plant with the layout drawings and Google maps. Also it was explained that after constructing the proposed dam across the Mahaweli River near Ulapane, CEB shall release 1.5m^3/s of flow of water continuously from the reservoir as E-flow for the purpose of maintaining riverside ecosystem and to meet the needs of water users in the river stretch between dam and the outfall of the power plant (as recommended in the EIA study).

   In addition CEB will carry out necessary modification to the existing water intake of Farm's Pride Pvt. Ltd. so that the said quantity of water would be properly diverted to the intake throughout the year.

3. The Farm's Pride Pvt. Ltd. inquired whether the proposed tunnel is routed under the processing plant

4. CEB explained using layout drawings that the proposed tunnel is not routed beneath the processing plant and the tunnel trace has been aligned to escape industrial zone as well as the Crysbro processing plant. Furthermore it is said that the tunnel will be routed about 60m below the ground surface.

5. The Farm's Pride Pvt. Ltd. inquired whether the proposed reservoir would make climatic changes to the surrounded area and also the possibilities of formation of algae in the reservoir water.

6. CEB explained that the proposed reservoir is not a storage type reservoirs like at Victoria, Randenigala and kotmale power stations and hence the influence for such cause by the proposed reservoir would be negligible. Furthermore it is explained that unless reservoir water gets mixed with biological substances by anthropogenic activities the possibility of formation of algae in the reservoir water would be negligible.

7. The Farm Pride Pvt. Ltd. consented with the CEB proposal to relocate the wastewater outlet as proposed in the letter PM/MOGL/DD-EIA, dated 28.09.2012 addressed to the Chairman, Farm Pride Pvt. Ltd. on the relocation of waste water outlet. CEB explained that maintenance of the waste water discharge line would be a Farm Pride Pvt. Ltd. responsibility.

8. The Farm's Pride Pvt. Ltd. requested an official letter from CEB assuring that the river water will be available along the said river stretch for the processing plant in all circumstances if it is allow pumping water from the present location.

9. CEB explained that releasing of E-flow is clearly stated in the EIA report, which will be available at both divisional secretariats of Ganga Ihala Korale and Uda Palatha for public reference once it is open for public by Mahaweli Authority. Nevertheless CEB agreed to inform the possibility of issuing such letter in due course after discussing this matter with the management.

10. Farm's Pride queried about the availability of water for their intake after the project commissioning, and raised their doubts regarding it during extreme drought periods.

11. CEB explained that the water requirement of 450,000/day (as previously indicated by them) could be very easily met by the proposed release, and even if it is increased to three shifts per day, the maximum quantity needed would be 0. 016m^3/s which is still within the allocation of 0. 02m^3/s for them, out of the E-flow

(190) 87.5

12. Farm's Pride explained that they prefer, if arrangements are made to relocate its river water intake to downstream side of the outfall of the proposed powerhouse by utilizing funds from both CEB and Farms Pride. They further explained that the whole modification work of newly proposed intake and tubing system would be carried out by them. They expect from CEB only the amount CEB might have allocated for the modifications required to be implemented at the existing water intake structure, as mention in the letter referred in item 7. The balance investment needed for executing this proposal and the future investment needed for carrying out maintenance of new intake and tubing system and also expenditure incur for pumping water would be covered by them. Furthermore the Farm's Pride Pvt. Ltd. explained that this option be the win-win solution for this issue, so that they would not be a stake holder of this hydropower project anymore.

13. CEB explained that the detail designing of the modifications required to the existing water intake of Farm's Pride for previous proposal is already included in the detailed design of the project, and a cost estimate for this modification work also can be obtained from the same international consultants engaged in that, which is the only amount CEB can pay as the compensation, if this proposal is to be implemented instead of modifying the existing water intake. However, CEB has to discuss and get the consent of the management regarding the possibility of passing the estimated cost to Farm's Pride, which would be informed to them in due course.

Copies:

1. DGM (TGP) : f.i.pls.
2. Project Manager (Moragolla FS) : f.i & n.a.pls.
3. Head Environmental Unit, CEB : f.i.pls.
4. Mrs. P.S.F. Siriwardene, DGM (WR) : f.i.pls.

යෝජිත මොරගොල්ල ජල විදුලි බලාගාරය ඉදි කිරීම
ලංකා විදුලිබල මණ්ඩලය

යෝජිත මොරගොල්ල ජල විදුලි බලාගාරය සඳහා මහවැලි ගඟේ ඉදිකිරීමට යෝජිත ජලාශය නිසා ඇතිවන බලපෑම යෝජිත ජලාශයට පහලින් සහ යෝජිත විදුලි බලාගාරයට ඉහලින් පිහිටා ඇති දුන්හිඳ අමුණ මගින් ජලය ලබා ගන්නා ගම්මැදොල රජ ඇල ව්‍යාපාරයේ පහල කොටසෙහි යහපත සඳහා වාරිමාර්ග දෙපාර්තමේන්තුව, දිස්ත්‍රික් ලේකම් මහතුවර, සහ ව්‍යාපෘති යෝජක වන ලංකා විදුලිබල මණ්ඩලය අතර වර්ෂ .....මස ..... දින අත්සන් තැබෙන

අවබෝධතා ගිවිසුම

01 මෙතැන් පටන් පළමු පාර්ශ්වය ලෙස හැඳින්වෙන ලංකා විදුලිබල මණ්ඩලයේ සාමාන්‍යාධිකාරී ද දෙවන පාර්ශ්වය ලෙස වාරිමාර්ග දෙපාර්තමේන්තුවේ වාරිමාර්ග අධ්‍යක්ෂ ජනරාල් ද අවන පාර්ශවය ලෙස දිස්ත්‍රික් ලේකම් මහතුවර අතර මෙම ගිවිසුම ඇතිවේ.

02 යම් හෙයකින් මෙම විදුලිබල ව්‍යාපෘතිය ලංකා විදුලිබල මණ්ඩලය විසින් අනුප්‍රාප්තිකයෙකුට පැවරීමක් සිදුකලහොත්, එම අනුප්‍රාප්තිකයා සමග වාරිමාර්ග දෙපාර්තමේන්තුව හා දිස්ත්‍රික් ලේකම් මහතුවර නැවත මෙවැනි ගිවිසුමකට එළඹිය යුතුය.

03 පළමුවන පාර්ශවකරු ලෙස ලංකා විදුලිබල මණ්ඩලයේ සාමාන්‍යාධිකාරී පහත දැක්වෙන කරුණු සඳහා එකඟ වේ.

(i) මොරගොල්ල ජල විදුලි බලාගාරයේ විදුලිය නිපදවීම පිණිස ජලය නිකුත් කිරීම, හේතුවෙන් දුන්හිඳ අමුණ යටතේ වගා කරන ගම්මැදොල රජ ඇල ව්‍යාපාරයේ පහල කොටසේ වගා කටයුතුවලට කිසිසේත් අහිතකර නොවන පරිදි සිදු කිරීම සහ වගා කටයුතු සඳහා අවශ්‍ය ජලය සඳහා ප්‍රමුඛතාවය ලබා දීම.

(ii) මෙම ව්‍යාපෘතියේ පරිසර අනුමැතිය ප්‍රකාරව එහි පාරිසරික බලපෑම අධ්‍යයන වාර්තාවෙහි දක්වා ඇති පරිදි යෝජිත ජලාශයේ බැම්මේ සුදුසු උසකින් තත්පරයට සත මීටර් 1.5 ක (කියුසෙක් 53 ක) ජලය නිකුත් කළ හැකි ගේට්ටුවක් සහිත විවරයක් ඉදිකිරීම සහ එහි ක්‍රියාකාරිත්වය හා ජලය මුදා හැරීම අධීක්ෂණය කිරීමට වාරිමාර්ග දෙපාර්තමේන්තුව විසින් නම් කරන ලද නිලධාරී මහතකුට ඕනෑම වේලාවක එම කටයුතු කිරීමට ඉඩ ප්‍රස්ථා සැලැස්වීම. තවද දුන්හිඳ අමුණ ව්‍යාපෘතියේ වාරිමාර්ග ජල අවශ්‍යතාවය වන කියුසෙක් 10 ක්ද, පාරිසරික ජල අවශ්‍යතාව සඳහා ප්‍රමාණවත් අමතර ජල ප්‍රමාණයක් ද (මධ්‍යම පරිසර අධිකාරියේ අනුමැතියට යටත්ව මෙම ව්‍යෘපෘතියේ පාරිසරික බලපෑම් අධ්‍යයන වාර්තාවට ඇතුලත් කර ඇති පරිදි) ජලාශයෙන් පහළට මුදා හැරීම.

(iii) පාරිසරික ඇගයීම් වාර්තාව ප්‍රකාරව කියුසෙක් 10 ක ජල ප්‍රමාණයක් දුන්හිඳ ඇල වෙත නිරන්තරයෙන් හැරවෙන අයුරු දැනට මහවැලි ගඟේ ඇති අමුණ සුදුසු ලෙස සැලසුම් කර නැවත ඉදිකිරීම සහ පෝෂිත ඇලේ අමුණ හා යෝජිත බලාගාර භූමිය අතර කොටස සම්පූර්ණයෙන් කොන්ක්‍රීට් ආස්තරණය කිරීම හා ජල කාන්දු නැවැත්වීම. දුන්හිඳ අමුණ හා පෝෂිත ඇල ප්‍රතිසංස්කරණය ප්‍රමුඛ වැඩක් ලෙස සලකා ජලාශය පිරවීමට ප්‍රථම ඉහත සඳහන් ඉදිකිරීම් අවසන් කිරීම

(iv) පෝෂිත ඇලේ ලංවිම භූමි භාගයට අයත් කොටසේ නඩත්තුව වාරිමාර්ග දෙපාර්තමේන්තුවේ එකඟතාව මත වීදුලිබල මණ්ඩලය මගින් සිදු කිරීම

(v) අමුණේ හා ඇලේ ඉහත ප්‍රතිසංස්කරණ අතර තුර අවශ්‍ය වන ජලය විකල්ප ක්‍රමයක් මගින් ලබා දීමටද කටයුතු කිරීම

(vi) යෝජිත ජලාශයට ඉහලින් උලපනේ මය හරහා ඉදිකර ඇති උලපනේ අමුණ යටතේ වගා කෙරෙන ගම්පොල රජ ඇල ව්‍යාපාරයේ වගා ප්‍රදේශයට කිසිදු හානියක් සිදු නොවිය යුතුය. යෝජිත ජලාශයේ අධි ගංවතුර මට්ටම (HFL) උලපනේ අමුණට හා එමගින් ජලය ලබා ගන්නා ගම්පොල රජ ඇල ව්‍යාපාරයේ කුඹුරු ඉඩම්වලට වඩා පහල මට්ටමකින් පිහිටන සේ සැලසුම් කිරීම

(vii) තවද මෙම ව්‍යාපෘතියේ E-flow (පාරිසරික ජල මුදා හැරීම) සඳහා මධ්‍යම පරිසර අධිකාරියේ අනුමැතියට යටත්ව මෙම ව්‍යාපෘතියේ පාරිසරික බලපෑම් අධ්‍යයන වාර්තාවට ඇතුලත් කර ඇති කියුසෙක් 53 ක ජල ප්‍රමාණයක් මොරගොල්ල ජලාශයෙන් පහලට නිකුත් කිරීම හා එයින් කියුසෙක් 10 ක් රජ ඇල ව්‍යාපාරයේ ප්‍රයෝජනය සඳහා වෙන් කිරීමද කන්න රෑස්වීම සඳහා හැකි සෑම අවස්ථාවකම ලංකා වීදුලි බල මණ්ඩල නියෝජිතයකු සහභාගි කරවීම.

(viii) වියලි කාලයන්හිදී ජල හිඟයක් ඇතිවුවහොත් වීදුලිය ජනනය කිරීම අත්හිටුවා මහා දුන්හිඳ අමුණ යටතේ වගා කටයුතු සඳහා ජල ලබා දීම

04 දෙවන පාර්ශවකරු ලෙස වාරිමාර්ග දෙපාර්තමේන්තුවේ වාරිමාර්ග අධ්‍යක්ෂ ජනරාල් පහත දැක්වෙන කරුණු සඳහා එකඟ වේ.

(i) යෝජිත ජලාශයේ බැම්මේ ජලය මුදාහරින ගේට්ටුව අධීක්ෂණය කිරීමට වාරිමාර්ග දෙපාර්තමේන්තුවේ සුදුසුකම් සහිත නිලධාරී මහතකු නම් කර එවන ලෙසට

(ii) ලංවිම භූමි භාගයට අයත් කොටසේ පිහිටි ඇල මාර්ගය අධීක්ෂණය කිරීමට වාරිමාර්ග දෙපාර්තමේන්තුවේ සුදුසුකම් සහිත නිලධාරී මහතකු නම් කර එවන ලෙසට හා ඒ සඳහා ලංවිම භූමියට ඇතුල් වන අවස්ථාවලදී නිසි පරිදි පුර්ව අනුමැතියක් ලබාගැනීම

(iii) කන්න රෑස්වීම් වලට ලං.වි. ම. නියෝජිතයකු සහභාගි කරවීම සඳහා එම දිනයන් හා වෙලාවන් කල්වෙලා ඇතුව දන්වා සිටීම

(iv) ලංවීම භූමි භාගයට අයත් නොවන පෝෂිත ඇලේ සියළුම කොටස් හා අමුතේ නඩත්තු කටයුතු (ජල කාන්දු නැවැත්වීම ඇතුලු) වාරිමාර්ග දෙපාර්තමේන්තුව විසින් සිදු කිරීම

(v) ඉහත අමුණ හා ඇල මාර්ග පිළිබඳ ලංවීම විසින් සවිස්තරාත්මක අධ්‍යයනය (Detail Design) වැනි අධ්‍යයන කටයුතු කෙරීගත්ත යන වකවානු වල එම කටයුතු වල යෙදීම පහසුවනු පිණිස එහි සැලසුම් වාර්තා (Design Report) සහ අනෙකුත් තාක්ෂණික වර්තාවල පිටපත් හා අදාල තාක්ෂනික උපදෙස් ලංවීම වෙත නොපමාව ලබාදීම

05 මෙම අවබෝධතා ගිවිසුම හා සම්බන්ධ සියලුම කාරණා සම්බන්ධීකරණය කෙවන පාර්ශවකරු වන දිස්ත්‍රික් ලේකම් මහතුවර විසින් වාරිමාර්ග ආඥා පනත යටතේ මහුට ලැබී ඇති බලතල අතුව දෙවන පාර්ශවකරු වන වාරිමාර්ග දෙපාර්තමේන්තුවේ වාරිමාර් අධ්‍යක්ෂ ජනරාල්ගේ නිර්දේශය මත සිදු කිරීමට ලංකා විදුලිබල මණ්ඩලය මෙයින් එකඟ වේ.

දිනය

සාමාන්‍යාධිකාරී
ලංකා විදුලබල මණ්ඩලය

වාරිමාර්ග අධ්‍යක්ෂ ජනරාල්
වාරිමාර්ග දෙපාර්තමේන්තුව

දිස්ත්‍රික් ලේකම්
මහතුවර

සාක්ෂි

1 1 1

2 2 2

මහින්දානන්ද අලුත්ගමගේ
ක්‍රීඩා අමාත්‍ය
மகிந்தானந்த அலுத்கமகே
விளையாட்டுத்துறை அமைச்சர்
MAHINDANANDA ALUTHGAMAGE
MINISTER OF SPORTS

ක්‍රීඩා අමාත්‍යාංශය, 33, අර්වින්ටන් පෙදෙස, කොළඹ 07, ශ්‍රී ලංකාව. [illegible] Ministry of Sports, 33, Torrington Place, Colombo 07, Sri Lanka

ඔබේ අංකය / உமது இல. / Your No	මගේ අංකය / எனது இல. / My No	දිනය / திகதி / Date

2012.10.11

සභාපතිතුමා,
ඉඩම් ප්‍රතිසංස්කරණ කොමිෂන් සභාව,
ශ්‍රෙගරි මාවත,
කොළඹ 07.

සභාපතිතුමනි,

<u>උලපනේ මහවිල වත්ත නොම්බර 10 දරණ ඉඩම් බෙදා දීම.</u>

ඉදිරියේ දී ලංකා විදුලිබල මණ්ඩලය මගින් ක්‍රියාත්මක කිරීමට යෝජිත මොරගොල්ල විදුලි යෝජනා ක්‍රමය නිසා මාවතුර වැලිගඟ ජනපදයේ පදිංචි පවුල් 36 කට පමණ ඉඩම් හා නිවාස අහිමි වන බැවින්, එම පවුල් 36 ට ඉඩම් ප්‍රතිසංස්කරණ කොමිෂන් සභාවට අයත් උලපනේ මහවිල වත්ත නොම්බර 10 දරණ කොටසින් අක්කර 05 ක බිම් ප්‍රමාණයක් ලබා දෙන ලෙස මොරගොල්ල විදුලි යෝජනා ක්‍රමයේ ව්‍යාපෘති කළමනාකරු මා වෙතින් ඉල්ලීමක් කර සිටී.

මීට වසර 05 කට පමණ පෙර ඔබ ආයතනය මගින් බෙදා දුන් උලපනේ මහවිල වත්තේ නොම්බර 10 දරණ ඉඩම් කොටසේ කිසිම ඉඩම් ලාභියෙක් මෙතෙක් ඉඩම් සංවර්ධනය කිරීමක් හෝ නිවාස ඉදිරිකිරීමක් සිදුකර නොමැති අතර, දැනට එය ගණ කැලෑවක් බවට පත්වී ඇත.

එම නිසා එම ඉඩම් කච්චේරිය අවලංගු කර මොරගොල්ල විදුලි යෝජනා ක්‍රමය ඉදිකිරීමෙන් නිවාස සහ ඉඩම් අහිමි වන පවුල් 36 සඳහා එම ඉඩම් ලබා දීම පිණිස එකී ඉඩමෙන් අක්කර 05 ක ප්‍රමාණයක් වෙන් කර දීමට අවශ්‍ය කටයුතු කරන මෙන් ඉල්ලමි.

ස්තුතියි,
මෙයට - විශ්වාසී,

මහින්දානන්ද අලුත්ගමගේ
ක්‍රීඩා අමාත්‍ය.

මහින්දානන්ද අලුත්ගමගේ,
ක්‍රීඩා අමාත්‍ය.

පිටපත -: අධ්‍යක්ෂතුමා, දිස්ත්‍රික් ඉඩම් ප්‍රතිසංස්කරණ බල මණ්ඩලය, මහනුවර (අ.ක.ස)

APPENDIX G

Details of sand mining locations (as of initial study in year 2009)

Location	Name of Sand Miner	No. of Labourers work	Approx: Qty (cubes per day)	Income of the mine owner (Rs / day)	Expenditure for labourers (Rs.)	Net Income (Rs. / day)
Ulapone south (Left bank close to Ulapone bridge (above the Proposed Dam)	M. Sahabdeen	4	4	8,800	4,800	4,000
	N. Ravindra	4	4	8,800	4,800	4,000
Navadevita GN division (Below the Proposed Dam - Right Bank)	Nihal Sisira Kumara	11	15	33,000	18,000	15,000
	R. Abeyratna	4	4	8,800	4,800	4,000
	K. Bathiya	6	7	15,400	8,400	7,000
	Pushpa Basnayake	3	4	8,800	4,800	4,000
	L. Karunaratna	4	5	11,000	6,000	5,000
	Hearth Banda	3	4	8,800	4,800	4,000
Amunupura GN division (Below the Proposed Dam - Right Bank)	M. Jayaratna	4	5	11,000	6,000	5,000
	Upali Jayalath	6	8	17,600	9,600	8,000
	A. Amarasinghe	5	6	13,200	7,200	6,000
	R. Jayasinghe	4	5	11,000	6,000	5,000
	Y. Sirisena	3	4	8,800	4,800	4,000
	Sunil Navaratna	3	3	6,600	3,600	3,000
	S D G Nihal Fernando	4	5	11,000	6,000	5,000
	A. Agalawatta	4	5	11,000	6,000	5,000
Weliganga GN division (above the Proposed Dam - Right Bank)	S. Jayalath	2	3	6,600	3,600	3,000
	N. Jayasekera	2	3	6,600	3,600	3,000
Gampola GN division (Below the Proposed Dam - Right Bank)	R. Samarasinghe	5	6	13,200	7,200	6,000
	K. Marasinghe	5	6	13,200	7,200	6,000
Total	20	86	106	233,200	127,200	106,000

Notes:

One cube of sand is sold at Rs. 2,200/- at the sand mining spot. A labourer is paid Rs. 1,200/- per day per 1 cube. Each mine owner has to pay Rs 17,000/- annually to the Government as royalty fees. According to the conditions stipulated when issuing permits each sand mining location can employ three labourers and can deploy only one raft (Paruwa). The sand mining is allowed only for three days per week. In most of the sand mining locations these conditions are violated.

APPENDIX H

COMMENTS BY PUBLIC & OTHER ORGANIZATIONS

AFTER PUBLIC HEARING

No Comments Received by Public & Other Organizations after Public Hearing