

# Environmental Monitoring Report

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Semi-Annual Report  
For the period covered September to December 2017  
Project Number: 47381-002  
April 2018

## SRI: Mahaweli Water Security Investment Program – Tranche 1

Upper Elahera Canal Project (UECP)

Prepared by Ministry of Mahaweli Development and Environment with the assistance of Program Management, Design and Supervision Consultant (Joint Venture Lahmeyer International GmbH – GeoConsult ZT GmbH) for Democratic Socialist Republic of Sri Lanka and the Asian Development Bank.

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## MAHAWELI WATER SECURITY INVESTMENT PROGRAM

### SEMI ANNUAL ENVIRONMENTAL MONITORING REPORT FOR UECP

September to December 2017

April 2018



Program Management, Design and Supervision Consultant

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**SEMI ANNUAL ENVIRONMENTAL MONITORING  
REPORT FOR UECP****September to December 2017****Prepared for:**

Ministry of Mahaweli Development and Environment  
 Mahaweli Water Security Investment Program  
 Program Management Unit  
 No. 493 1/1, T.B. Jayah Mawatha  
 Colombo 10  
 Sri Lanka

**Prepared by:**

Program Management, Design and Supervision Consultant  
 Joint Venture Lahmeyer International GmbH – GeoConsult ZT GmbH  
 in Association with NIRAS (Denmark), Engineering Consultants Ltd. (Sri Lanka), and  
 Infotechs IDEAS (Pvt.) (Ltd.) (Sri Lanka)  
 No. 493, T.B. Jayah Mawatha  
 Colombo 10  
 Sri Lanka

Lahmeyer International Main Office  
 Friedberger Str. 173  
 61118 Bad Vilbel  
 Germany

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**ABBREVIATIONS**

ADB	Asian Development Bank
AIS	Alien Invasive Species
CEA	Central Environmental Authority
CEMP	Contractor's Environmental Management Plan
DWC	Department of Wildlife Conservation
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
EMS	Environmental Method Statements
	Environmental Monitoring Specialist
EO	Environmental Officer
EPL	Environmental Protection License
FAM	Facility Administration Manual
FD	Forest Department
GoSL	Government of Sri Lanka
GRC	Grievance Redress Committee
GSMB	Geological Survey and Mines Bureau
ICB	International contractor bidding
IML	Industrial Mining License
KMTC	Kaluganga Moragahakanda Transfer canal
MLBCRP	Minipe Left Bank Canal Rehabilitation Project
MMDE	Ministry of Mahaweli Development and Environment
MRB	Mahaweli River Basin
MWSIP	Mahaweli Water Security Investment Program
NCB	National Contractor bidding
NWPCP	North Western Canal Project
PD	Program Director/Project Director
PIU	Project Implementation Unit
PMDSC	Project Management Design Supervision Consultant
PMU	Program Management Unit
RE	Resident Engineer
SAEMR	Semi Annual Environmental Monitoring Report
SPS	Safeguard Policy Statement
STC	State Timber Cooperation
UECP	Upper Elahera Canal Project

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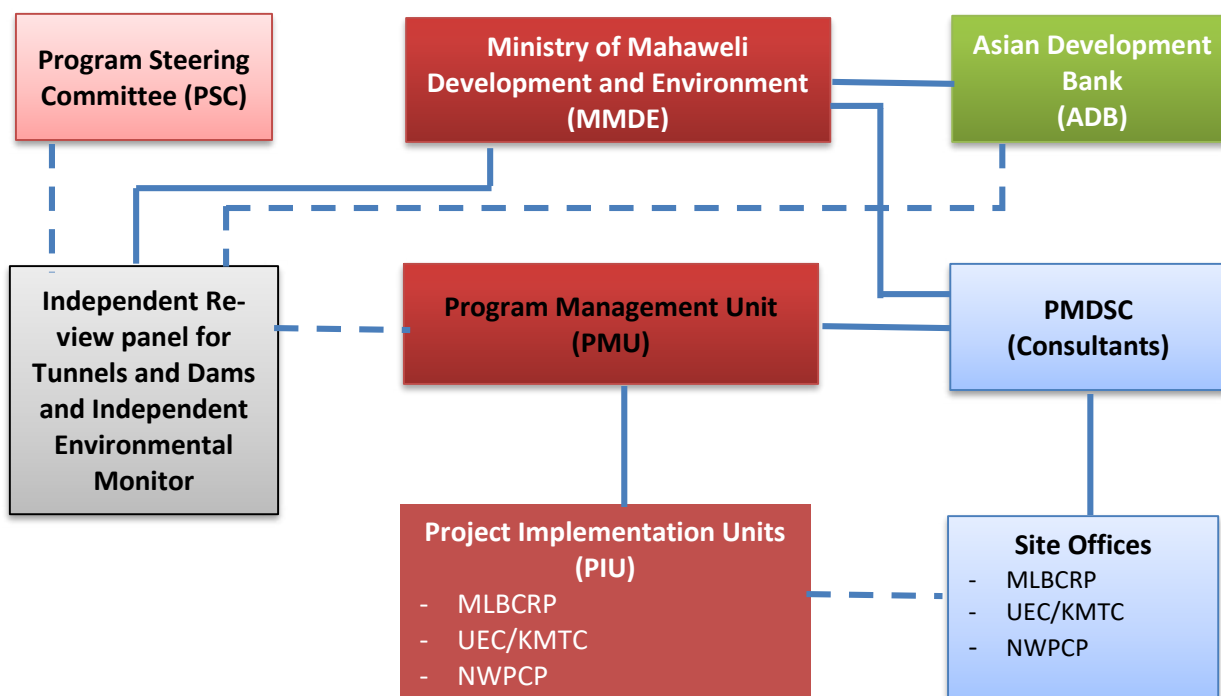
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## 1. INTRODUCTION

### 1.1 MWSIP and UECP

1. The Mahaweli Water Security Investment Program (MWSIP), which completed its second year in December 2017, is being implemented under the Ministry of Mahaweli Development and Environment (MMDE) of the Government of Sri Lanka (GoSL), funded by the Asian Development Bank (ADB) (Loan No. 47381-002-SRI (SF) and GoSL.
2. The Investment Program consists of 3 individual projects named as Minipe Left Bank Canal Rehabilitation Project (MLBCRP), North-Western Province Canal Project (NWPCP) and Upper Elahera Canal Project (UECP), divided in to 17 construction packages.
3. The three PIU offices and the three Resident Engineers' (RE) offices are operated at site level to monitor closely the performance of Contractors constructing infrastructure of the Program. The organization structure of the MWSIP is shown in **Figure 1-1**.
4. There are 6 contract packages under the MLBCRP, 3 contract packages under the NWPCP and 1 contract package under the UECP to be completed under the Tranche 1 of the development program during 2016 to 2019. Out of the total of 10 contract packages under Tranche 1 of MWSIP, 7 construction contracts had been awarded by the end of the reporting period, comprising 5 national contractors in the MLBCRP, 1 national contractor in the NWPCP and 1 International contractor in the UECP area. The single international contract in MLBCRP was due for award during the first quarter of 2018. The organization structure of the MWSIP is shown in Figure 1-1.



**Figure 1-1 : Organisation Chart for Project Implementation**



## 1.2 Scope of the Report

5. This Semi-Annual Environmental Monitoring Report (SAEMR) is prepared to update the progress of UECP with respect to environmental safeguard aspects, for the period of September (since the last report was to August 2017) to December 2017; it is an ADB requirement to submit an SAEMR to ADB and Central Environmental Authority (CEA) for the “Category A” projects as documented in FAM<sup>1</sup> and EARF<sup>2</sup>.

6. The purpose of this report is to ensure that the project is implemented with due concern for environment and social safeguards according to the ADB’s Safeguard Policy Statement (SPS) 2009, and specifically to ensure that these issues are adequately addressed in compliance the requirements of ADB. Further, this report is to assess the progress with implementation of the program in complying with the approved Environmental Impact Assessment (EIA) and Environmental Management Plan (EMP)<sup>3</sup> as per the stipulation No. 14.3 of the EIA approval No. 08/EIA/Water/04/2012 issued by CEA on 31.03.2016.

## 1.3 UECP Project at a Glance

7. The **Upper Elahera Canal Project (UECP)** comprises two components. The first component is the 9 km Kalu Ganga-Moragahakanda Transfer Canal (including 8 km of tunnel) that transfers water between the Kalu Ganga and Moragahakanda reservoirs. The second component is the Upper Elahera Canal that connects the Moragahakanda reservoir to the existing reservoirs: Huruluwewa, Eruwewa and Mahakanadarawa via 92 km of canals (including a 27.7 km long tunnel 3 & 4). These reservoirs supply existing irrigation and water supply schemes. The UEC is to be implemented in 3 Tranches:

- (i) Tranche 1 is to construct the UEC from 0+100 km to 3+860 km (UEC-ICB-1)
- (ii) Tranche 2 will include construction of UEC Tunnel 3 and Tunnel 4 from 27+509 km to 55+600 km (UECP-ICB-2A), and the Kaluganga – Moragahakanda Transfer Canal (KMTC) from 0+000 km to 8+830 km (UECP-ICB-2B)
- (iii) Tranche 3 will include construction of UEC from 3+860 km to 17+700 km (UECP-ICB-3 which includes Kongetiya LC even though the names of Contracts UEC-ICB-1 and ICB-3 mention chainage 3+860, the corrected chainages here reflect the limits of the work), UEC from 17+700 km to 27+509 km (UECP-ICB-4), 55+600 to 65+500 km (UECP-ICB-5) and the transfer canal from the end of UEC to Mahakanadarawa reservoir is to be constructed under UEC-ICB-6<sup>4</sup>

8. UECP-ICB-1 contract (MMDE/MWSIP/ADB/MLBCRP/NCB-5/3267-3268/SRI/NCB/2016/019) awarded to CML-MTD Construction Limited was commenced on 11 January 2017 and is scheduled to be completed by 8 January 2020. This package is the initial section of the UEC connecting with the Moragahakanda Reservoir, which includes construction of 3+760 km water conveyance system. The construction work includes 1,313 m of closed canal with Rectangular Double Conduit and 2,404 m of cut and cover section with Circular Conduit.

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<sup>1</sup> Paragraph 60 of Facility Administration manual (FAM), June 2015 prepared by MMDE

<sup>2</sup> Paragraph 111 of Environmental Assessment Review Framework (EARF) November 2014 (updated in June 2017) by MMDE

<sup>3</sup> Environmental Impact Assessment Report (EIAR) dated June 2015 and approved by CEA on 31.03.2016

<sup>4</sup> It is expected that former packages UECP-ICB-3 and ICB-4 will be combined in the next quarter to form a new UECP-ICB-3 and that the other packages will be re-numbered accordingly.

9. The Contractor's Environmental Officer appointed for UECP-ICB-1 package has been advised and trained to make independent monitoring of their safeguard activities and submit the monthly environmental monitoring report along with the monthly construction progress report. Reviewing and carrying out progress meetings take place regularly at RE's office with the participation of PIU and PMDSC staff.

10. The significance of the environmental impact is recorded as high, due to the clearance of wildlife habitat falling within the Elahera Giritala sanctuary area, which comes under the Elahera Wildlife Range. By December 2017, the physical progress of the UECP-ICB-1 package is recorded as 67 % of site clearance, 26 % of excavation work, 6.4 % of Rectangular Double Conduit and 6.1 % of Circular Conduit sections.

11. **Table 1-1** summarizes the status of designs, contract bidding and awards of UECP contract packages by the end of December 2017. The updated Environmental Management Plans (EMPs) have been prepared and submitted along with the bidding documents for the packages UECP-ICB-1, UECP-ICB-2A, UECP-ICB-2B, UECP – ICB 3 and UECP-ICB-4.

**Table 1-1: Summary of the UECP contract bidding and awarding**

Time	Contract Name	Status by End August 2017
<b>Tranche 1 (2015 - 2019)</b>	UEC-ICB-1; Upper Elahera Canal Stage 1 (0+100 to 3+860km)	Ms. CML-MTD Construction Ltd has commenced work on 11 January 2017 and construction work is ongoing.
<b>Tranche 2 (2017 - 2024)</b>	UECP-ICB-2A; Upper Elahera Canal - (27+509 to 55+600 km); Tunneling of UEC Tunnel 3 (TBM) and Tunnel 4 (D&B)	Bidding documents with the 7th revision along with the <u>updated EMP</u> and Revised Engineering estimate has been submitted on 16 October 2017. Review by Independent Review Panel (IRP) is ongoing.
	UECP-ICB-2B; Upper Elahera Canal: KMTC (0+000 to 8+813 km)	<u>Updated EMP</u> submitted with the bidding documents. The technical bid evaluation was approved by ADB on 23 October 2017 and Financial Bid opening was on 02 November 2017.
<b>Tranche 3 (2018 - 2024)</b>	UECP-ICB-3; Upper Elahera Canal (3+860 to 17+700km) including Kongetiya, Bogahawewa, and Madeththawewa Level Crossings.	Final bidding document with the final revision along with the <u>updated EMP</u> and Revised Engineering estimate have been submitted on 05 December 2017.
	UECP-ICB-4; Upper Elahera Canal (17+700 to 27+509 km)	Final bidding document with the final revision along with the <u>updated EMP</u> and revised Engineer's Estimate has been submitted on 20 October 2017.
	UECP-ICB-5; Upper Elahera Canal (55+600 to 65+500km)	Final bidding document with the final revision along with the <u>updated EMP</u> and revised Engineer's Estimate have been submitted on 14 December 2017.
	UECP-ICB-6; Feeder Canal to Manankattiya, Eruwewa and Mahakanadarawa Reservoirs (0+000 to 19+000km)	Preparation of bidding document awaiting preparation of feasibility study
	UECP-ICB-7; NCPP Water Management Software & Control Centre	Scheduled to finalize document in March 2021

## 2. PROGRESS OF UECP

### 2.1 Safeguard documentation and approvals

#### 2.1.1 EIA and updated EMPs

12. UECP is classified as Category “A” according to ADB’s SPS (2009) and the conditional approval was granted by CEA for a period of 3 years commencing from 31 March 2016. It is one of the conditions given by the Department of Wildlife Conservation (DWC) to prepare a comprehensive Wildlife Management Plan (WMP) and the revised Draft Final Plan was submitted in December 2017. The 4<sup>th</sup> Technical Review Committee Meeting (TRC) to evaluate the submitted draft final report was held on 12 December 2017 at the Head Office of DWC, chaired by the Director – Operations and Natural Resources Management (Mr. Manjula Amararatne). The comments related to structural modifications as per the canal type and design details were submitted to IUCN through PMU to incorporate in the Final WMP.

13. As updated in the previous SAEMR, the design changes made in comparison to the approved EIA with respect to UECP Tranche 1 and Tranche 2 packages were submitted as “Supplementary Information Related to Infrastructure Design Changes for Tranche 1 and Tranche 2 components” (Addendum to EIA) to CEA in July 2017 and to ADB in August 2017. CEA held the Technical Review Committee (TRC) meeting on 30 November 2017 on the submitted report, and the letter summarizing comments and clarifications required were sent by CEA on 26 December 2017. The approval for the design changes will be granted by CEA upon the submission and approval of PMDSC’s responses.

14. The updated EMPs have been completed and submitted along with the bidding documents to both CEA and ADB for the Tranche 2 packages of UECP-ICB-2A and ICB-2B packages, while draft updated EMPs for UECP-ICB-3, ICB-4 and ICB-5 packages are included within Tranche 3 and were submitted with the bidding documents for PMU and ADB review.

#### 2.1.2 Contractor’s Environmental Management Plan (CEMP)

15. The CEMP for the UECP-ICB-1 contract package has been approved in May 2017 but requires continuous updates to take account of the site changes and environmental issues being observed due to the ecological and environmental sensitivity of the project area.

16. The additional environmental mitigation requirements and environmental issues occurring in the project area during construction are being updated using following documentation, and the summary during the period September to December 2017 is shown in Table 2-1.

**Table 2-1: Summary of the UECP-ICB-1 Contractor’s Reporting**

CEMP approval / update status	Approved in May 2017 and no updates issued by the Contractor
Self-monitoring records of the Environmental Officer	Requirement for environmental sign boards, stream diversion, dust controlling and placed temporary ramp and filter drains for stream crossing
Submission and approval of Environmental Method Statement	Site clearance and access road, common including rock excavation and concrete works being submitted and approved
Environmental Issue Log	Maintaining weekly

CEMP approval / update status	Approved in May 2017 and no updates issued by the Contractor
Grievance Log	No public grievances were recorded
Submission and approval of monthly Environmental Monitoring Report	Report is submitted on or before 5 <sup>th</sup> of every following month.

## 2.2 UECP Physical progress

17. The key physical activities carried out in the site by the UECP contractor as of December 2017 are as follows;

i. **Construction work in section 1 (0+ 963 km – 1+ 428 km)**

- Dewatering
- Screeding
- Reinforcement
- Concreting

ii. **Construction work in Section 2 (1+ 428 km - 2+ 200 km)**

- Common excavation
- Dewatering
- Rock excavation works

iii. **Construction work in Section 3 (2+200 km – 3+980 km)**

- Site clearing and top soil removal
- Common excavation
- Rock excavation work
- Screeding
- Concreting

iv. **Section 4 (0+100 km to 0+963 km)**

Tree enumeration completed, and trees to be removed in March 2018.

18. One year of the 3 years of the UECP-ICB--1 contract has elapsed since the Contract was awarded to M/s CML-MTD Construction Limited, and physical progress of the major works is recorded as given in Table 2-2.

**Table 2-2: Summary Physical Progress of Major Work done by December 2017**

Activity	Cumulative Percentage	
	Expected	Actual
<b>Canal Earthwork</b>		
(i) Common excavation	28.0 %	18.0 %
(ii) Rock excavation (BoQ volume)	27.0 %	50.0%
<b>Concrete</b>		
(i) Blinding concrete class C12/15	25.0 %	7.5 %
(ii) Reinforced concrete class C30/37	21.5 %	4.0 %
<b>Reinforcement</b>	22.0 %	8 %
<b>Backfill</b>	14.0 %	0.0 %

19. In addition, a 60 m<sup>3</sup>/h batching plant, a 50 t/h crusher plant and a field laboratory are installed and operating with the required environmental approvals and licences.

20. Physical work progress related to environmental aspects are summarized in the Table 2-3.

**Table 2-3: Summary of the approval status for the construction work under UECP-ICB-1**

Key activities started/ implemented	Environmental considerations
<b>Batching plant was commissioned</b> Environmental clearances for concrete batching plant and mobile crusher plant were issued by CEA, Central Province office, Kandy on 2017.07.06	Environmental protection licenses for concrete batching plant and mobile crusher plant were issued by Deputy Director General, Env. Pollution Control Division, CEA on 17 October 2017
Tree removal (Ch. 3+ 500 Km to 3+ 760 Km) completed <ul style="list-style-type: none"> <li>- Tree removal from 0+960 km to 2 + 200 km (width 40 m) – completed</li> <li>- Tree removal of 2 +200 km to 2 + 860 completed (width 10m)</li> <li>- Tree removal from 3+200 km to 3 +980 km (width 40m) completed</li> </ul>	Department of Wildlife Conservation granted approval 9 December 2016 and tree removal by State Timber Corporation (STC) - completed Approval from Forest Department given to STC, who commenced the tree removal August 2017 – completed by end of reporting period.
Tree removal of the remaining areas of ICB-1 <ul style="list-style-type: none"> <li>- Tree marking of remaining area of 2 +200 km to 2 + 860 km is completed by FD (DFO, Pollonnaruwa) and tree list was sent for approval of FD</li> <li>- Tree marking of 0+100 km to 0+960 km and diversion road completed by FD (DFO, Matale) and tree list was sent for approval of FD</li> </ul>	Tree list was sent to FD on 2017.11.08  Tree list was sent to FD on 2017.11.15

Key activities started/ implemented	Environmental considerations
<b>Tree Removal of Moragahakanda-Kaluganga Link Tunnel</b> Conservator General of Forest granted approval for tree marking activities of the tunnel components on 13.11.2017	Tree marking activities are ongoing by FD and PIU, UEC

## 2.3 Approval Status

21. The summary of required approvals was identified by the Contractor during the CEMP preparation stage with support of the Engineer, and the RE approved commencement of construction activities upon the receipt of required key approvals. The summary of the approval status is given in **Table 2-4**.

**Table 2-4: Summary of the approval status for the construction work under UEC-ICB-1**

Project activity	Type of approval	Responsible Institution	Compliance status Update (Ref No. and Expiry date)
Implementation of the project	Approval	CEA	08/EIA/water/04/212 30-03-2019
Land obtaining for construction	Approval	DWC	WL/6/1/1/266 of DWC
Removal of trees	Permission	DWC	WL/6/1/1/266 of DWC
Land for accommodation	Permission	DWC	WL/6/1/1/255 of DWC 23-05-2020
Implementation of the project	Approval	Dept. of Archaeology	ARCH/PO/EXP/04/11/217
Erection of electrical fence	Permission	Engineer	PMDSC-UEC-site/ICB-1/CMLMTD/067
Handing of explosive	Permit	MOD	Permit no. 275258 13-02-2018
Rock blasting	Permission	DWC	WL/61/1/255-1
Rock test blasting	Approval	GSMB	CME/TB/IML/A/CP/MQUR/2017/2552/119 23-06-2017
Rock blasting	IML	GSMB	IML/A/HO/10778 24-07-2018
Station of concrete batching plant	EPL	CEA	14564 (R.O) 16-10-2018
Station of crusher plant	EPL	CEA	14566 (R.O) 16-10-2018
Water excavation from Ambanganga	Approval	MKDP	MKDP/PD/ENG/44
Disposal site	Permission	DWC	WL/6/1/1/266

22. The site selection for the Contractor's facilities and relevant concurrence are being followed up by the relevant subject specialists and officers attached to PMDSC, PMU and PIU.

23. Approval for blasting activities was granted by Department of Wildlife Conservation on 29 June 2017 and test blasting was carried out on 27 June 2017. The method statement for rock blasting was submitted by the Contractor in May 2017 and comments on the method statement were issued on 29 June 2017 by the RE with approval. Industrial Mining License was issued by GSMB on 25 July 2017.

24. As per the Extraordinary Gazette of GoSL No. 1533/16 dated 25 January 2008 (Part B, Paragraph 29)<sup>5</sup>, EPL is to be obtained for the labour camp since the number of boarders is more than 25 labourers.

## 2.4 Consultative sessions and meetings

25. With the project progress, stakeholder engagement was an essential part of the work program, and **Table 2-5** summarizes the key consultative sessions and work programs held with the participation of PMU, PMDSC and PIU environmental safeguard officials.

**Table 2-5: Summary of Stakeholder engagement and consultative sessions, meetings held during September to December 2017**

Date	Location/ Purpose	Participants	Outcome/ Remarks
18 July 2017	To identify suitable locations for tree planting	Officials of wildlife and Forest department.	Identified suitable locations.
24 Aug 2017	Dambulla	Project keys staff	Preparation wildlife management Plan.
07 Sept 2017	Technical Review Committee Meeting for Wildlife Management Plan at DWC Head Office, Bataramulla	IUCN Team of consultants, TRC members, DWC Directors and relevant staff	Comments on the draft Wildlife Management Plan
25 Sept 2017	Review panel Discussion (UEC EIA Team) on UEC Tunnels at PMU conference hall	UEC EIA team, PMDSC and PMU staff, Independent Review panel members	Obtain key recommendations and suggestions of the UEC Tunnel areas
25 Sept 2017	Discuss with PMU and IUCN about the monitoring mechanism for WMP preparing by IUCN and providing inputs	IUCN team of consultants, PMU and PMDSC Env staff	Discuss about the WMP implementation mechanism
02 Oct 2017	Consultative session to aware about design changes under Tr 1 and 2 packages to key stakeholder agencies chaired by Sec to the ministry at	Key stakeholders including CEA, FD, DWC, Local Authorities, GSMB, NBRO, Archaeology department etc.	Aware the key stakeholders about the design changes with respect to the Approved EIA, and obtain consensus

<sup>5</sup> Hostels and similar dwelling places where occupancy level or 25 or more boarders and less than 200 boarders

Date	Location/ Purpose	Participants	Outcome/ Remarks
	Central Bank Institute, Rajagiriya		
10 Oct 2017	0+900km	Officials of PIU and FD	Tree marked along the canal trace.
30 Oct 2017	Discussion and presentation at CEA to approve addendums on design changes for UECP TR 1 & TR 2 and NWPCP TR 1 packages	CEA relevant officials, PMDSC, PMU and PU staff and relevant stakeholders invited by CEA	Technical Review of the design changes and provide comments
18 Dec 2017	Technical Review Meeting on SEA report at CEA	Technical Review Committee members appointed by CEA, PMDSC, PMU staff	Comments on the SEA report submitted

## 2.5 Compliance with CEA's Conditions

26. The conditional approval issued (08/EIA/Water/04/2012 dated 31 March 2016) by Central Environmental Authority (CEA) for EIAR comprises 14 conditions with detail subsections covering (i) General conditions; (ii) Ecological aspects; (iii) Hydrological aspects; (iv) Geological/land stability and erosion aspects; (v) Disposal of excavated material; (vi) Social aspects; (vii) Extraction of construction material; (viii) Restoration, rehabilitation of construction site; (ix) Waste disposal; (x) Archaeological aspects; (xi) Noise and Vibration; (xii) Transportation of material and machinery; (xiii) Safety, emergencies; and (xiv) Environmental Management Plan.

27. Complying with the conditions related to regulatory and approval requirements, as described in **Table 2.4**, relevant approval has been obtained prior to commencing the relevant construction activity.

28. The preparation of a Wildlife Management Plan (WMP) and obtaining corresponding approval from the CEA and DWC is a key compliance requirement to permit the progress of the next construction packages under UECP Tranche 2. The Draft WMP plan prepared by the IUCN has been submitted in December 2017, and comments have been shared by holding several consultative sessions as mentioned in **Table 2-5**.

29. The Contractor has been made aware of the CEA conditions and it is being ensured that the Contractor is complying with the conditions related to construction activities. The Department of Wildlife Conservation (DWC) has included their conditions annexed to the CEA conditions, and complying with the general conditions from Section 2.12 to 2.32 of the DWC conditional approval (Ref. Wa. Jee/6/1/1/252-ii on 16 March 2016), following steps have been taken by the project:

- (i) Necessary approval from Department Wildlife Conservation /Forest Department should be obtained for the release of the lands belonging to DWC/FD prior to commencement of construction activities (land for canal construction approval of Wildlife Department granted on 9th December 2016)
- (ii) Details of the disposal sites recommended in the EIA report have been sent to CEA and DWC



- (iii) DWC has granted the permission to use Moragahakanda disposal sites situated in Wildlife area as a disposal site for this Project
- (iv) Priority plant species were removed by IUCN from canal trace of ICB-1 and collected plant species were temporarily transferred to a nursery established at the wildlife premises of Elahera. There plant species were replanted in suitable habitats by UECP Project from 6 November 2017 to 8 November 2017 as follows:
  - *Dendrolobium Trinagulare* - 9 plants
  - *Garcinia terpnophyta* - 5 plants
  - *Nervilliya* - available in plant nursery and schedule to translocate 1<sup>st</sup> week of January 2018
- (v) No night time work is allowed for the construction within sanctuary area
- (vi) No worker is allowed to hunt or harm any animal or plant in the protected area, and the construction area boundaries are demarcated to avoid illegal movements within sanctuary area
- (vii) The necessary awareness has been made to stop work and keep away from the area when elephant movements occur in or around the construction area
- (viii) No new access roads are prepared, and 10 m belt of the canal trace was cleared for the access, and fenced properly to avoid any unauthorized people/public to enter the sanctuary area
- (ix) The area where deep excavation and blasting take place along the canal trace is protected with electric fencing to avoid elephants to reach the excavated area, and for the safety of small animals green mesh is installed to the ground level (**Figure 2-4**)
- (x) Waste management is properly arranged using the identified waste disposal areas, and no waste is left in the sanctuary area, which could disturb existing wildlife movements
- (xi) The construction work is carried out with accompanying the officers from the Elahera Wildlife Range office and under their guidance and supervision

### 3. CEMP IMPLEMENTATION & MONITORING

30. As a new recruitment approved by ADB and PMU, two Environmental Monitoring Specialists were recruited to the PMDSC staff and assumed duties from 1<sup>st</sup> week of December 2017. One specialist was assigned for UEC contractor's safeguard monitoring and implementing specific environmental mitigation measures through the Contractors and the Engineer.

31. The Contractor is contractually bound to implement the CEMP and carry out independent monitoring during the construction period as per the formats agreed with the RE/PMDSC Environmental Specialist. In addition to the CEMP, prior to each construction activity, it is compulsory to submit the Environmental Method Statement (EMS) based on the format discussed during the Contractor's orientation program.

32. The other relevant documentation and reporting managed by the Contractor's Environmental Officer include: (i) Environmental Issue Log, (ii) Contractor's Schedule for CEMP implementation, (iii) Grievance Log, and (iv) Monthly Environmental Monitoring Report. The environmental issues of the previous month are discussed in the monthly progress meetings carried out by the RE/PMDSC with the participation of PD/PIU.

33. The Contractor (Project Manager (PM) & Environmental Officer (EO) ) was made aware about the non-compliances during the site inspection carried out on 13<sup>th</sup> & 14<sup>th</sup> December 2017 by the Environmental Specialist and EMS of PMDSC, and was instructed through RE to take the "Remedial Actions" highlighted in the **Tables 3.1** and **3.2**.

Table 3-1: Summary of Significant Environmental Impacts and Remedial Actions to be Adopted

Item	Compliance	Non-compliance	Effectiveness of the mitigation	Comment	Proposed Remedial Action	Records on follow up on implementing proposed "Remedial Action"
Air Quality	✓		Low	<ul style="list-style-type: none"> <li>Water is being applied for dust control, but no dust covers were provided in the areas where drilling and excavation activities were taking place</li> </ul>	<p><b>Following actions to be implemented by:</b> Contractor's Environmental Office and his team</p> <ul style="list-style-type: none"> <li>Frequency of water spraying is not adequate, and not properly planned. Need frequent water spraying according to a proper plan arranged identifying the required areas where dust generation is high.</li> <li>Dust generate by rock drilling spreads in to forest cover neighbourhood. Drilling areas should be confined with the dust covers</li> </ul> <p><b>Verified and monitored by:</b> EMS-PMDSC/RE</p>	Frequent Monitoring was commenced from end December 2017 after appointing EMS from PMDSC, and these details will be updated in the next SAEMR
Water Quality		✓	None	<ul style="list-style-type: none"> <li>A natural stream at 1+122 km has been polluted by eroded soil particles.</li> <li>The natural streams are not properly diverted and erosion and siltation are caused in adjacent water ways</li> </ul>	<p><b>Following actions to be implemented by:</b> Contractor's Environmental Office and his team</p> <ul style="list-style-type: none"> <li>Stream diversion should be done as per the EMP instructions by preparing a stream crossing and sand bags and stone / rubble protection to be made against soil erosion</li> <li>PM to schedule construction work in such areas during dry season</li> </ul> <p><b>Verified and monitored by:</b> EMS-PMDSC/RE</p>	Contractor immediately attended and rectified the diversion of natural stream including soil erosion protection proposed
Soil	✓		Low	<ul style="list-style-type: none"> <li>Soil erosion takes place at camp, batching plant and contractor yard.</li> <li>Mud consisted surface layer of the service road</li> </ul>	<p><b>Following actions to be implemented by:</b> Contractor's Environmental Office and his team</p> <ul style="list-style-type: none"> <li>Soil conservation means to be applied to control soil erosion.</li> </ul>	In progress but could not be completed within the reporting period

Item	Compliance	Non-compliance	Effectiveness of the mitigation	Comment	Proposed Remedial Action	Records on follow up on implementing proposed "Remedial Action"
				being washed out by the rain.	<ul style="list-style-type: none"> <li>Proper drainage systems to be arranged within camp, temporary disposal and batching plant areas</li> <li>Access road surface should be improved with suitable materials</li> </ul> <b>Verified and monitored by:</b> EMS-PMDSC/RE	
Noise	✓		Low	<ul style="list-style-type: none"> <li>No records on the noise &amp; vibration levels of the crusher plant.</li> </ul>	<ul style="list-style-type: none"> <li>Activity based monitoring is required for noise &amp; vibration level measurements (24 hrs) as per CEA requirements by the <b>Contractor</b>.</li> <li><b>RE</b> to be advised to the Contractor to carry out 3rd party noise level &amp; vibration measurements to verify that the activities are performed complying with the CEA standard levels for Noise &amp; Vibration</li> </ul> <b>Verified and monitored by:</b> EMS-PMDSC/RE	In progress but could not be completed within the reporting period
Flora (Including Invasive Species)	✓		Moderate	<ul style="list-style-type: none"> <li>There are some invasive plants recorded in the project area in the contractor's camp/disposal areas.</li> </ul>	<ul style="list-style-type: none"> <li>A programme to be implemented to get rid of them. Assigned environmental officer to the contractor lack of knowledge in Biology and hence recommended the <b>Contractor</b> to provide adequate training to the EO</li> <li><b>Environmental Specialist / EMS of PMDSC</b> will arrange an awareness program / prepare awareness material on identification and eradication of Invasive Alien Species (IAS)</li> <li><b>PIU</b> to identify the areas where invasive species are spread, and submit the land details / extent with the concurrence of the relevant land owner (FD/Wildlife) to RE, so</li> </ul>	In progress but could not be completed within the reporting period

Item	Compliance	Non-compliance	Effectiveness of the mitigation	Comment	Proposed Remedial Action	Records on follow up on implementing proposed "Remedial Action"
					that the PMDSC to prepare and issue PSO through RE to the contractor to implementing IAS removal and habitat enrichment through reforestation using the Provisional Sum money allocated under UEC ICB 1 contractor	
Fauna / wildlife	✓		Moderate	<ul style="list-style-type: none"> <li>As per wildlife department observations, there has been very few incidents recorded in the project site such as falling small animals in to the excavated sections of the canal, elephant chasing etc.</li> <li>These has not been recorded in "Environmental Issue Log"</li> <li>The protective fence with green mesh erected to avoid animal falling into excavated canal has been damaged due to poor attention on maintaining the fence</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b> to rectify with immediate action</li> <li><b>PM of the Contractor</b> to appoint a Separate team of labourers to under the Environmental Officer of the Contractor for regular maintaining.</li> <li><b>PIU/ RE</b> to discuss with Wildlife Elahera Range Office to take over regular maintenance of the electric fence and protective green mesh around the project site, and contractor to provide financial requirements</li> </ul> <p><b>Verified and monitored by:</b> EMS-PMDSC/RE</p>	Contractor immediately attended and repaired the green mesh and an environment officer was provided by end December 2017 with a team to attend to regular maintenance
Traffic Management within the site		✓	Low	<ul style="list-style-type: none"> <li>No site entrance security post established</li> </ul>	<ul style="list-style-type: none"> <li><b>Contractor</b> to rectify with immediate action by establishing an entrance security point</li> </ul>	In progress but could not be completed within the reporting period

Item	Compliance	Non-compliance	Effectiveness of the mitigation	Comment	Proposed Remedial Action	Records on follow up on implementing proposed "Remedial Action"
				<ul style="list-style-type: none"> <li>Motor bikes are observed parked in the construction area and no control of visitors entering Elahera-Giritala Sanctuary area</li> </ul>	and a vehicle & visitor log book to be maintained with a Visitor pass <ul style="list-style-type: none"> <li>24-hour security person with proper facilities / sign boards to be established at the site entrance with the guidance/ assistance of Wildlife Department. Required expenses, implementation to be covered <u>by the Contractor</u></li> </ul> <u>Verified and monitored by:</u> EMS-PMDSC/RE	
Waste Management & Hazardous Materials	✓		Low	No adequate solid waste management system in place	<ul style="list-style-type: none"> <li><b>PM-Contractor</b> to adopt a Waste segregating and regular disposing system</li> <li>Labours to aware about the waste disposal mechanism and establish a fine system for improper waste dumping <u>by the Contractor against the laborers</u> those who not stick to the rules</li> </ul> <u>Verified and monitored by:</u> EMS-PMDSC/RE	In progress but could not be completed within the reporting period
Cultural Heritage	N/A					
Environmental Incident Log	✓		Moderate	Not maintaining properly	<ul style="list-style-type: none"> <li><b>EMS</b> to attend regular check of the Environmental Issue log</li> <li><b>Contractor's EO</b> should daily update the Environmental Issue log including every single/ simple incident occur in the construction area</li> </ul>	In progress
Labour Welfare	✓		Moderate	Basic requirements have been provided.	Health & Safety Specialist of PMDSC report on this aspect, and any incident noticed will be recorded by EMS who will report to <b>H&amp;S Sp.</b> of <b>PMDSC / RE</b> to take necessary action	<u>NA</u>
House keeping	✓		Low	Some section of the site is untidy and unclean.	<b>The Contractor – PM / EO</b> to attend regular housekeeping is required.	In progress but could not be completed within the reporting period

Item	Compliance	Non-compliance	Effectiveness of the mitigation	Comment	Proposed Remedial Action	Records on follow up on implementing proposed "Remedial Action"
Stray dogs are available at the site		✓	NA	Dogs may be accustomed for hunting wild animals	<b><u>Contractor's Environmental Officer and his team</u></b> to attend to the following; <ul style="list-style-type: none"> <li>• A system is to be adopted to chase them away from site, by practising better housekeeping and waste management</li> <li>• Proper site barricading to be adopted.</li> </ul>	



### 3.1 Environmental risks and safeguard compliance

34. This section includes the information gathered through periodical site visits, Contractor's independent monitoring reports, and discussions held at the Contractor's monthly progress meetings, since there is no continuous CEMP monitoring take place on site. Since only the UECP-ICB-1 Contractor had commenced physical work on site by the end of the reporting period, the relevant details are available related to that construction package only. Summary is given in **Table 3-1**.

35. The Contractor's attention regarding the environmental issues raised during the monitoring period was initially inadequate, but actions have been taken with the recruitment of Environmental Monitoring Specialist to improve the safeguard compliance, working closely with the Contractor's Environmental Officer.

36. Prioritized list of non-compliances noticed, and actions proposed by the Engineer, with respect to UECP-ICB-1 contract package are described in **Table 3-2**.

**Table 3-2: Summary of key non-compliances recorded in UECP-ICB-1 area during September to December 2017**

Issue	Proposed action
 <p>(i) Poor maintenance of the electrical fence and wire mesh</p>	<p>Rectify with immediate action Separate team of labourers to be appointed under the Environmental Officer of the Contractor for regular maintenance.</p>
 <p>(ii) A natural stream at CH 1+122 has been polluted by eroded soil particles</p>	<p>Stream diversion should be done as per the EMP instructions and action must be taken to avoid soil erosion</p>



Issue	Proposed action
 <p>(iii) Poor solid waste management</p>	<p>Separate team of labourers to be appointed under the Environmental Officer of the Contractor for regular site cleaning and waste management</p> <p>Project Manager of CML MTD to be involved with identifying proper solid waste disposal mechanism</p>
 <p>(iv) Untidy working site and labour camp</p>	<p>Separate team of labourers to be appointed under the Environmental Officer of the Contractor for regular site cleaning</p> <p>Project Manager of CML MTD to be involved with identifying proper solid waste disposal mechanism</p>
 <p>(v) Loose soil susceptible to scouring and erosion</p>	<p>Access roads to be prepared as per required engineering designs and properly maintained</p>

37. It was confirmed by the Environmental Monitoring specialist that the Contractor has attended to rectifying most of the con-compliance activities related to issues No (i) to (iv) , and the actions related to issue No. (v) are in progress.

### 3.2 Environmental issues and grievances recorded

38. Environmental Issue log and Grievance Log are maintained at the site office, but there are no records for the period of September to December 2017. The Contractor of UECP-ICB-1 has placed a Grievance Box at the site office to receive any complaints and suggestions about the construction work.

39. PMU / PIU has not established GRM for UECP-ICB-1 due to construction activities being undertaken in forest and wildlife areas so that there is no direct impact for the public.

#### **4. KEY ACTIVITIES FOR NEXT YEAR (JANUARY TO JUNE 2018)**

40. Specific environmental mitigation measures are planned for implementation through the provisional sum provided in the Contract, by preparing specifications for “Ecological Restoration through Reforestation”. Actions in the areas identified in the EIA, WMP and through observations and stakeholder consultations for the removal of Alien Invasive Species (AIS) and compensatory reforestation are to be implemented.
41. Identifying a qualified accredited laboratory to carry out periodical environmental quality data collection will be achieved through the competitive bidding process.
42. Implementation of standard environmental monitoring system through the newly appointed Environmental Monitoring Specialists (EMS) and RE/PMDSC.
43. Kalu Ganga – Moragahakanda Transfer Canal (KMTC) under Contract UECP-ICB-2B is due to be awarded during the next 6 months and the required environmental approvals will be obtained from relevant agencies upon the submission of clarifications raised by CEA for the addendum on design changes.
44. Species translocation program is planned for UECP-ICB-2B new access road proposed for access to the Northern portal of Tunnel 2.

## 5. PHOTO ANNEX



Awareness meeting for head office – Forest Department on 2017.08.09 on KMTC tunnel construction



Awareness programme for relevant line agencies (field level) on Tunnel Construction on 09.11.2017 at NAQDA





Tree marking activities of ICB-1 on 2017.10.10 by FD at canal trace 0 + 900 km



Tree removal of State Timber Cooperation (STC) on 15.10.2017 at canal trace 3+600 km





Field visit to identify the suitable locations for tree planting with FD and Wildlife Department at Elehera – Giritale Sanctuary 18.07.2017



Field visit – Internal Monitoring Committee – 2017.09.22 at ICB-1



Safety Audit - held on 2017.10.17 at Contractor's camp site



Key staff awareness meeting on preparation of Wildlife Management Plan –  
2017.08.24 at Dambulla



